

Plenary Symposia Abstracts

ESPID PLENARY SYMPOSIUM 3: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0127

THE IMPACT OF AGE AT VACCINATION ON INFANT VACCINE RESPONSES: AN ANALYSIS OF IMMUNITY IN 7630 CHILDREN

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Background

Global infant immunisation programmes vary in the age at which infants are first vaccinated. The magnitude of the infant antibody response to vaccination is thought to be affected by the age of the infant and the level of maternal antibody present at the time of vaccination. Since trans-placentally acquired antibody decays over time, the interference with vaccine responses reduces with age and observed age effects on vaccine responses may therefore be due to reduced maternal antibody interference.

Methods

We conducted an analysis of serology from vaccine trials in infants. We assessed the effect of age at vaccination on antibody responses to both priming and booster doses of most vaccines included in global infant immunisation programmes.

Results

A total of 7630 infants from 17 countries were included in the analysis. For antibodies against 18 out of the 21 antigens studied, children who were older when initially immunised had significantly higher vaccine responses, with between 10% and 71% higher post-vaccination antibody per additional month older when first vaccinated. These effects were independent of the level of pre-existing antibody. For diphtheria, pertussis antigens PT and FHA, inactivated polio and 5/10 (50%) serotypes of pneumococcus, the age at first vaccination also had a positive effect on post-booster antibody levels.

Conclusions

A delay in age at first immunisation results in a combined beneficial effect on immunogenicity due to both a reduction in maternal antibody interference associated with antibody decay, and improved immune responsiveness as a result of an increase in infant age. A delayed start immunisation policy may be a cost-effective method of enhancing vaccine responses in infants and be of particular benefit for countries with prenatal immunisation programmes.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ESPID PLENARY SYMPOSIUM 3: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0387

A MULTIPLE ANTIGEN PRESENTING SYSTEM (MAPS) VACCINE AGAINST MYCOBACTERIUM TUBERCULOSIS PULMONARY INFECTION

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Background

There is a critical and unmet need to develop vaccines against Mycobacterium tuberculosis (MTB). We developed a vaccine platform, MAPS (Multiple Antigen Presenting System) which relies on biotin-rhizavidin interactions to create a polysaccharide-protein scaffold. Mice immunized with MAPS generate Th1 and Th17 CD4+ T-cell responses to proteins. Here we used MAPS to immunize BCG-exposed and unexposed mice and evaluate protection in mice against pulmonary challenge.

Methods

TB antigen fusion proteins (including ESAT-6, Cfp10, TB9.8/10.4) and rhizavidin were coupled with biotinylated pneumococcal polysaccharide. C57BL/6 mice (n=10/group) were immunized with vehicle alone, BCG, 3 doses of TB MAPS, or primed with BCG and boosted twice with TB MAPS. Other mice received BCG and TB MAPS simultaneously, then 2 doses of TB MAPS. Blood was obtained 2 weeks later for Th1 and Th17 responses. Mice were aerosol-challenged with MTB; one month later, lungs were harvested for bacterial enumeration.

Results

Th1 and Th17 responses were significantly higher in mice that received TB MAPS than saline or BCG alone ($P < 0.001$ for all comparisons). Co-administration of BCG and MAPS resulted in higher Th17 responses than when the vaccines were administered sequentially ($P < 0.001$). Mice that received BCG or TB MAPS alone had a 1-log reduction in MTB counts compared to vehicle alone ($P < 0.001$); this difference was 1.5-log when TB MAPS was given twice after BCG. Best protection was in mice that received BCG+TB MAPS simultaneously followed by 2 doses of TB MAPS (2-log reduction, $P < 0.001$).

Conclusions

While protective on its own, TB MAPS also enhances BCG-induced protection, particularly if the first doses are given simultaneously. Given wide use of BCG, a strategy consisting of a vaccine that augments BCG-induced protection is very attractive. Further work on TB MAPS is warranted.

Clinical Trial Registration (Please input N/A if not registered)

ESPID PLENARY SYMPOSIUM 1: TROPICAL VIRUSES

ESP17-0777

DESCRIPTION OF PREVALENCE OF SYMPTOMS RELATED ZIKA VIRUS IN PREGNANT WOMEN WITH CHILDREN WITH MICROCEPHALY DURING THE FIRST YEAR OF EPIDEMIC IN PERNAMBUCO/BRAZIL

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Background

Zika Virus (ZIKV), transmitted by *Aedes aegypti*, was first described in humans in 1952 in Uganda and United Republic of Tanzania. The symptoms are similar to other arboviroses, presenting fever, rash, pruritus, conjunctivitis, myalgia and arthralgia, but it is asymptomatic in 80% of cases. In Pernambuco/Brazil, in 2015, ZIKV was associated with microcephaly, due to the increased number of cases. The present study describes the prevalence of symptoms related to ZIKV, during pregnancy, in mothers of patients with microcephaly secondary to ZIKV.

Methods

Observational cross-sectional cohort study conducted between October/2015 and October/2016, the first year of epidemic of ZIKV in Pernambuco/Brazil, with a review of 446 records of children with head circumference smaller than 33 cm (as defined as microcephaly by the Brazilian Ministry of Health) that were admitted for investigation at Oswaldo Cruz University Hospital, a reference in Brazilian infectology, in Pernambuco.

Results

After analysis by Cerebrospinal fluid (CSF) for ZIKV IgM, 80 patients with microcephaly had the diagnosis confirmed. Regarding the maternal symptoms during the pregnancy of these, 74.03% (57) presented symptoms related to ZIKV infection. 19.48% (15) presented the 3 main symptoms (rash, fever and arthralgia) and 44.15% (34) only one. 40.26% (31) were only rash (18 in the first, 7 in the second and 1 in the third trimester). 25.97% (20) denied any symptoms during the pregnancy.

Conclusions

Although the literature shows that 80% of ZIKV infection are asymptomatic, only 25.97% of the mothers of neonates with microcephaly secondary to ZIKV infection, during the first year of Brazil's epidemic, denied any kind of symptoms. It could be related to the mother's viremia, during pregnancy, so the fetus had more severe symptoms. More studies are needed to confirm this hypothesis.

ESPID PLENARY SYMPOSIUM 2: HIV CURE IN CHILDREN

ESP17-1112

RELATIONSHIP BETWEEN CCR5(WT/ Δ 32) HETEROZYGOSITY AND HIV-1 RESERVOIR SIZE IN ADOLESCENTS WITH PERINATALLY HIV-1 INFECTION

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Background

Several host factors contribute to HIV disease progression in the absence of combination antiretroviral therapy (cART). Among them, the CC-chemokine receptor 5 (CCR5) is known to be the main coreceptor used by HIV-1 to enter target cells during the early stages of an HIV-1 infection. We evaluated the association of CCR5^(WT/ Δ 32) heterozygosity with HIV-1 reservoir size, lymphocyte differentiation, activation and immunosenescence in adolescents and young adults with perinatally acquired HIV-infection receiving cART.

Methods

The CCR5 genotype was analysed in 242 subjects with vertically transmitted HIV-1 infection from the Paediatric Spanish AIDS Research Network Cohort (coRISpe). The proviral HIV-1 DNA was quantified by digital-droplet PCR, and the T-cell phenotype was evaluated by flow cytometry in a subset of 24 subjects (10 with CCR5^(Δ 32/WT) genotype and 14 with CCR5^(WT/WT) genotype).

Results

We found 23 subjects heterozygous for the Δ 32 genotype but none homozygous for the mutated CCR5 allele. We observed no difference in the HIV-1 reservoir size (455 and 578 copies of HIV-1 DNA per million CD4⁺ T-cell in individuals with CCR5^(WT/WT) and CCR5^(Δ 32/WT) genotypes, respectively; $P=0.75$) or in the immune activation markers between both genotype groups. However, we found that total HIV-1 DNA in CD4⁺ T-cells correlated with the percentage of memory CD4⁺ T-cells: a direct correlation in CCR5^(WT/ Δ 32) subjects but an inverse correlation in those with the CCR5^(WT/WT) genotype.

Conclusions

This finding suggests a differential distribution of the viral reservoir compartment in CCR5^(WT/ Δ 32) subjects with perinatal HIV-infection, which is a characteristic that may affect the design of strategies for reservoir elimination.

Parallel Symposia Abstracts

ESPID SYMPOSIUM 5: FIGHTING VIRUSES

ESP17-0039

ENTEROVIRUS AND PARECHOVIRUS MENINGITIS IN INFANTS YOUNGER THAN 90 DAYS OLD IN THE UNITED KINGDOM AND REPUBLIC OF IRELAND: AN ACTIVE ENHANCED PROSPECTIVE SURVEILLANCE STUDY

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Background

Enteroviruses (EV) are responsible for >90% of viral meningitis cases in young infants. This study aimed to prospectively collect detailed clinical information for all confirmed cases of EV and Human Parechovirus (HPeV) meningitis in infants aged <90 days in the United Kingdom and Ireland.

Methods

Prospective national surveillance study during July 2014 – July 2015 through the British Paediatric Surveillance Unit (BPSU). Paediatricians reporting a case using the monthly BPSU orange card were asked to complete a detailed clinical questionnaire on clinical presentation, investigation, management and outcome.

Results

During the 13-month surveillance period, there were 710 cases in total (668 EV, 35 HPeV). The median age at onset was 43 days, with 12% of EV (76/658) and 23% of HPeV cases (8/35) admitted to HDU/PICU. The most common clinical presentations for EV/HPeV meningitis were fever (EV: 570/668 [85%]; HPeV: 28/35 [71%]), irritability (EV: 441/668 [66%]; HPeV: 23/35 [66%]) and reduced feeding (EV: 363/668 [54%]; HPeV 23/35 [71%]). A significant proportion of cases presented with signs of shock (EV: 182/668 [27%], HPeV: 15/35 [43%]). Of the 95% (678/710) cases that were confirmed by CSF PCR, 52% (309/600) of EV and all HPeV cases had CSF white cell count <20/ml. Most EV (77%, 495/643) and HPeV (82%, 27/33) cases also had a CRP level <20mg/L. Two infants (1 EV, 1 HPeV) died and six (5 EV, 1 HPeV) had significant neurological impairment at discharge.

Conclusions

The burden of EV and HPeV meningitis in young infants is much higher than previously estimated. CSF samples should be routinely tested for these viruses, even in the absence of pleocytosis. Future studies should evaluate long-term neurodevelopmental outcomes and define targets for future antiviral therapy.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ESPID SYMPOSIUM 7: ANTIMICROBIAL STEWARDSHIP/ANTIMICROBIAL RESISTANCE

ESP17-0053

IMPACT OF A CARBAPENEM ANTIMICROBIAL STEWARDSHIP PROGRAMME ON PATIENT OUTCOMES IN A WOMEN'S AND CHILDREN'S HOSPITAL

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Background

Antimicrobial stewardship programmes (ASPs) aim to improve appropriate antimicrobials use. However, concerns of negative consequences of accepting ASP interventions exist, particularly where de-escalation or discontinuation of broad-spectrum antibiotics are recommended. Hence, we sought to evaluate the impact of ASP interventions acceptance on clinical outcomes where carbapenems were used inappropriately to address these concerns.

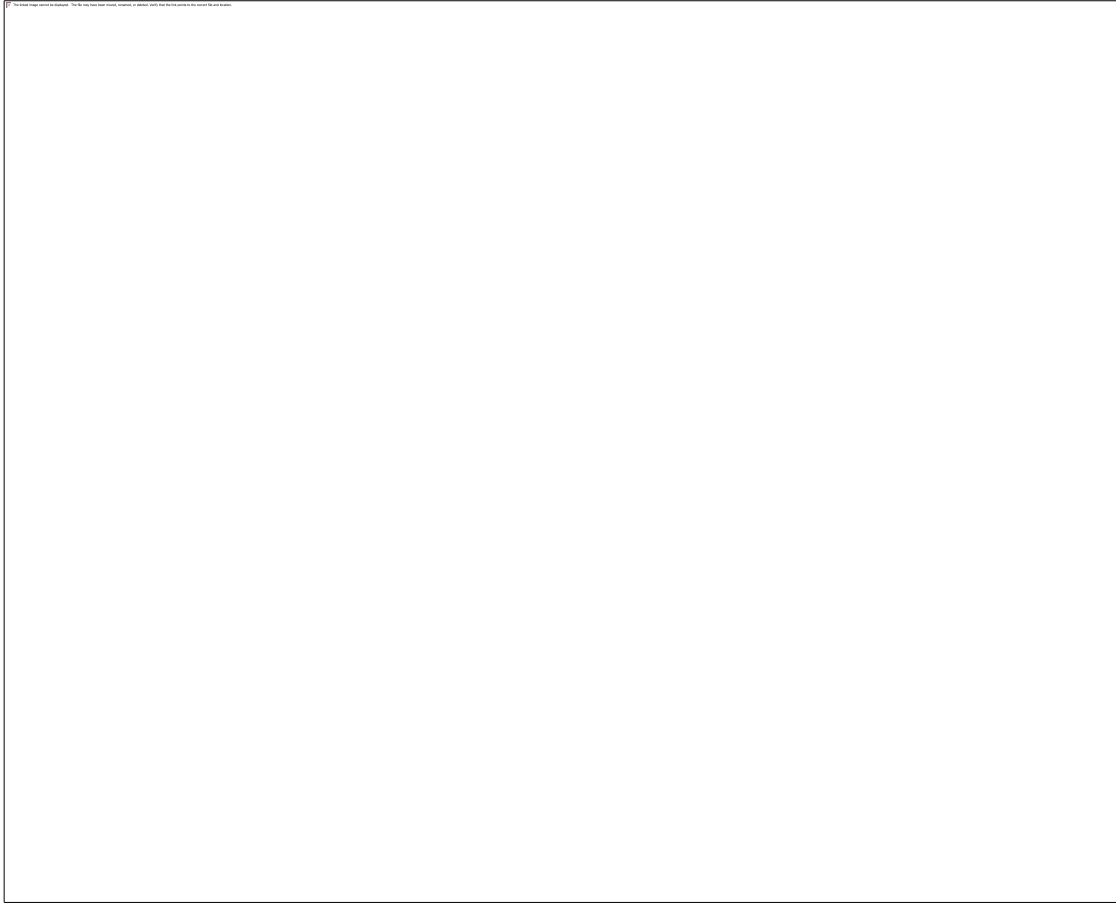
Methods

We retrospectively reviewed all carbapenem prescriptions between July 2011 and December 2014 which were deemed inappropriate according to institutional guidelines. Acceptance of ASP interventions and outcomes including carbapenem utilization, hospitalization cost, length of stay, 30-day readmission and mortality rates. Data were analyzed in groups where physicians accepted all interventions ("Accepted") vs. those who rejected interventions ("Rejected").

ASP interventions include: 1) discontinuation of carbapenem, 2) change to narrower-spectrum antimicrobial, 3) optimize dosing, 4) further investigations, 5) Infectious Diseases referral, 6) discontinue antibiotic other than audited and 7) intravenous-to-oral switch.

Results

Of 220 unique patients, carbapenem use was inappropriate in 101 (45.9%). There were no major significant differences in baseline characteristics between groups. Significant reduction in carbapenem utilization was observed in the "Accepted" group versus the "Rejected" group (median defined daily doses: 0.224 vs. 0.668 per 1000 patient-days, $p < 0.001$). There was a significant reduction in 30-day mortality in "Accepted" (no mortality) vs. "Rejected" group (11 deaths, $p = 0.03$), and a non-significant trend towards reduced length-of-stay, hospitalization cost and 30-day readmission rates in the "Accepted" group.



Conclusions

In our institution, acceptance of carbapenem ASP interventions did not compromise patient safety and had a positive impact on clinical outcomes while reducing consumption.

ESPID SYMPOSIUM 1: CONGENITAL DISEASES

ESP17-0135

EARLY TREATMENT OF CHAGAS DISEASE PREVENTS CONGENITAL TRANSMISSION.

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Background

We previously showed, in a small cohort, that pharmacological Chagas treatment may prevent congenital transmission. The objective of this study was to confirm these results in a larger cohort of girls and women treated for Chagas disease before pregnancy, to confirm impact of treatment on risk of congenital transmission to their babies.

Methods

A cohort of girls and women treated with benznidazole or nifurtimox, who later became pregnant. Offspring were evaluated by parasitemia before 8 months and specific serology ≥ 8 months. Demography, *Trypanosoma cruzi* serology and qPCR pre and posttreatment were recorded. Protocol approved by local ethical committee.

Results

23 women and their 28 children were included. Mothers: Mean Treatment age: 23.6 years; Mean time between treatment and pregnancy: 5 years; Place of birth: Argentina 60.8%, Bolivia 39.2%; Treatment: 86.9% benznidazole (mean dose 6.2 mg/kg/day, mean length of treatment 48.6 days). Moderate adverse events were observed in 2 cases. Three patients (13.1%) received nifurtimox (mean dose 9.8 mg/kg/day, mean treatment duration: 40 days). At diagnosis qPCR was positive in 15/17 patients (88.2%).

Follow up: decrease of *T. cruzi* antibody titers were observed and qPCR was negative in all patients at the end and after treatment. No mother or children returned to an endemic area.

Infants: Parasitemia was negative in all cases. Congenital infection was ruled out by *T. cruzi* serology (ELISA and IHA) at 8 months of age in all infants.

Conclusions

treatment of infected women of childbearing age prevented congenital transmission of *T. cruzi*, currently the main route of transmission of Chagas disease in Argentina and in areas without vectorial transmission. Our results provide strong support for widespread treatment of Chagas disease in children and young women of childbearing age.

ESPID SYMPOSIUM 10: DIAGNOSIS THROUGH HOST RESPONSE

ESP17-0178

CEREBROSPINAL FLUID B-LYMPHOCYTE CHEMOATTRACTANT CXCL 13 IN THE DIAGNOSIS OF ACUTE LYME NEUROBORRELIOSIS IN CHILDREN

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Background

Detection of intrathecally produced antibodies against the spirochete *borrelia burgdorferi* sensu lato has insufficient sensitivity in the diagnosis of early Lyme Neuroborreliosis (LNB) in children. The B-lymphocyte chemoattractant CXCL13 in cerebrospinal fluid (CSF) may be a more sensitive marker, but the specificity has not been evaluated in studies including children with clinically relevant differential diagnosis to LNB. We aimed to elucidate the diagnostic value of CSF CXCL13 in children with symptoms suggestible of LNB.

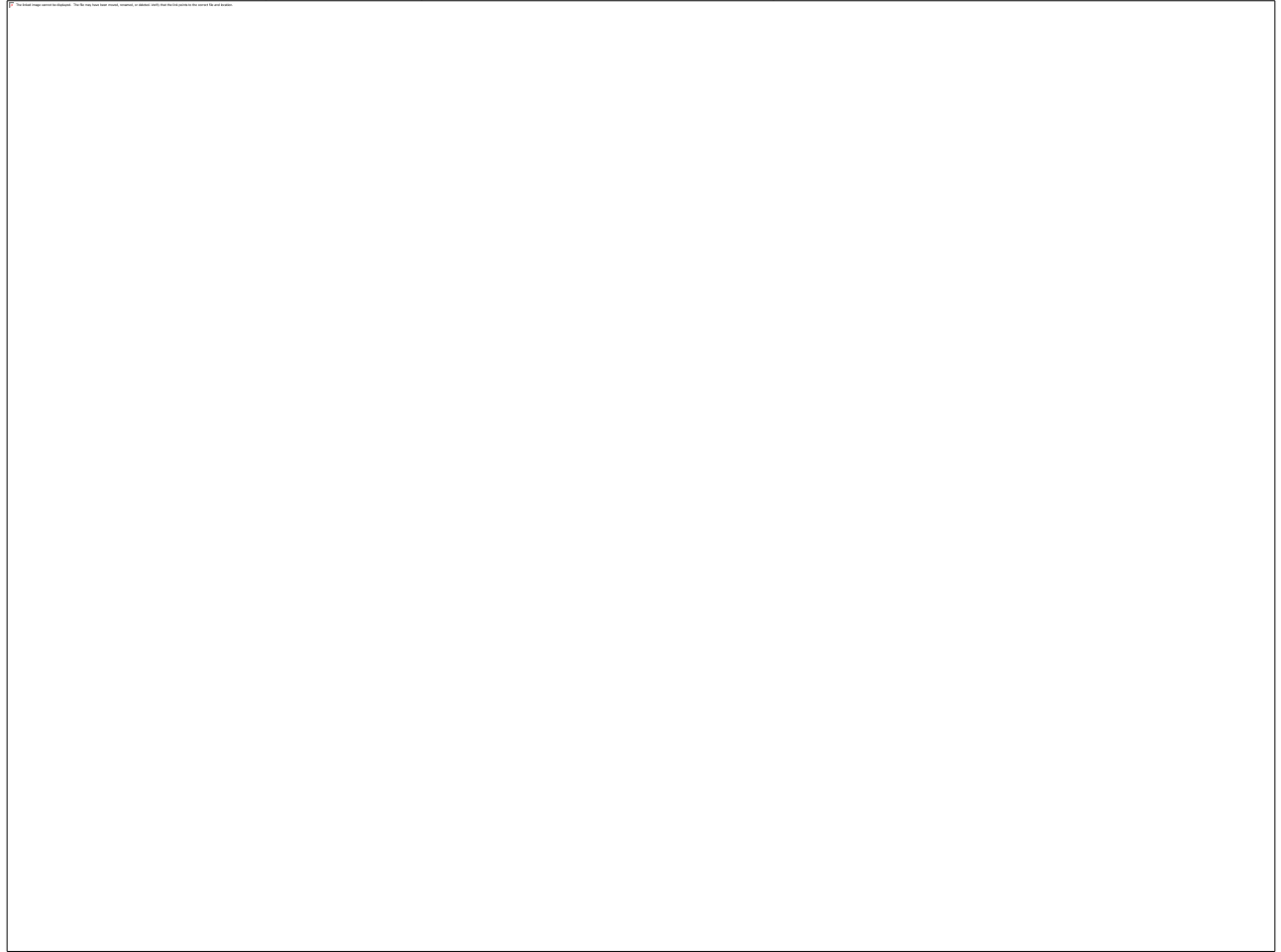
Methods

During 2011-2014 children in South-West Norway (region endemic for Lyme Borreliosis) with symptoms suggestible of LNB were included prospectively to predefined groups with high and low likelihood of LNB, based on CSF pleocytosis and detection of *Borrelia*-antibodies or other causative agents. Levels of CSF CXCL13 were compared between the groups by Kruskal Wallis test, followed by the Mann-Whitney U-test. Receiver operating characteristic analyses were performed to indicate optimal cut-off levels to discriminate LNB from non-LNB conditions.

Results

210 children were included. Children with confirmed LNB (n=59) and probable LNB (n=18) had higher levels of CSF CXCL13 compared to children with possible LNB (n=7), possible peripheral LNB (n=7), non-lyme aseptic meningitis (NLAM) (n=12), non-meningitis (n=91) and negative controls (n=16) (figure). Using 18 pg/ml as cut-off level, both the sensitivity and specificity of CSF CXCL13 for LNB were 97%. Comparing only children with LNB

and NLAM, the sensitivity and specificity were 97% and 83%, respectively.



Conclusions

CSF CXCL13 is a sensitive marker of LNB in children. The specificity to discriminate LNB from NLAM may be more moderate, suggesting that CSF CXCL13 should be used together with other variables in the diagnostics of LNB in children. (This study is currently under revision for publication in The Pediatric Infectious Disease Journal)

Clinical Trial Registration (Please input N/A if not registered)

ESPID SYMPOSIUM 2: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-0190

ANTIBODY ADMINISTRATION EFFECTIVELY TREATS PERTUSSIS IN A BABOON DISEASE MODEL AND PROVIDES FIVE WEEKS OF PERTUSSIS PROPHYLAXIS IN NEWBORN BABOONS

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Background

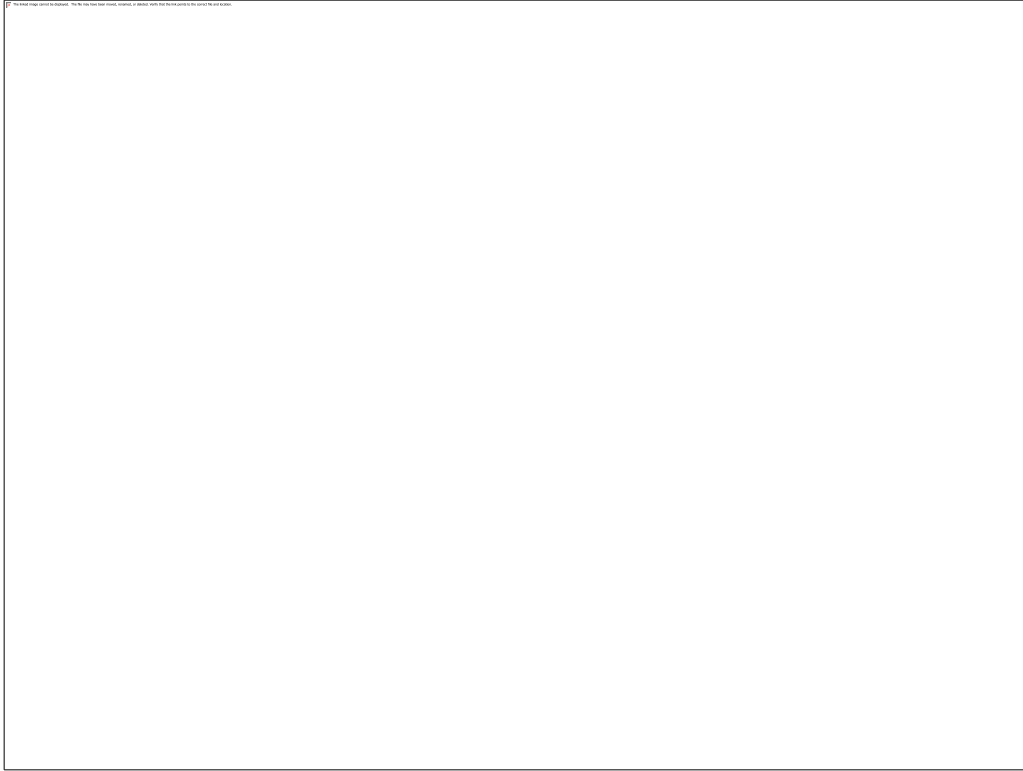
Pertussis remains a significant health problem, killing up to 200,000 infants annually. Maternal vaccination is a strategy to protect newborns, but is unlikely to capture all eligible mothers. A humanized monoclonal antibody (mAb), hu1B7, potently neutralizes pertussis toxin, prevented disease symptoms in mice, and mitigated disease when administered to weanling baboons after infection as part of a binary mAb cocktail. To determine if passive immunization could provide protection from pertussis infection, hu1B7 was tested in newborn baboons.

Methods

Two-day-old baboons received hu1B7 (40 mg/kg, IV) and five weeks later were infected with 10^8 cfu of *B. pertussis*. Animals were monitored for clinical signs of disease including leukocytosis, coughing, and bacterial colonization. hu1B7 sera concentrations and anti-Fha responses were followed.

Results

Six controls and 7 treated animals have been enrolled. All animals were heavily colonized after infection as measured by *B. pertussis* in the nasopharyngeal wash. All control animals developed leukocytosis, 3 displayed severe coughing, and 3 required euthanasia. In contrast, white blood cell counts for all treated animals remained within or close to the normal range, all maintained normal activity, and coughing was virtually absent. As expected for a humanized mAb in a non-human primate, hu1B7 had an elimination half-life of 11.8 ± 4.0 days.



Conclusions

mAb prophylaxis of newborn baboons with hu1B7 mitigated the clinical signs of pertussis, including leukocytosis and coughing, but did not prevent bacterial colonization. Hu1B7 administration at birth could potentially provide 4 months of prophylaxis and is a viable strategy to complement maternal vaccination. As a step toward lowering the cost for developing world application, we generated and completed *in vitro* testing of an extended half-life version of hu1B7 and are commencing neonatal baboon evaluation.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ESPID SYMPOSIUM 4: UPDATE ON TYPHOID

ESP17-0225

MOLECULAR BACTERIOLOGICAL SURVEILLANCE OF PAEDIATRIC ENTERIC FEVER IN NEPAL BETWEEN 2008 AND 2015

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Background

Enteric fever accounts for the majority of invasive bacterial infections among children in Nepal. The population structure of *Salmonella* Typhi isolated from adults in Nepal revealed a dominance of genotype 4.3.1 (H58) as well as antibiotic resistance mediated via plasmids and SNPs in *gyrA*, *parC* and *parE*.

Methods

140 *S. Typhi* and 61 *S. Paratyphi A* isolates obtained from children attending the Patan Academy of Health Sciences (PAHS) hospital between 2008 and 2015 were sequenced. The resulting data were used to place these Nepalese isolates into a global context based on their phylogenetic markers and molecular determinants of antibiotic resistance.

Results

Several distinct *S. Typhi* genotypes were identified in Nepal that were related to other clusters isolates from neighbouring India and Bangladesh, as well as from elsewhere in South-East Asia. The rapidly expanding *S. Typhi* clade 4.3.1 (H58), associated with multiple antimicrobial resistance, was the dominant subclade in this population. The antibiotic resistance genes, which are normally carried on the IncHI1 plasmid in Nepalese isolates, were identified, for the first time in Nepal, within the chromosome of 7 (5%) isolates. SNPs in *gyrA*, conferring resistance to fluoroquinolones, were seen in 107 (76%) isolates. There were no resistance conferring genes identified within the *S. Paratyphi A* population.

Conclusions

The *S. Typhi* population in Nepalese children is dominated by the 4.3.1 (H58) genotype indicating enhanced transmission success and fitness. The presence of antibiotic resistance genes in the genome indicates the grave possibility that this phenotype may be fixed and propagated vertically in subsequent progeny. These concerns highlight the need for effective preventive measures via the deployment of vaccines, increased awareness of hygiene and provision of clean water.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ESPID SYMPOSIUM 2: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-0318

PERTUSSIS ANTIBODIES IN ENTIRE POPULATION, AMONG PATIENTS WITH PERTUSSIS AND THE TIME COURSE UP TO THREE YEARS AFTER THE DISEASE

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Background

The single-sample serology has always been the mostly used diagnostic method for pertussis in Estonia. However, the knowledge of appropriate diagnostic cut-off value and the time course of pertussis toxin (PT)-IgG after pertussis disease is still limited. We aimed to describe the level of PT-IgG in entire population, among patients with pertussis and persistence of PT-IgG up to three years after disease.

Methods

In a cross-sectional serosurvey consecutive leftover sera from subjects of 0-99 year olds collected at medical laboratories 09.04.12-27.02.13 was used. Prospectively patients of all ages with persistent cough of unknown aetiology that had lasted for ≥ 7 days were enrolled 23.04.12-31.12.14 from 25 GP practices and 3 hospitals. Pertussis was confirmed by culture and/or PCR and/or presence of PT-IgG >100 IU/mL or PT-IgG 40-100 IU/mL and PT-IgA ≥ 12 IU/mL (if last pertussis immunisation was >1 year ago). The level of PT-IgG was measured by ELISA (Euroimmun®) and the geometric mean concentration (GMC) of PT-IgG were calculated in both studies.

Results

Based on serosurvey ($n=4478$), the GMC of PT-IgG is 5.9 IU/mL (95%CI 5.7-6.1). Among patients with persistent cough and confirmed pertussis (predominantly diagnosed by positive serology (17/22 cases), median age of study population $17.7 \pm SD 17.2$ years, 22.7% were immunised <5 years ago) the GMC of PT-IgG was significantly higher 73.4 IU/mL (95% CI 28.8-128.9). The changes of the level of antibodies after disease is presented in

Figure 1.



Conclusions

The level of PT-IgG is generally low in Estonia, but significantly higher among patients with pertussis. Already one year after the disease the GMC of PT-IgG is <100 IU/mL, indicating that the cut-off value used in this study is appropriate.

(Funded by Estonian Science Foundation, grant 9259).

Clinical Trial Registration (Please input N/A if not registered)

N/A

ESPID SYMPOSIUM 4: UPDATE ON TYPHOID

ESP17-0336

CLINICAL EPIDEMIOLOGY, ANTIMICROBIAL RESISTANCE AND MOLECULAR TRACING OF NONTYPHOIDAL SALMONELLA ENTERIC INFECTIONS IN CHILDREN : 2012-2014

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Background

To understand the clinical epidemiology and antibiotic resistance of nontyphoidal *Salmonella* (NTS) enteric infections in children, and trace the possible infectious source.

Methods

Salmonella isolates were serotyped and tested for antimicrobial susceptibility testing using Kirby-Bauer method. PCR and sequencing were performed to identify ESBL-producing genes and plasmid-mediated quinolone resistance determinants. The predominant serovars were analyzed by pulsed-field gel-electrophoresis.

Results

Of the enrolled 3143 children with probable bacterial diarrhea during 2012-2014, NTS was identified in 738 (23.5%) and 41 serovars were identified with *Salmonella* Enteritidis and Typhimurium representing 42.6% and 28.2% of isolates, respectively. The common symptoms included fever (57.5%) and blood-in-stool (31.1%). NTS isolates exhibited the high-level resistance to nalidixic acid (51.6%), ampicillin (61.6%), tetracycline (51.3%), trimethoprim-sulfamethoxazole (29.4%), and chloramphenicol (29.0%). Resistance to the third-generation cephalosporins, amoxicillin-clavulanate and ciprofloxacin was detected in 7.5%–10.0%, 6.7%, and 1.1% of isolates, respectively. Of 45 ciprofloxacin-resistant strains, gyrA S83Y, gyrA D87N, gyrA D87Y and parC S80R mutation and gyrB and parE multiple locus mutation were identified with gyrA D87N mutation detected in 26. Of the 64 ESBL-producing strains, 55 were CTX-M positive, 40 TEM positive, 5 DHA positive, 2 CMY positive and 2 SHV positive. The 54 of 148 *Salmonella* Typhimurium strains shared more than 85.1% similarity in banding patterns to the isolates from food (duck, pork, chicken), and water, and 97 of 100 *Salmonella* Enteritidis strains showed patterns more than 84.6% similar to isolates from food (duck, pork, chicken and fish), turtles, water and environment.

Conclusions

NTS was the common pathogen causing bacterial diarrhea in Shanghainese children and antimicrobial resistance among NTS was serious. Food of animal origin was potentially a major source of NTS infections.

ESPID SYMPOSIUM 10: DIAGNOSIS THROUGH HOST RESPONSE

ESP17-0349

A NOVEL HOST-PROTEIN SIGNATURE OUTPERFORMS STANDARD LABORATORY PARAMETERS IN DIFFERENTIAL DIAGNOSIS OF ACUTE INFECTION ETIOLOGY OF FEBRILE CHILDREN

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Background

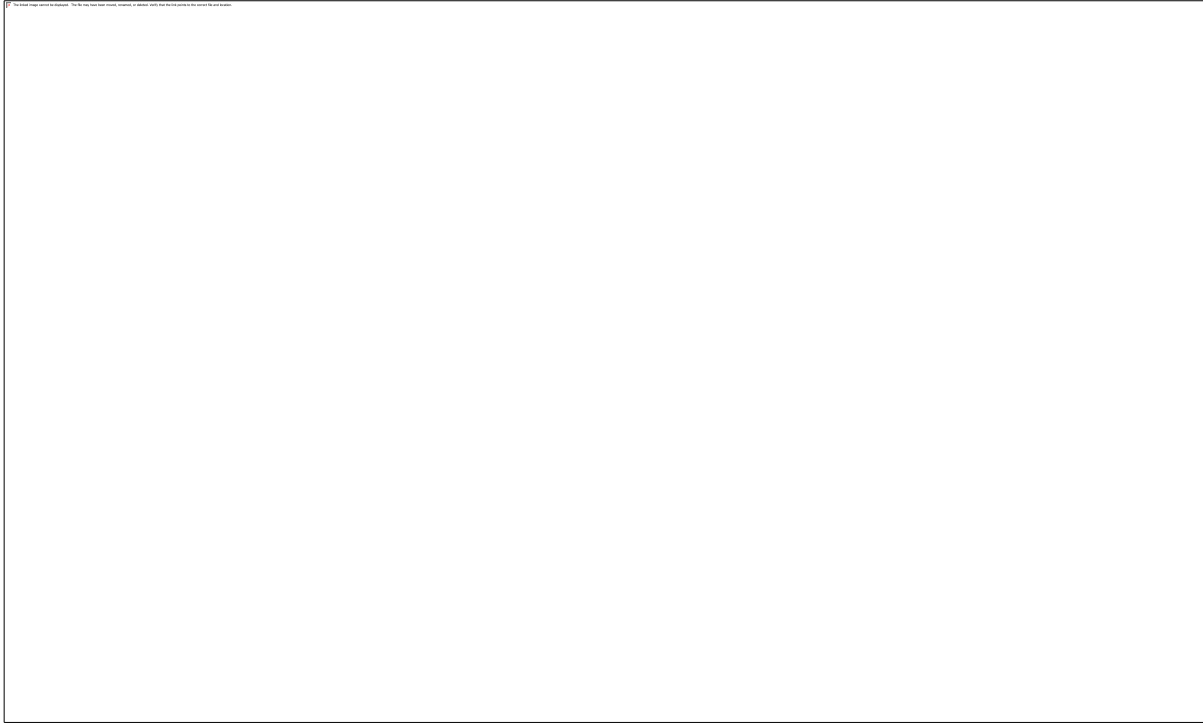
A novel assay (ImmunoXpert™) that integrates measurements of three blood-borne host-response proteins (TRAIL, IP-10, and CRP) was recently developed to assist in differentiation between bacterial and viral disease. Here we compare the assay performance with standard laboratory parameters that are routinely used in clinical practice to facilitate diagnosis of infection etiology in febrile children.

Methods

We studied serum remnants collected from children aged ≥ 3 months to ≤ 18 years with suspicion of acute infection presenting at the ED or admitted. Reference standard diagnosis was based on predetermined criteria plus adjudication by an expert panel blinded to assay results. Assay performers were blinded to reference standard. Assay cut-offs were defined before un-blinding.

Results

Of 529 potentially eligible patients, 100 did not fulfill infectious inclusion criteria and 68 had insufficient serum. The resulting cohort comprised 361 patients, with 239 viral, 68 bacterial, and 54 indeterminate reference standard diagnoses. The assay distinguished between bacterial and viral infected patients with 93.8% sensitivity (95% CI: 87.8%-99.8%) and 89.8% specificity (85.6%-94.0%); 11.7% had an equivocal assay outcome. Overall the assay outperformed other laboratory parameters, including: (i) white blood count (WBC; cut-off 15,000cells/ μ l, sensitivity 72.7% (61.7%-83.8%), $P < 0.002$; specificity 83.2% (78.3%-88.1%), $P < 0.05$); (ii) CRP (cutoff 40 mg/L, sensitivity 88.2% (80.4%-96.1%), $P < 0.37$, specificity 73.2% (67.6%-78.9%), $P < 0.001$); (iii) Procalcitonin (PCT; cutoff 0.5 ng/ml, sensitivity 63.1% (51.0%-75.1%), $P < 0.001$, specificity 82.3% (77.1%-87.5%), $P < 0.03$); (iv) absolute neutrophil count (ANC; cut-off 10,000 cells / μ l, sensitivity 68.2% (56.6%-79.7%), $P < 0.001$; specificity 92.9% (89.6%-96.3%), $P < 0.30$).



Conclusions

The host response-based assay was more accurate than routine laboratory parameters and biomarkers (WBC, ANC, CRP, PCT) in distinguishing bacterial from viral etiologies in febrile children. It has the potential to help clinicians avoid missing bacterial infections or overusing antibiotics.

Clinical Trial Registration (Please input N/A if not registered)

NCT01911143

ESPID SYMPOSIUM 5: FIGHTING VIRUSES

ESP17-0352

FIRST OUTBREAK OF ENTEROVIRUS RELATED BRAINSTEM ENCEPHALITIS IN WESTERN EUROPE: CHARACTERIZATION, MANAGEMENT AND EVOLUTION OF THE PATIENTS

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Background

Enteroviruses(EV) have been responsible for several outbreaks of acute neurological disease in Asia and Pacific area. An outbreak of brainstem encephalitis was detected in Spain in 2016, the first one identified in Western Europe. The aim of this study is to characterize this kind of patients and to reflect the diagnostic and therapeutic attitude adopted.

Methods

Analysis of all cases of EV related brainstem encephalitis and acute flaccid paralysis admitted to different hospitals in Spain from April to December 2016. Clinical characteristics, administered treatment and evolution are described.

Results

196 patients from 16 Spanish hospitals were included. Median age 25m. Before admission (median 2d), they had fever (94%), somnolence (86%), ataxia(75%), tremor(47%), myoclonus(40%) and exanthema(26%). CSF showed pleocytosis in 84%, with EV detection in only 3%. EV RNA was identified in at least 1 site in all patients (81% in throat, 86% in feces and 54% in both). Co-infections in 18% (rhinovirus 30%, adenovirus 30%, VRS 11%). MRI performed on 87% showing brainstem encephalitis in 79% and myelitis in 52%. The most frequent complications were dysarthria(15%), abnormal respiratory pattern(11%), seizures(10%), acute flaccid paralysis(9%), cardiorespiratory failure(6%) and pulmonary edema(3%). 64% were treated with intravenous immunoglobulins and 43% with corticosteroids. 26% were admitted to PICU (median stay: 3.5d). 9% required invasive ventilation. Survival 99.5% (93% without sequelae). 85% of 114 serotyped EV were identified as EV-A71.

Conclusions

We present the first described neurological EV outbreak in Western Europe. Brainstem encephalitis was the most common neurological manifestation. Most patients presented with satisfactory evolution. Aggressive treatments should be restricted to those patients with important neurological involvement. No patients with milder involvement and without alarm signs after the first 24 hours of symptoms, presented with torpid evolution.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ESPID SYMPOSIUM 1: CONGENITAL DISEASES

ESP17-0381

NEGATIVE CYTOMEGALOVIRUS PCR IN NEONATAL DRIED BLOOD SPOTS: CAN WE RULE CONGENITAL INFECTION OUT? A STUDY FROM THE SPANISH REGISTRY (REDICCMV)

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Background

We pretended to assess the accuracy of a commercial real time PCR technique for the detection of cytomegalovirus (CMV)-DNA in neonatal dried blood spots (DBS) collected at birth for the retrospective diagnosis of congenital CMV infection (cCMV) in the Spanish Registry of cCMV patients (REDICCMV). Previously published studies showed sensitivities ranging 34-100%.

Methods

Multicentric, ambispective observational study including patients with confirmed cCMV included in REDICCMV, born between January 2007 and January 2016. Clinical, analytical, neuroimaging and follow-up data from all patients were collected and analyzed. Negative controls were children in whom cCMV had definitively been ruled out. DBS samples were collected and checked for the presence of CMV DNA by rt-PCR (RealStar CMV®, Germany) from both groups.

Results

One hundred and three patients with cCMV from ten hospitals and eighty-one controls were recruited. Among patients, 33.3% were premature and 26.2% small for gestational age. At birth, median gestational age was 38 weeks (IQR 27-41), median weight 2647 grams (920-4420), and 59.8% had signs or symptoms consistent with cCMV. Fifty-eight DBS samples from the patient group and two from the control group tested positive for CMV-DNA. Sensitivity, specificity, positive and negative likelihood ratios were 0.56 (95%CI 0.47-0.65), 0.98 (0.91-0.99),

22.81 (5.74-90.58) and 0.45 (0.36-0.60), respectively. From all the variables studied, only a lower plasmatic CMV viremia at birth (bPVL) was associated with negative DBS results. Sensitivity and median bPVL among symptomatic and asymptomatic patients at birth were similar.

Conclusions

The sensitivity of CMV-DNA PCR in DBS for the retrospective diagnosis of cCMV in our study was lower than previously reported. Accordingly, a negative CMV-DNA PCR result in DBS does not fully rule out cCMV, particularly in patients with low bPVL.

Clinical Trial Registration (Please input N/A if not registered)

ESPID SYMPOSIUM 6: PREGNANCY AND THE NEONATE

ESP17-0393

TRANSIENT TACHYPNEA OF THE NEWBORN IS ASSOCIATED WITH INCREASED RISK OF BRONCHIOLITIS IN INFANTS

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Background

Transient tachypnea of the newborn (TTN) is characterized by respiratory distress, which resolves in 1-3 days. TTN is considered an isolated case of delayed activation of pulmonary fluid transport. Respiratory syncytial virus (RSV) is the most common pathogen causing bronchiolitis in infants. RSV infects primarily respiratory epithelial cells and, by causing respiratory tract fluid accumulation. We evaluated whether epithelial ion transport dysfunction is a common denominator of both conditions.

Methods

Data from the Medical Birth Register (MBR) were used to gather all cases of TTN (ICD-10 code P22.1) in Finland during 1998-2014. The MBR is a population-based registry that was established in 1987 and collects data on all live births and stillbirths at > 22 weeks' gestation and BW > 500 g. In addition, the National Hospital Discharge Register was used to assess the incidence of hospital-treated bronchiolitis during 1998-2014 in children <1 year of age. Only term infants were included.

Results

During 1998-2014, 927 970 term deliveries were registered with 4 580 registered cases of TTN. During this period, there were 18 146 cases of bronchiolitis in children < 1 year. Of them, 260 had a history of TTN, which was associated with an almost three-fold increased risk for bronchiolitis compared with those without TTN (OR 2.96, CI 2.63-3.33).

Conclusions

We found an association between TTN and bronchiolitis. This suggests similar pathogenic mechanisms in TTN and bronchiolitis. TTN is caused by the delayed onset of Na⁺-driven pulmonary fluid transport. We suggest that an intrinsic defect in Na⁺-driven pulmonary fluid transport may predispose to clinically significant bronchiolitis during the first year of life.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ESPID SYMPOSIUM 8: REFUGEE CHILDREN

ESP17-0403

MMR AND INFLUENZA VACCINATION COVERAGE AMONG MIGRANT CHILDREN IN FINLAND – A REGISTER-BASED STUDY

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Background

Migrant health is an important public health concern. Migrant children in Finland are entitled to vaccinations according to the National Vaccination Program. In this retrospective register-based study, we aimed to assess if the vaccination coverage differs among children with Finnish or migrant origin in Finland.

Methods

All children born between January 2010 and December 2014 registered in the national Population Register (PR) on the 31st December 2014 were included in the study and data from the National Vaccination Register (NVR) collected in September 2016. Children with at least one Measles, Mumps and Rubella (MMR) or annual influenza vaccination were identified from the NVR. Individuals not covered by the NVR or of unknown origin were excluded. Maternal socio-economic data were retrieved from the National Medical Birth Register and countries of origin from the PR.

Results

263,184 children were included in the analysis. 6.1% were children whose both parents were born abroad. The most frequent countries of origin were Finland (93.9 %), Former Soviet Union (FSU) (1.1%), Estonia (0.8%) and Somalia (0.8%). Children of FSU origin and European origin had 2.41 (95% CI 2.21-2.62) and 1.44 (1.20-1.73) times the risk of not being vaccinated with MMR as compared to children of Finnish origin, respectively. The risk of not being vaccinated for influenza was 0.95 (0.93-0.98) and 0.77 (0.75-0.80) for children of Sub-Saharan African and Asian origin.



Conclusions

Significant differences in MMR and influenza vaccination coverage exist between children with different origin in Finland. Vaccination coverage among migrants might be influenced by socio-cultural factors, integration to the host country, and vaccine hesitancy among others. Vaccine research and promotion should focus on understanding the mechanisms resulting in low coverage among the risk populations.

ESPID SYMPOSIUM 3: INFECTIONS IN THE ONCOLOGY PATIENT

ESP17-0445

CLINICAL AND MICROBIOLOGICAL CHARACTERIZATION OF INVASIVE VIRIDANS GROUP STREPTOCOCCI INFECTIONS IN CHILDREN WITH CANCER, FEVER AND NEUTROPENIA, SANTIAGO, CHILE, 2004-2015

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Background

The frequency of infections caused by viridans group streptococci (VGS) in children with cancer and febrile neutropenia (FN) has increased significantly in the last 20 years, probably associated to an increased mucosal disruption due to a more aggressive chemotherapy. Aims: To describe the clinical and microbiological characteristics of VGS infections in children with cancer and FN.

Methods

Analysis of all bloodstream infections by VGS in FN patients enrolled in successive prospective, multicenter studies in 6 hospitals in Santiago, Chile, belonging to the National Children's Cancer Program Network, during the period 2004-2015.

Results

Of a total of 487 FN episodes with positive microbiological isolation in the study period, 72 were identified as invasive infection by VGS (14.8%). The median age of patients was 68 months (IQR 25-75, 34-120 months), 51% were men, 60 (83%) had an hematological malignancy as cancer type, 62 (86%) used cytarabine in their chemotherapy regimen and 32 (44%) presenting mucositis. 20/72 children (28%) had sepsis and 3 died (4%). Patients with sepsis were significantly different from those without sepsis in the following variables: days of fever (9.6 versus 5.9, $p=0.009$), days of hospitalization (18.2 versus 13.3, $p=0.0014$), C-reactive protein values (241 versus 177 mg/L, $p=0.026$), use of vancomycin (100% versus 79%, $p=0.028$) and days of vancomycin use (13.1 versus 6.4, $p<0.0001$). 52 % of the strains presented partial or total resistance to penicillin, 16 (22%) resistance to 3rd generation cephalosporins, without resistance to vancomycin.

Conclusions

Invasive VGS infections in children with cancer and FN are associated with a high frequency of sepsis, longer hospitalizations and increased use of vancomycin. Prospective epidemiological surveillance is relevant for an adequate and rational use of antimicrobials in this population.

ESPID SYMPOSIUM 3: INFECTIONS IN THE ONCOLOGY PATIENT

ESP17-0568

VIRAL KINETICS AND TREATMENT OF CYTOMEGALOVIRUS INFECTIONS IN IMMUNOCOMPROMISED CHILDREN

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Background

Cytomegalovirus (CMV) infections are common post-HSCT. At Great Ormond Street Hospital (GOSH), we administer treatment for viral loads exceeding 12,500 International Units (IU)/mL in whole blood, a higher threshold than is typically used, to balance potential drug toxicities with control over viral loads. Here, we report on the outcomes of CMV infections and evaluate the efficacy of this treatment strategy.

Methods

A dataset of 161 children considered for HSCT from 2009 who also exhibited a detectable CMV infection was collated. Of these 161 children, 74 received a form of anti-CMV treatment. From this dataset, the growth kinetics of CMV were characterized using viral doubling time, peak viral load, and the area under the curve (AUC). These were then compared to recorded outcome measures, including CMV organ disease and death. Alongside this, we attempted to quantify drug effects on viral load.

Results

The median doubling time was 1.1 days and was not clearly predictive of any CMV outcome. In contrast to this, the peak viral load was predictive of all CMV outcomes and was correlated with the AUC (Adj. $R^2 = 0.88$). Measuring anti-CMV drug efficacy revealed that 133 of 179 treatment episodes resulted in a net-loss of virus over the treatment period as measured by the time-corrected AUC normalised to the viral load at the start of treatment.

Conclusions

CMV infections can be well characterised by either their peak viral load or their AUC, which both predict for CMV organ disease and death. Anti-CMV treatment is effective at reducing the viral burden in the majority of cases. As earlier treatment is clearly linked to a reduced viral AUC, a reduced treatment threshold in these HSCT patients is likely to be beneficial.

ESPID SYMPOSIUM 12: IMMUNE DYSREGULATION- FROM BED TO BENCH AND BACK TO BED

ESP17-0595

MODELLING WITHIN-HOST DYNAMICS OF INFECTION TO IDENTIFY PROTECTIVE AND DETRIMENTAL IMMUNE RESPONSES TO PLASMODIUM FALCIPARUM MALARIA

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Background

The outcome of infection is determined by reciprocal interactions between increasing pathogen load and protective host response. Quantifying the contribution of pathogen multiplication and its limitation by the host response in different individuals would facilitate identification of constitutive and inducible mechanisms of protection.

Methods

We developed a mathematical model of within-host dynamics of infection to predict individual-level parasite multiplication rates and parasite growth inhibition in 139 Gambian children with *Plasmodium falciparum* malaria at the time of clinical presentation. We performed RNA-sequencing on whole blood of 26 of these subjects to identify gene expression which correlated with *in vivo* parasite growth inhibition. We identified genes encoding secreted products and validated the predictions using recombinant proteins in *P. falciparum* invasion and growth assays with flow-cytometry.

Results

After adjustment for false-discovery rate, 51 human genes were significantly correlated (26 positively, 25 negatively) with predicted within-host parasite growth inhibition. Negatively correlated genes were dominated by interferon responsive genes, with CXCL10 having the strongest effect. Positively correlated genes did not have any common function, and only 2 were secreted proteins – both proteases. Both of these inhibited parasite invasion and growth *in vitro*, with the maximal effect equivalent to high doses of the antimalarial drug artesunate.

Conclusions

Our results demonstrate the feasibility of modelling the dynamics of host-pathogen interaction in humans to quantify the role of the host response. We find evidence that a type-1 interferon response is detrimental to control of parasite load, consistent with data from animal models. We identify 2 proteases with previously unknown antimalarial activity, which have direct inhibitory effects on parasite growth. We propose this approach could be employed to help identify therapeutic and vaccine targets in malaria and other infectious diseases.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ESPID SYMPOSIUM 7: ANTIMICROBIAL STEWARDSHIP/ANTIMICROBIAL RESISTANCE

ESP17-0628

CHARACTERIZING ANTIBIOTIC-RESISTANT PNEUMOCOCCI IN THE NASOPHARYNX OF HEALTHY SOUTH AFRICAN INFANTS USING SHOTGUN SEQUENCING AND CONVENTIONAL TYPING

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Background

The increased prevalence of antibiotic-resistant *Streptococcus pneumoniae* is of public health concern. *S. pneumoniae* is one of the leading causes of death in infants. We longitudinally investigated antibiotic-resistant *S. pneumoniae* in the nasopharynx of healthy infants in the Drakenstein Child Health Study, using conventional and shotgun sequencing methods.

Methods

Nasopharyngeal (NP) swabs were collected fortnightly from birth through the first year of life, from 137 infants. Infants received 3 doses of 13-valent pneumococcal conjugate vaccine (PCV13). *S. pneumoniae* isolates were serotyped using sequotyping and Quellung. Antibiotic susceptibility profiles were determined using disc diffusion and E-test. Metagenomic shotgun sequencing was performed on a subset of 200 NP samples from 23 infants, selected on the basis of changing serotype or antibiogram over time.

Results

S. pneumoniae was isolated from 54% (1809/3331) NP swabs. After correcting for repeated acquisition of the same serotype with a unique antibiogram (33%; 591/1809), non-susceptibility to penicillin G, erythromycin, and cotrimoxazole was found in 26% (125/591), 20% (120/591), and 42% (250/591) of the isolates respectively. Multidrug resistance (MDR) was observed in 11% (67/591) of the *S. pneumoniae* with vaccine types 9V (n= 5), 19F (n= 5), and non-vaccine type 15B/C (n= 9), being predominant serotypes. We found a 68% (136/200) concordance between shotgun sequencing and conventional serotyping, with co-colonization by multiple pneumococcal serotypes identified in 23 samples by shotgun sequencing. We detected 26 different sequence types (including 4 novel STs), predominantly ST8687 and ST2068 (ST2068 not previously described in Africa) and 31 different antibiotic resistance genes by shotgun sequencing.

Conclusions

MDR was noted in a small proportion of isolates. Shotgun sequencing is a valuable technique for detailed evaluation of the pneumococcal component of the NP microbiome.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ESPID SYMPOSIUM 7: ANTIMICROBIAL STEWARDSHIP/ANTIMICROBIAL RESISTANCE

ESP17-0732

IMPACT OF IMPLEMENTING NATIONAL GUIDELINES ON ANTIBIOTIC PRESCRIPTIONS FOR ACUTE RESPIRATORY TRACT INFECTIONS IN PEDIATRIC EMERGENCY DEPARTMENTS: AN INTERRUPTED TIME SERIES ANALYSIS

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Background

Many antibiotics are prescribed inappropriately in pediatric emergency departments, but little data are available in these settings about effective interventions based on guidelines following the antimicrobial stewardship principle. Our aim was to assess the impact of implementing the 2011 national guidelines on antibiotic prescriptions for acute respiratory tract infection (ARTI) in pediatric emergency departments (PEDs).

Methods

We conducted a multicentric, quasi-experimental, interrupted time series analysis of prospectively collected electronic data from seven French PEDs. We included all pediatric patients visiting a participating PED during the study period from November 2009 to October 2014 diagnosed with an ARTI. The intervention consisted of local protocol implementation, education sessions twice per year, and feedback. The main outcome was the antibiotic prescription rate of discharge prescriptions for ARTI per 1,000 PED visits, before and after implementation, analyzed using the segmented regression model with autoregressive error.

Results

We included 242,534 patients with an ARTI during the study period. The intervention was associated with a significant change in slope for the antibiotic prescription rate per 1,000 PED visits (-0.4% per 15 day period, $p = 0.04$) and the cumulative effect at the end of the study was estimated to be -30.7%, (95% IC [-45.2 to -20.1]), representing 13,136 avoided antibiotic prescriptions. The broad-spectrum antibiotic prescription rate decreased dramatically (-60.7%, 95% IC [-71.5 to -41.5]), and was replaced by amoxicillin.

Conclusions

Implementation of the 2011 national French guidelines led to a significant decrease of the antibiotic prescription rate for ARTI and a dramatic drop in broad-spectrum antibiotic prescriptions, in favor of amoxicillin. It provides strong evidence for the effectiveness of this type of antimicrobial stewardship intervention to improve antibiotic use in pediatric emergency departments.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ESPID SYMPOSIUM 8: REFUGEE CHILDREN

ESP17-0782

LATENT TUBERCULOSIS INFECTION IN YOUNG REFUGEES AND ASYLUM SEEKING MIGRANTS; A MULTICENTRE CROSS-SECTIONAL STUDY

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Background

Incidence rates of tuberculosis (TB) in children in Germany have been on the rise since 2008, especially among foreign-born individuals. Significant numbers of asylum-seeking migrants during 2014-2016, many from high TB incidence countries, suggest that national TB incidence rates are likely to continue to rise. The implementation of an adequate screening strategy for active and latent TB is challenging.

Methods

In order to setup effective and reliable measures for comprehensive TB screening in children below the age of 15 years, a multicentre, cross-sectional study was performed from September 2015 to October 2016. In 7 refugee camps in two different German urban settings (Hamburg and Bochum), a total of 1,046 children and adolescents, aged between 6 months and 15 years, were immunologically tested for tuberculosis utilizing the Mantoux tuberculin skin test (TST, 2 IU tuberculin, positive cut-off of 10 mm) as well as the interferon gamma release assay (IGRA, Quantiferon). A pre-screening questionnaire included questions on sociodemographic data (e.g. country of birth, country of origin of the child's parents as well as migratory route and its respective duration), health status and Bacille Calmette-Guérin (BCG)-vaccination status.

Results

In Hamburg, 552 out of 802 children were examined. 200 could not be screened further: 159 had previously been vaccinated against measles-mumps rubella, 39 had already been screened with TST, 2 exhibited fever. In Bochum, 650 out of 873 children were screened. Here the majority of the initially 186 excluded children (117 MMR, 69 fever) could be screened on a later occasion.

The following flowchart depicts examination results.



Conclusions

In line with expectations, 5.7 per cent of young asylum seekers were tested positively, underlining that they represent a vulnerable group for tuberculosis infection. Consequently universal screening should be implemented.

Clinical Trial Registration (Please input N/A if not registered)

ESPID SYMPOSIUM 12: IMMUNE DYSREGULATION- FROM BED TO BENCH AND BACK TO BED

ESP17-0870

SYSTEMIC AND INTRATHECAL IMMUNE ACTIVATION IN PERINATALLY HIV-INFECTED CHILDREN

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Background

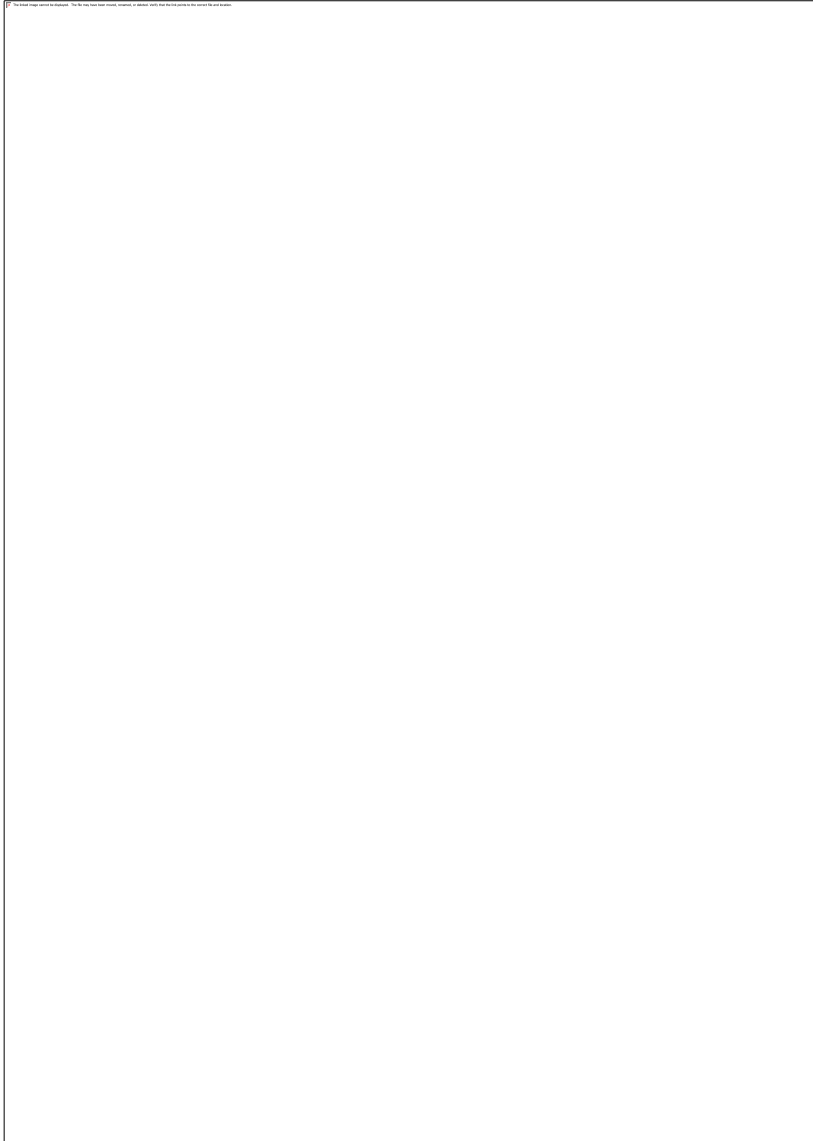
The contribution of inflammation and immune activation to cerebral and cognitive deficits in pediatric HIV is largely unknown. We aim to assess the relationship between inflammation/immune activation and cerebral injury in perinatally HIV-infected children; in a first analysis we focus on characterizing systemic and intrathecal inflammation/immune activation, and potential associations with HIV-related disease and treatment factors.

Methods

This cross-sectional study included 36 perinatally HIV-infected children between 8-18 years from our center, and 37 age-, sex-, ethnicity-, and socio-economically matched controls. Using MesoScale Discovery, we analysed inflammation/immune activation biomarkers in plasma samples of all participants, and cerebrospinal fluid (CSF) only of HIV-infected participants. Potential associations between these markers and HIV-related disease and treatment factors were explored using ordered logistic regression.

Results

HIV-infected children showed higher plasma levels of IL-15, IFN γ , IP-10, and MCP-1, while concordance between systemic and intrathecal biomarkers was limited (Table 1). Higher plasma IFN γ was associated with a shorter duration of CD4⁺ T-cell counts <500/ μ L (log months; coef=-0.99, *P*-value=.019). Higher plasma MCP-1 was associated with higher CD4⁺ T-cell Z-score at inclusion (coef=1.93; *P*-value=.029) and older age at cART initiation (coef=-0.22; *P*-value=.037). A prior AIDS diagnosis was associated with higher CSF IL-15 (coef=3.18; *P*-value=.041). No associations were found with detectable HIV viral load.



Conclusions

IL-15, IFN γ , IP-10 and MCP-1 were mildly elevated in HIV-infected children. As viremia or low CD4⁺ T-cell counts were not associated with increased inflammation/immune activation, other mechanisms may regulate inflammation when stable on treatment. The association between older age at cART initiation and higher MCP-1 could imply that early cART initiation may reduce systemic inflammation. In further analyses, we aim to evaluate how these biomarkers relate to cerebral and cognitive deficits in pediatric HIV.

Clinical Trial Registration (Please input N/A if not registered)

Dutch Trial Registry: NTR4074

ESPID SYMPOSIUM 8: REFUGEE CHILDREN

ESP17-0914

IMMUNOLOGICAL RESPONSE TO TREATMENT IN HIV-INFECTED MIGRANT CHILDREN IN EUROPE AS COMPARED TO DOMESTIC-BORN COUNTERPARTS

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Background

Migration and how it influences health is of growing importance. Few studies have investigated the effect of migrant status on outcomes of HIV-infection in children.

Methods

EPPICC cohorts where $\geq 5\%$ of children were born abroad were eligible for this analysis. Children aged < 18 -years at initiation of combination ART (cART) were included. The probability of severe immunosuppression (age-adjusted WHO classification) at 1 year after cART start was assessed using multivariable logistic regression.

Results

2,284 children from 11 European countries were included, 52% were from the UK/Ireland. Overall, 55% of children were born abroad, with wide variation across countries (5% Poland to 97% Sweden), 67% were from sub-Saharan Africa. Children born abroad initiated cART at older ages (median [IQR] 8.1 [4.0, 11.9] years vs 1.9 [0.3, 7.3] years in domestic-born), but had similar prevalence of severe immunosuppression (32.0% vs 30.9%, respectively). After cART initiation, most children had age-adjusted CD4 count z-scores within the normal range (Figure). At 1 year after ART start, the proportion of children with severe immunosuppression was not significantly different (8.0% born abroad vs 7.1% domestic born, $p=0.6$). After adjustment for sex, year of birth, age at HIV diagnosis and calendar year, age, weight-for-age z-score, CD4% and regimen at cART start, there was no effect of migrant status (adjusted OR 0.65 (95% CI 0.32,1.31), $p=0.2$). Children with severe immunosuppression at cART initiation had highest risk of severe immunosuppression 1 year after ART start (adjusted OR=14.8

(5.2,42.1), $p < 0.001$).



Conclusions

Migrant children initiated cART at older ages but did not have worse immunological response as compared to domestic-born children. Low CD4% at cART initiation was the strongest risk factor for immune impairment, highlighting the need for timely diagnosis and treatment, irrespective of migrant status.

Clinical Trial Registration (Please input N/A if not registered)

on behalf of the European Pregnancy and Paediatric HIV Cohort Collaboration (EPPICC)

ESPID SYMPOSIUM 09: GROUP A STREPTOCOCCUS

ESP17-0919

MULTI-CENTER STUDY EVALUATING INCIDENCE, PREDISPOSING FACTORS AND CLINICAL CHARACTERISTICS OF PEDIATRIC INVASIVE GROUP A STREPTOCOCCAL DISEASE IN MADRID, SPAIN

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Background

There has been a resurgence of invasive Group A Streptococcal infection (iGASi), which may cause high morbidity and mortality. Aim: Evaluate the incidence, clinical characteristics and management of children with iGASi, and determine possible risk factors linked to worse outcome.

Methods

Medical charts from children with iGASi diagnosed in 13 hospitals across Madrid between 2005-2015, were evaluated. Epidemiology, clinical and laboratory features, treatment and outcome were analyzed. P1(2005-June 2010) was compared with P2(July 2010-2015).

Results

Two hundred and fifty-two children with GASi were analyzed. Median age was 32.1 months; 52.6% male. The incidence of iGASi did not increase within the study period (5.7/100,000 pediatric emergencies in P1 vs 6.07/100,000 in P2). Fiftyfour percent had risk factors, especially prior trauma(29.5% of them). Most common clinical syndromes were: cellulitis/skin abscess(28.9%), primary bacteremia(16%), pneumonia(12%) and sepsis(10%). *S. pyogenes* was isolated from blood culture in 34.5% of cases. Two hundred and twenty-eight(90.5%) children were admitted to the hospital(mean duration 20 days), 64% underwent surgery and 25.9% required PICU admission (mean duration 12 days). Children from P1 had recent chicken-pox infection more frequently (12.2% vs 2.3%;p=0.009), whereas the diagnosis by PCR was more frequently achieved in P2 (1.6% vs 12.4%;p=0.01). Children admitted to PICU required more surgical procedures (76.3%;, p=0.057., OR: 1.9[0.98- 3.79]), and developed more complications (49% vs 23.6%; p=0.005) and sequelae (7.1% vs 0.6%; p=0.016). Multivariate analysis showed that only pneumonia was associated with PICU admission (OR 19.47[7.1- 53.12]).

Conclusions

According to this study, iSGAi remains a very severe disease, with a high percentage of PICU admissions and surgery procedures. Having pneumonia was an independent factor to require PICU admission. No increased in incidence was observed over time.

ESPID SYMPOSIUM 7: ANTIMICROBIAL STEWARDSHIP/ANTIMICROBIAL RESISTANCE

ESP17-0969

BUNDLE APPROACH TO REDUCE VENTILATOR ASSOCIATED PNEUMONIA IN NEONATES: A QUALITY IMPROVEMENT INITIATIVE IN AN OUTBORN NICU OF DELHI.

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Background

entilator Associated Pneumonia (VAP) is most common and severe nosocomial infection in critically sick neonates. It accounts for 6.8% to 32.2% of infections. It not only increases morbidity, mortality but also length of hospital stays in NICU. Higher rates of nosocomial sepsis reflect upon poor quality care of patients.

Methods

This is a prospective observational study conducted in a NICU of a tertiary care teaching hospital for a period of seven years from July 2009 to December 2015. All neonates requiring mechanical ventilation for more than 48 hours were enrolled. The diagnosis of VAP was made on the guidelines given by Center for Disease Control and Prevention (CDC). To reduce VAP rate we used evidence based bundles. A bundle chart was placed over ventilators. The staff was educated, motivated and trained to implement these. A VAP Scoring sheet was designed for active surveillance which was done daily by ICN using score sheet. All positive cultures were traced back for potential VAPs (passive Surveillance) using specially designed forms. All data were analysed, weekly and monthly and discussed with microbiologist and neonatologist. A checklist was made to check the compliance of implementation of bundles.

Results

Neonates admitted were 4896 constituting 54,943 patient days. Patients required ventilation are 1,123 (22.93%), constitutes 5,664 ventilator days. VAP was present in 49 cases. VAP rate per 1000 patient days were 8.378. VAP rate in 2009 was 23.86 per thousand patient days which was reduced to 3.9 per 1000 in 2015. *Acinetobacter spp.* (26.3%) and *Klebseilla spp.* (22.7%), were the most common organisms isolated, They were most susceptible to colistin (92.3%), imipenem (47%) & meropenem (33%). Total eleven (22.44%) patients expired.

Conclusions

VAP bundles are very effective tool to reduce Ventilator Associated Pneumonias.

ESPID SYMPOSIUM 6: PREGNANCY AND THE NEONATE

ESP17-1015

IMMUNOGENICITY OF DIFFERENT DOSING SCHEDULES OF TRIVALENT INFLUENZA VACCINE IN HIV-INFECTED PREGNANT WOMEN: A RANDOMIZED CONTROLLED TRIAL

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Background

A single-dose of seasonal trivalent inactivated influenza vaccine (IIV) has been shown to be less immunogenic in HIV-infected compared to HIV-uninfected pregnant women, which might impact on protection of their young infants. The aim of this study was to assess the immunogenicity of different IIV dosing-schedules in HIV-infected pregnant women.

Methods

800 HIV-infected pregnant women were enrolled into a double-blind, randomized-controlled trial in South Africa. Women were randomized (1:1:1) to receive IIV as a single-strength dose (SD, 15mg/epitope), a double-strength dose (DD) or two single-strength doses one-month apart (2SD). Antibody responses were measured by hemagglutination inhibition (HAI) assay in the women pre-vaccination and one-month post each vaccination; and in the infants born to women in the SD and DD groups within 7-days of birth.

Results

At baseline the percentage of women with HAI titers $\geq 1:40$ ranged from 1.5% for B-Yamagata to 21.8% for A/H3N2. The percentage of women who achieved HAI titers $\geq 1:40$ one-month post-vaccination was higher in the DD compared to the SD group for A/H1N1 (74.6% vs. 63.8%), A/H3N2 (70.7% vs. 62.7%) and B-Yamagata (30.6% vs. 21.5%, $p < 0.05$ for all observations). The percentage of women with HAI titers $\geq 1:40$ following first-SD did not increase after receiving a second-SD ($p > 0.30$ for all observations). Infants born to mothers who received DD had higher HAI geometric mean titers than those whose mothers received SD for A/H1N1 only (38.6 vs 29.4, $p = 0.04$).

Conclusions

The immunogenicity of IIV in HIV-infected pregnant women was slightly improved using a DD regimen; although the percentage of women achieving seroprotective antibody levels was still lower than in a historical cohort of HIV-uninfected women and there was only marginal increase in newborn HAI titers among those born to women who received DD.

Clinical Trial Registration (Please input N/A if not registered)

ClinicalTrials.gov NCT01527825

ESPID SYMPOSIUM 11: TUBERCULOSIS IN CHILDREN

ESP17-1036

NOVEL RNA BIOMARKERS IMPROVE DISTINCTION OF CHILDREN WITH ACTIVE TUBERCULOSIS FROM THOSE WITH PNEUMONIA, LATENT TUBERCULOSIS AND HEALTHY CONTROLS AFTER IN-VITRO STIMULATION

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Background

Childhood tuberculosis (TB) is a major cause of death globally. Traditional diagnostic methods, such as sputum culture and chest x-rays are less reliable in paediatric TB cases. Thus, there is a great need for improved reliable diagnostic methods that can combine accuracy with low cost. The aim of this study was to investigate the diagnostic potential of host transcriptional biomarkers for childhood TB from unstimulated and stimulated PBMCs (peripheral blood mononuclear cell) using gene expression profiling

Methods

Illumina HT-12 arrays were used to measure the RNA expression in PBMCs either unstimulated or stimulated with tuberculin PPD (purified protein derivative) or ESAT6/CFP10 (Early Secretory Antigenic Target-6/Culture Filtrate Protein-10) from 62 children including active TB (16), healthy controls (15), pneumonia (13), latent TB infection (LTBI) (18), collected at our Tuberculosis Clinic. After quality control and pre-processing for the microarrays, linear models were fitted to identify differentially expressed genes between patient groups and variable selection was used for identification of minimal biomarker signatures. The findings were validated in a new separate validation cohort comprising unstimulated and stimulated samples of active TB (11), latent TB (10) and pneumonia (11).

Results

We identified distinct subsets of genes differentially expressed when compared TB to LTBI, TB to pneumonia, TB to healthy controls and LTBI to healthy controls. Gene expression differences between the groups were amplified in the stimulated samples. The variable selection provided with signatures (the smallest but most informative probe set for every comparison of interest), which were used for classification in the validation cohort. ing gene expression profiling

Conclusions

Minimal transcript sets were able to discriminate between different phenotypes and the discrimination is enhanced after stimulation. The signatures identified have strong potential for paediatric TB diagnosis.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ESPID SYMPOSIUM 5: FIGHTING VIRUSES

ESP17-1125

PHARMACOKINETICS, SAFETY AND EFFICACY OF OMBITASVIR/PARITAPREVR/RITONAVIR ± DASABUVIR ± RIBAVIRIN IN HEPATITIS C GENOTYPE 1 OR 4 VIRUS INFECTED ADOLESCENTS: THE ZIRCON STUDY

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Background

In adults, treatment of hepatitis C virus (HCV) infection with ombitasvir, paritaprevir (identified by AbbVie and Enanta), ritonavir ± dasabuvir (OBV/PTV/r ± DSV) ± ribavirin (RBV) results in high sustained virologic response (SVR) rates. However, these direct-acting antivirals (DAAs) have not been studied in children or adolescents.

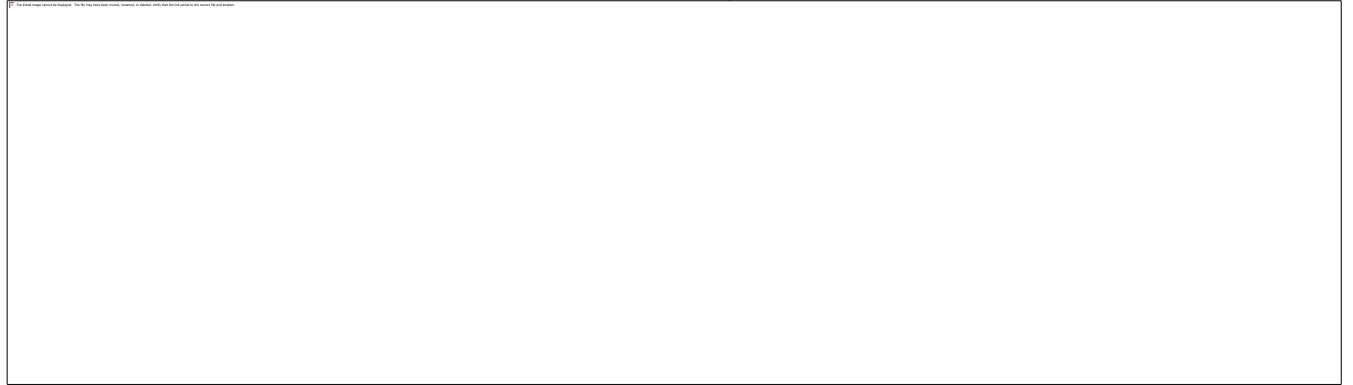
Methods

This ongoing, open-label, phase 2/3 study assessed the pharmacokinetics (PK) of OBV/PTV/r + DSV ± RBV in HCV genotype (GT)1–infected adolescents without cirrhosis (Part 1) and the efficacy and safety of OBV/PTV/r ± DSV ± RBV in GT1- or GT4-infected adolescents with or without cirrhosis (Parts 1 and 2). Patients were 12-17 years of age, treatment naïve or peginterferon/RBV experienced, with baseline HCV RNA level >1000 IU/mL. Regimens were based on GT and cirrhosis status. Endpoints were PK parameters, adverse events (AEs), laboratory changes, and SVR at post-treatment week 12 (SVR12).

Results

Thirty-eight adolescents were enrolled: 25 (66%) female, 29 (76%) white, median age (range) 15 (12-17) years, and median weight 66.4 (49.5-118.7) kg. Baseline HCV RNA levels were ≥800,000 IU/mL in 23 (61%) patients. Intensive PK results from Part 1 (Table) showed DAA exposures comparable to those of adults. All subjects had undetectable HCV RNA at the last visit: 33 achieved SVR12, 4 achieved SVR4, 1 at end of treatment. No confirmed grade 3 or 4 laboratory abnormalities were reported. No serious AEs occurred, and no AEs led to

discontinuation. Most common AEs were headache (n=8, 21%), fatigue (n=7, 18%), and pruritus (n=5, 13%).



Conclusions

In adolescents with GT1 or GT4 HCV infection, OBV/PTV/r ± DSV ± RBV was well tolerated, highly efficacious, and had a PK profile comparable to that of adults. Complete SVR12 data will be reported at the meeting.

Clinical Trial Registration (Please input N/A if not registered)

NCT02486406

ESPID SYMPOSIUM 2: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-1145

SAFETY, IMMUNOGENICITY AND ANTIBODY PERSISTENCE OF A NOVEL AP VACCINE (PERTAGEN®) IN HEALTHY ADOLESCENTS

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Background

To respond to the call of improving existing aP (acellular pertussis) vaccines BioNet-Asia Co., Ltd, has developed and licensed in Thailand the world first aP vaccine (Pertagen®) containing a recombinant genetically-inactivated PT (PTgen) and FHA for booster vaccination of adolescents and young adults . We present here the results of a clinical study performed in Thai adolescents.

Methods

A phase II/III, observer-blind, randomized, controlled trial, was conducted at Mahidol University in 12-17 years old. A total of 300 subjects received one dose of either BioNet aP (Pertagen®) or Sanofi Pasteur Tdap (Adacel®).

Results

Local and systemic post-immunization reactions, incidence of AEs at 28 days and of SAEs for 1 year were similar in both Pertagen® and Adacel® groups. At 28 days after vaccination, antibody titers were statistically significant higher in Pertagen® group than in Adacel® group, for anti-PT [562 (95% CI 468-675)IU/mL in Pertagen® group vs 63 IU/mL (95% CI 51-78) in Adacel® Group, p<0.001] and anti-FHA [924 IU/mL (95% CI 809-1054) in Pertagen® group vs 242 IU/mL (95% CI 209-280) in Adacel® group, p<0.001] as measured by ELISA, for PT-neutralizing titers measured by CHO assay [276 IU/mL (95% CI 182-419) in Pertagen® group vs 36 IU/mL (95% CI 26-51) in Adacel® group, p<0.001] . One year after vaccination, the proportion of subjects with anti-PT seroconversion rate (≥ 4-fold increase in titer) was still statistically significant higher in Pertagen® group (82% 95% CI 71-93) than in Adacel® group (4% 95% CI 0-9).

Conclusions

Pertagen® shows to have safety and tolerability profile similar to Adacel® while inducing significantly higher anti-PT and anti-FHA antibody titers with sustained persistence one year after vaccination.

Clinical Trial Registration (Please input N/A if not registered)

TCTR20150703002 www.clinicaltrials.in.th

ESPID SYMPOSIUM 3: INFECTIONS IN THE ONCOLOGY PATIENT

ESP17-1308

MARKERS OF RISK TO DEVELOP A SEVERE INFECTION IN CHILDREN WITH FEVER AND NEUTROPENIA RELATED TO CHEMOTHERAPY

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Background

Fever and neutropenia (FN) is a common complication in children receiving chemotherapy. The aim of this review was to describe the clinical and laboratory characteristics, and assess the existence of markers associated with the development of a potentially severe infection (PSI) in these children.

Methods

Children with FN admitted to the hospital were prospectively enrolled between November 2010-May 2016. On admission, patients underwent clinical assessment, laboratory test and bacterial and viral cultures. Furthermore, nasopharyngeal wash was obtained for the detection of 16 respiratory viruses (RV) by PCR test. Children were followed until the end of the episode and classified as having a PSI according to clinical outcome and microbiological isolates.

Results One hundred and eighty episodes of FN were evaluated (49.5% female; median age 5.5 years [1.8-11.8]), and 29.5% were classified as having a PSI. A bacterial and RV isolate were obtained in 20% and 19.4% of children, respectively. Children with PSI had received more frequently antibiotics 7 days before admission (19.2 vs 12%; $p=0.06$). From this group, no isolates of RV apart from rhinovirus were obtained (vs 9.3%; $p=0.011$). Several laboratory markers were higher in PSI group, such as platelets on admission (29,000 vs 71,000/ mm^3 ; $p=0.04$), maximum PCR (8.2 vs 11.8; $p=0.02$) or maximum PCT (1.3 vs. 1.5; $p=0.05$). Children with PSI had also longer duration of fever (4.2 vs 2.6 days; $p=0.05$) and more days of neutrophils $<100/\text{mm}^3$ (3.3 vs 6.5; $p=0.005$). See table.

Conclusions

In this cohort of children with FN, the absence of RV isolation, lower levels of platelets or neutrophils on admission, or higher levels of inflammatory parameters at 48 hours were associated with the development of SPI. These children had also longer duration of fever and of severe neutropenia.

ESPID SYMPOSIUM 09: GROUP A STREPTOCOCCUS

ESP17-1356

THE CLINICAL SYNDROMES AND OUTCOMES ASSOCIATED WITH INVASIVE GROUP A STREPTOCOCCAL (IGAS) INFECTIONS IN BRISTOL FROM 2006-2015.

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Background

Group A streptococcus is a pathogenic beta-haemolytic, gram positive bacterium which commonly colonises the skin and upper respiratory tract, resulting in mild superficial infection. It can, however, cause more invasive life-threatening disease, including septic arthritis, osteomyelitis, cellulitis, pneumonia and meningitis.

Methods

This study is a retrospective descriptive study analysing all iGAS infections in children under 16 years of age from 2006 to 2015 in Bristol Children's Hospital. iGAS infection was defined as group A streptococcus isolated from a usually sterile site such as blood, cerebrospinal fluid, pleural fluid, or deep tissue.

Clinical data collected included age at presentation, sex, predisposing factors, site, toxic shock syndrome, fever at presentation >38°C, site of isolation, type and duration of antibiotic used, immunoglobulin use, PICU, imaging surgery, relapse, morbidity at 2 years and mortality.

Results

Eighty-three patients met the inclusion criteria. 35% of cases were preceded by varicella infection. Upper respiratory tract infection and eczema were also common predisposing factors. 62.2% of patients (n=46) were found to have a bacteraemia, 27.0% (n=20) had soft tissue involvement; most commonly cellulitis, 25.7% (n=19) had pneumonia and 23.0% (n=17) developed empyema. Septic arthritis was seen in 21.6% of patients (n=16) while osteomyelitis was present in 13.5% (n=10). Less frequent presentations included necrotising fasciitis and meningitis, affecting 2.7% of patients each (n=2) while peritonitis was seen in only one case. 17 cases met the definition for streptococcal toxic shock syndrome. 5 cases died with an overall mortality rate of 5.88%.

Conclusions

Toxic shock syndrome represented 34% of cases and was associated with increased severity of disease. The relapse rate of 35.6% and the mortality rate of 5.88% highlight the need for prompt antibiotic therapy or surgical intervention in this disease.

ESPID SYMPOSIUM 10: DIAGNOSIS THROUGH HOST RESPONSE

ESP17-1367

APPLICATION OF A 2-TRANSCRIPT RNA SIGNATURE TO DISCRIMINATE BACTERIAL FROM VIRAL INFECTION IN YOUNG INFANTS USING DIVERSE RNA QUANTITATION PLATFORMS

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Background

Diagnosis of bacterial infection by minimal gene expression signatures measured in whole blood is feasible and accurate. Translation of preclinical findings to clinical tests requires expression signatures to be robust across patient groups, and classification to be reproducible across RNA quantitation platforms. We assessed the performance of a minimal 2-gene signature derived from microarray data for discrimination of bacterial infection in an independent infant microarray cohort, and in a new RNAseq validation cohort.

Methods

A published dataset of febrile infants (aged <60 days) recruited in United States emergency departments (n=251) and a novel dataset of febrile children recruited in the EUCLIDS study (n=97) were used to assess the performance of the 2-transcript Disease Risk Score (DRS) incorporating the *FAM89A* and *IFI44L* genes. In the infant dataset RNA was measured by Illumina microarrays. The EUCLIDS dataset used RNAseq to quantify RNA.

Results

In the microarray data, after quality control and pre-processing the 2-gene DRS distinguished febrile infants with bacterial or viral infection with sensitivity 88.8% (95% CI: 80.3-94.5), specificity 93.7% (95% CI: 87.4 -97.4) and AUC (Area Under the Curve) 95.7% (95% CI, 92.6 - 98.3). In the EUCLIDS RNAseq dataset, the reads were aligned to the human genome and quantified. The 2-gene DRS discriminated bacterial from viral infection with AUC 96.8% (CI 93.4-99.1).

Conclusions

Developing diagnostic tests based on RNA expression is hampered by uncertainty over its applicability in different patient groups, and its reproducibility with different RNA quantitation methodologies. Our data demonstrate the accuracy of a simple 2-gene DRS in independent patient groups, recruited in different settings, and measured using different methodologies. Further studies in larger cohorts of infants and children are required.

Clinical Trial Registration (Please input N/A if not registered)

Oral Abstracts

ORAL PRESENTATION SESSION 05: INVASIVE COMMUNITY-ACQUIRED BACTERIAL INFECTIONS

ESP17-0016

GENOME AND VIRULENCE DETERMINANTS OF STAPHYLOCOCCUS AUREUS ISOLATED FROM CHILDREN WITH ACUTE HEMATOGENOUS OSTEOMYELITIS

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Background

This study characterizes the genome of *Staphylococcus aureus* utilizing a novel reference strain and analyzes the association of virulence genes with clinical severity of illness of children with osteomyelitis.

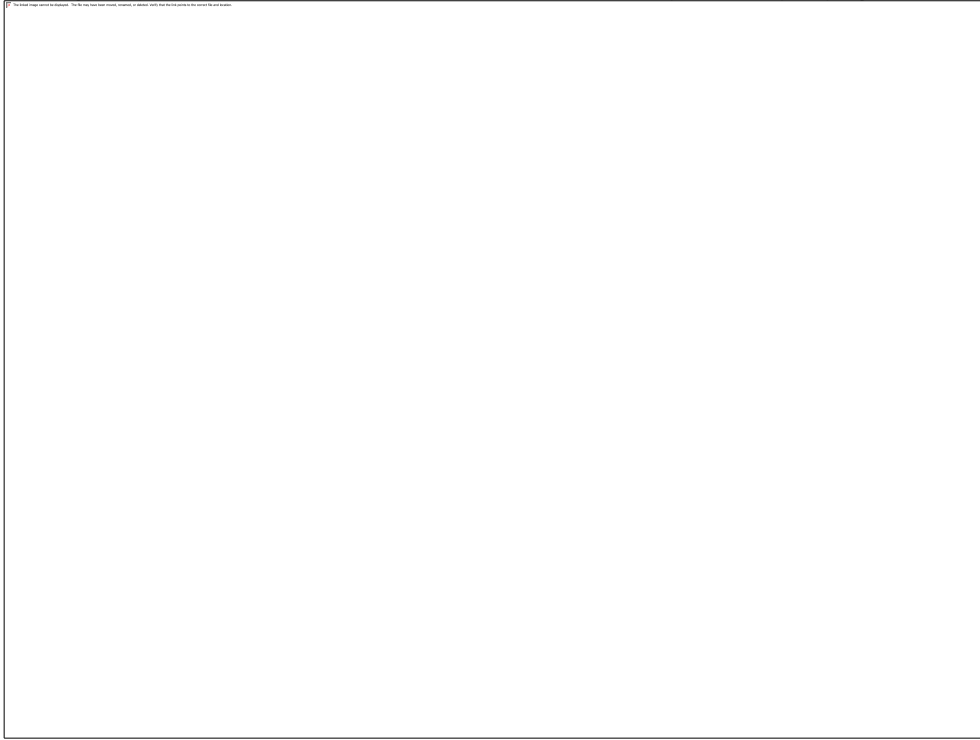
Methods

A community acquired Methicillin-resistant *Staphylococcus aureus* (MRSA) strain, isolated from a 12 year old female with osteomyelitis, was procured for de novo whole genome assembly with PacBio HGAP from 6 SMRT Cells and compared to complete sequence data of 49 *Staph* isolates in GenBank. Candidate virulence genes were annotated using blastp similarity identity scores greater than 0.8 and exhaustive literature review to ensure unambiguous assignment of each gene. DNA was extracted from bacterial isolates of 71 children with osteomyelitis. Sequence libraries were prepared using Illumina HiSeq2000 with an average of 6.9 million reads (243-fold coverage). Clinical and laboratory data were used to calculate severity of illness of each child. Kruskal-Wallis rank sum test was used to determine association between severity of illness and virulence gene presence. Calculated p-values were adjusted using False Discovery Rate with significance of <0.01.

Results

UTSW55 consists of 2,898,306 bp with 2054 assigned ORFs. Gene annotation identified 201 candidate virulence genes within at least one of the GenBank or study isolates. Severity of illness scores ranged from 0-10 (mean 5.3 + 3.7). 40 genes were significantly associated with severity of illness. MRSA isolates were found to encode a significantly greater number of virulence genes than did isolates which were not MRSA ($p < 0.0001$). Genomic

heterogeneity was confirmed to correspond with clinical severity scores by phylogenetic analysis.



Conclusions

The *Staphylococcus aureus* genome contains virulence genes significantly associated with severity of illness of children with osteomyelitis. This study introduces a novel reference strain for future genome and transcriptome studies.

ORAL PRESENTATION SESSION 08: VACCINES - ELUCIDATING MECHANISMS

ESP17-0024

THE IMPACT OF MATERNAL ANTIBODY ON INFANT VACCINE RESPONSES: AN ANALYSIS OF IMMUNITY IN 7630 CHILDREN

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Background

The design of infant immunisation schedules requires an understanding of the factors which determine the immune response to each vaccine antigen. High concentrations of trans-placentally acquired antibody inhibit the immune response to some vaccines in infancy. However, the small size of most studies and lack of appropriate control groups, has resulted in a lack of consensus in the current literature.

Methods

We conducted an analysis of serology from vaccine trials in infants. We assessed the effect of pre-existing maternal antibody on antibody responses to both priming and booster doses of most vaccines included in global infant immunisation programmes.

Results

A total of 7630 infants from 17 countries had pre-vaccination sera available for at least one antigen. Pre-existing maternal antibody inhibited infant antibody responses to priming doses for 20 of 21 antigens assessed, with up to 22% lower responses per 2-fold increase in maternal antibody. The influence of maternal antibody could still be detected in reduced responses to booster doses of acellular pertussis, inactivated polio, and diphtheria vaccines at 12-24 months of age. Pre-existing antibody to related carrier proteins also reduced infant responses to pneumococcal conjugate vaccines.

Conclusions

Reduced immune response to vaccination is of particular importance in the context of prenatal immunisation programmes which are currently recommended in some countries. Prenatal immunisation protects infants against disease in the first two months of life, however, subsequent diminished responses to infant vaccination may leave children more susceptible to disease in later infancy. Prenatal immunisation programmes containing multi-component vaccines have the potential to interfere with established immunisation programmes. The clinical significance of this interference is unknown.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 09: PARASITIC AND MYCOBACTERIAL INFECTIONS

ESP17-0044

PHARMACOKINETICS OF ISONIAZID IN CHILDREN WITH TUBERCULOSIS WHO ARE ON DAILY THERAPY

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Background

To assess pharmacokinetics of Isoniazid (INH) at steady state after oral administration of 10 mg/kg/dose in children with tuberculosis (TB).

Methods

35 children aged 1–15 years on daily anti-tuberculous therapy (ATT) for a minimum period of two weeks and upto four months after treatment initiation were included in the study. Six blood samples were collected at 0, 1, 2, 3, 6 and 24 hrs after administration of INH. Serum levels of INH were estimated by LC-MS/MS. C_{max} (maximum plasma concentration achieved) was determined by visual inspection of the data. Area under curve from 0–24 hours (AUC_{0–24}) was calculated.

Results

Mean dose of INH given was 9.93±1.16 mg/kg/day. Mean C_{max} was 8.3±4.28 µg/ml reached in 1.22±0.5hrs. Mean AUC was 46.23±34.82 µg/ml*hr with mean half-life was 2.45±1.17hrs. C_{max} in males 8.71±5.18 µg/ml and in females was 7.86±2.97 µg/ml (p=0.56) and AUC in males was 49.7±43.22 µg/ml*hr compared to 42.06±21.74 µg/ml*hr in females (p=0.52). Children between 1 to 4.9 years had mean C_{max} of 9.87±5.75 µg/ml and AUC of 60.97±49.90 µg/ml*hr while those between 5 to 10 years had C_{max} 7.62±3.37 µg/ml and AUC 38.95±22.28 µg/ml*hr while those above 10 years had C_{max} 7.21±2.50 µg/ml and AUC 36.09±13.56 µg/ml*hr (p=0.08, p= 0.29 respectively). Mean C_{max} and mean AUC in children taking fixed drug combination (FDC) were 9.07±4.67µg/ml and 50.48±38.38 µg/ml*hr compared to those taking individual drugs (C_{max} 7.43±3.71 µg/ml and AUC of 41.20±30.52 µg/ml*hr) (p=0.26 and p=0.44 respectively).

Conclusions

Most children on daily INH therapy with 10mg/kg/day seem to have higher AUC and C_{max} levels of INH. C_{max} and AUC was higher in younger children.

Clinical Trial Registration (Please input N/A if not registered)

ORAL PRESENTATION SESSION 07: VACCINE IMPACT & RELATED EPIDEMIOLOGY

ESP17-0066

THE GLOBAL BURDEN OF DIARRHEAL DISEASES: RESULTS FROM THE GLOBAL BURDEN OF DISEASE STUDY 2015

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Background

The Global Burden of Diseases, Injuries, and Risk Factors Study 2015 (GBD 2015) provides an up-to-date analysis of the burden of diarrhoeal diseases. This study assesses cases, deaths, and aetiologies spanning the past 25 years and informs the changing picture of diarrhoeal disease.

Methods

We estimated diarrhoeal mortality by age, sex, geography, and year using a modeling platform shared across causes of death in the GBD 2015 study. Diarrhoeal morbidity, including incidence and prevalence, was modeled using a meta-regression platform. Etiologies were estimated using a counterfactual approach. The two leading risk factors for diarrhoea, childhood malnutrition and unsafe water, sanitation, and hygiene, were used in a decomposition analysis to determine the relative contribution of changes in diarrhoea DALYs.

Results

Globally, diarrhoea was the 9th leading cause of death among all ages (1,312,128 deaths, 95% uncertainty interval: 1,233,574-1,391,254) and the 5th leading cause of DALYs due to its disproportionate impact on young children (71,589,510 DALYs, 95% UI: 66,442,884-77,205,835). Among under 5 years old, diarrhoea was the 4th leading cause of death (498,889 deaths, 95% UI: 447,450-557,643). The number of diarrhoea deaths decreased by 20.8% (95% UI: 15.4-26.1%) from 2005 to 2015. Rotavirus was the leading cause of deaths (199,177, 95% UI: 165,483-241,162) followed by Shigella and Salmonella. The three etiologies responsible for the most deaths were rotavirus, Cryptosporidium, and Shigella among under 5 years old.

Conclusions

At the global level, deaths due to diarrhoeal diseases have decreased dramatically in the last 25 years although progress has been variable. Diarrhoea remains an important disease and cause of death and continued efforts to improve access to safe water and sanitation and childhood nutrition will be a driving force in reducing the global burden of diarrhoea.

Systematic Review Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 02: PREGNANCY, CONGENITAL AND PERINATAL INFECTIONS

ESP17-0105

REDUCED INTERNALIZATION OF TNF-ALPHA AND TNFR1 DOWN-REGULATES CASPASE DEPENDENT PHAGOCYTOSIS INDUCED CELL DEATH (PICD) IN NEONATAL MONOCYTES

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Background

Phagocytosis-induced cell death (PICD) is diminished in cord blood monocytes (CBMO) as compared to cells from adults (PBMO) due to differences in the CD95-pathway. This may support a prolonged pro-inflammatory response with sequels of sustained inflammation as seen in neonatal sepsis. Here we hypothesized that TNF-alpha mediated induction of apoptosis is impaired in CBMO due to differences in the TNFR1-dependent internalization.

Methods

Monocytes were infected with *Escherichia coli*-GFP (*E. coli*-GFP). Monocyte phenotype, phagocytic activity, induction of apoptosis, TNF-alpha/TNF-receptor (TNFR) -expression were analyzed.

Results

In the course of infection TNF-alpha secretion of CBMO was reduced to 40% as compared to PBMO ($p < 0.05$). Neutralization of TNF-a by an anti TNF-alpha antibody reduced apoptotic PICD in PBMO four-fold ($p < 0.05$ vs. infection with *E. coli*). PICD in CBMO was reduced 5-fold and showed less responsiveness to a TNF-alpha antibody. CBMO expressed less pro-apoptotic TNFR1, which, after administration of TNF-a or infection with *E. coli* was less internalized. With similar phagocytic capacity, reduced TNFR1 internalization in CBMO was accompanied by lower activation of caspase-8 ($p < 0.05$ vs. PBMO). Stronger caspase-8 activation in PBMO caused more activation of effector caspase-3 and apoptosis (all $p < 0.05$ vs. PBMO).

Conclusions

Our results demonstrate that TNFR1 internalization is critical in mediating PICD in monocytes after infection with *E.coli* and is reduced in CBMO.

Clinical Trial Registration (Please input N/A if not registered)

n.a.

ORAL PRESENTATION SESSION 03: VACCINE SAFETY

ESP17-0122

SAFETY OF TWO DOSES OF PNEUMOCOCCAL-PROTEIN D CONJUGATE VACCINE IN CHILDREN WITH CHRONIC SUPPURATIVE LUNG DISEASE

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²Private Practice, General Medicine, Brisbane, Australia

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⁷Princess Margaret Hospital for Children, University of Western Australia, Perth, Australia

⁸Menzies School of Health Research, Child Health Division, Darwin, Australia

⁹Murdoch Children's Research Institute, Pneumococcal Research, Melbourne, Australia

¹⁰University of Sydney, Central Clinical School, Sydney, Australia

Background

Increasing attention is being paid to vaccines that may reduce acute exacerbations of chronic suppurative lung diseases (CSLD) in children. However, clinical trials are scarce. We describe the safety of two doses of the 10-valent Pneumococcal Protein D Conjugate Vaccine (PHiD-CV) in children with CSLD.

Methods

An Australian multi-centre, double-blind randomized controlled trial evaluated the efficacy of PHiD-CV at preventing acute exacerbations in children aged ≤ 18 years with CSLD. Children received 2 doses of study vaccine, 2-months apart and were followed for 12-months following the second dose. Safety data on solicited and unsolicited adverse events (AE) for 7 and 30-days respectively after each vaccine dose as well as Serious Adverse Events (SAEs) for 14-months post-dose 1 were recorded. Events were compared with children in the control group who received Quadrivalent Meningococcal ACYW₁₃₅ conjugate vaccine.

Results

Thirty-four children received 2 doses of PHiD-CV and 37 children received control vaccine; 54% were male and mean age was 6.9-years (SD 3.6). In the PHiD-CV group, 94.1% experienced any local injection site reactions post-dose 1 and 85.2% post-dose 2. The corresponding proportions for any solicited general symptoms in the PHiD-CV group were 61.7% and 44.1% 7-days post-doses 1 and 2, and 26.4% and 14.7% for 30-day unsolicited events (Figure). Most symptoms were mild. Compared with controls, local reactions were higher in the PHiD-CV group (dose 1: 94.1% vs 54.0%, $p < 0.001$; dose 2: 85.2% vs 48.6%, $p < 0.001$), but no significant between-group differences existed for solicited general symptoms and unsolicited events. There were no SAEs related to the

study vaccine.



Conclusions

PHiD-CV is well tolerated in children with CSLD however there was a high proportion of children experiencing local reactions; most of which were mild.

Clinical Trial Registration (Please input N/A if not registered)

ANZCTR Number:ACTRN12612000034831

ORAL PRESENTATION SESSION 02: PREGNANCY, CONGENITAL AND PERINATAL INFECTIONS

ESP17-0129

BORDETELLA PERTUSSIS (BP): IMPACT OF TDAP MATERNAL IMMUNIZATION STRATEGY IN A PEDIATRIC HOSPITAL. 2003-2016

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Background

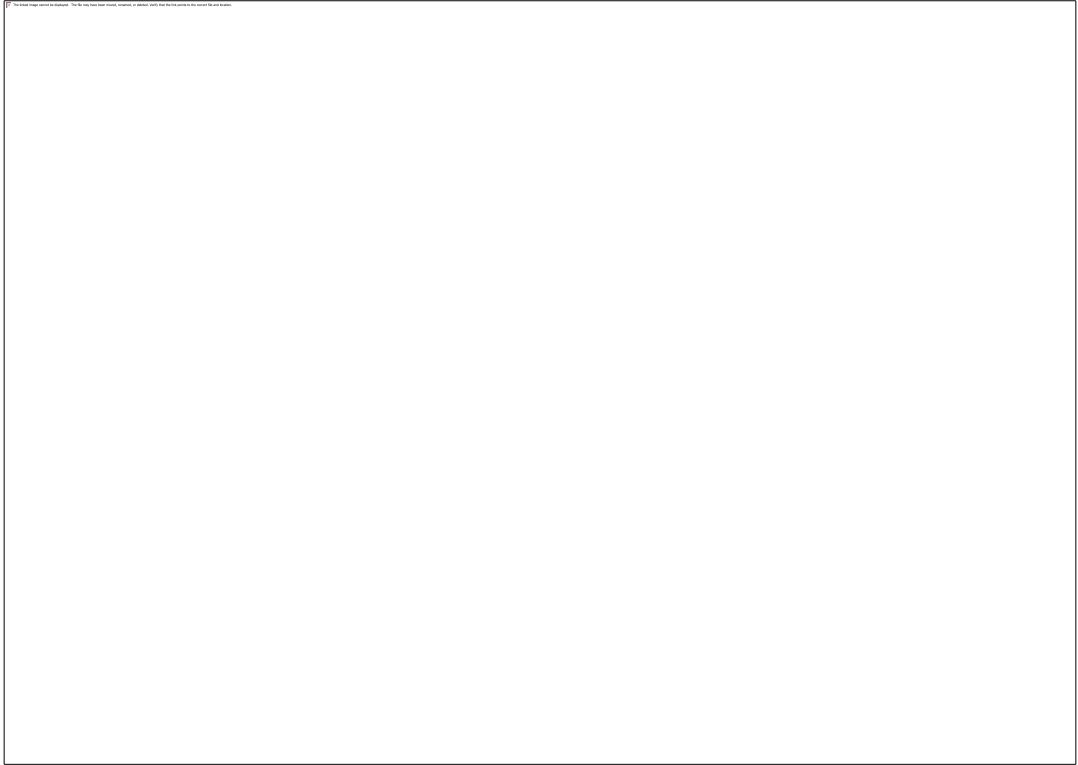
Whooping cough continues being a major cause of morbidity and mortality in infants younger than 1 year old. In 2012 Argentina introduced Tdap in pregnancy to prevent infant mortality. The aim was to describe the clinical and epidemiological profile of *Bordetella pertussis* comparing pre and post Tdap vaccine periods.

Methods

All laboratory PCR confirmed Bp cases between December 2003 and December 2016 were included in "R. Gutierrez" Children's Hospital. Analysis was performed comparing Bp hospitalization rates (per 10,000 discharges) between pre-vaccination (PreV) 2003-2011 and post-vaccination maternal immunization strategy (PostV) 2013-2016 periods excluding intervention year (2012).

Results

From 1046 suspected cases, 337 (32.2%) were Bp confirmed cases: median age 3 months (IQ=2-7months), 39% <3 months, 69% <6 months, 84% <12 months; 55% females; 18% had underlying conditions, the most frequent recurrent respiratory disease 73%; 1% were malnourished, 10% born preterm and 1% immunosuppressed; 82% required hospitalization, median length of stay was 6 days (IQ=4-10 days), 17% in UCI. Confirmed cases showed a seasonal pattern predominantly from September through February (spring-summer). Bp hospitalization rate (HR) and lethality rate is shown in Figure 1. In comparison with PreV, PostV cases were older (3 vs 9 months; p<0.001), required less hospitalization (86.9% vs 67.6%; p<0.001) and Bp HR decreased (22.3 vs 11.6; p<0.001). No difference found in gender, length of stay days or intensive care requirement. Lethality rate 5%(14/277), all fatal cases in PreV.



Conclusions

Confirmed cases were mostly healthy infants younger than 1 year old who had not completed their primary immunization schedule. In PostV Bp cases were older and there was a significant decrease in the hospitalization rate. There were no fatal cases in our centre after this intervention.

ORAL PRESENTATION SESSION 06: HOST RESPONSE TO INFECTION AND NEW DIAGNOSTIC TOOLS

ESP17-0132

HAPLOTYPE OF NON-SYNONYMOUS MUTATIONS WITHIN IL-23R IS ASSOCIATED WITH SUSCEPTIBILITY TO SEVERE MALARIA ANEMIA IN A *P. FALCIPARUM* HOLOENDEMIC TRANSMISSION AREA OF KENYA

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Background

Improved understanding of the molecular mechanisms involved in pediatric severe malarial anemia (SMA) pathogenesis is a crucial step in the design of novel therapeutics. Identification of host genetic susceptibility factors in immune regulatory genes offers an important tool for deciphering malaria pathogenesis. The IL-23/IL-17 immune pathway is important for both immunity and erythropoiesis via its effects through IL-23 receptors (IL-23R). However, the impact of IL-23R receptor variants on SMA has not been fully elucidated.

Methods

Since variation within the coding region of *IL-23R* may influence the pathogenesis of SMA, the association between *IL-23R* rs1884444 (G/T), rs7530511 (C/T), and SMA (Hb<6.0g/dL) was examined in children (n=369, aged 6-36 months) with *P. falciparum* malaria in a holoendemic *P. falciparum* transmission area.

Results

Bivariate logistic regression analysis, controlling for confounding factors of anemia, revealed that individual genotypes of *IL-23R* rs1884444 (G/T) [GT; OR=1.34, 95% CI=0.78-2.31, *P*=0.304 and TT; OR=2.02, 95% CI=0.53-7.74, *P*=0.286] and *IL-23R* rs7530511 (C/T) [CT; OR=2.6, 95% CI=0.59-11.86, *P*=0.202 and TT; OR=1.66, 95% CI=0.84-3.27, *P*=0.142] were not associated with susceptibility to SMA. However, carriage of *IL-23R* rs1884444T/rs7530511T (TT) haplotype, consisting of both mutant alleles, was associated with increased susceptibility to SMA (OR=1.12, 95% CI=1.07-4.19, *P*=0.030).

Conclusions

Results presented here demonstrate that a haplotype of non-synonymous *IL-23R* variants increase susceptibility to SMA in children resident in a holoendemic *P. falciparum* transmission area.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 08: VACCINES - ELUCIDATING MECHANISMS

ESP17-0164

TNFA, TGFB AND IGA IN COLOSTRUM AND BREASTMILK MAY DETERMINE INFANT GROUP B STREPTOCOCCUS COLONISATION AND CLEARANCE

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Background

Background: Whilst neonatal Group B Streptococcus (GBS) disease is widely associated with maternal rectovaginal GBS colonisation, the condition has also been linked with transmission via infected breastmilk. However, most breastfed infants remain unaffected by GBS found in breastmilk, possibly due to a complex interplay between infant immunity and breastmilk immune factors that may prevent GBS colonisation and invasion when ingested by the infant. Understanding these dynamics is important, particularly for infants in the developing world where breastfeeding is the only sustainable infant feeding option, and for premature infants who represent a high-risk group.

Methods

Methods: In order to assess the impact of plausible immune factors on GBS colonisation in infants, we measured secretory IgA and breastmilk cytokines in colostrum, breastmilk and serum in 750 mother/infant pairs at birth, day 6 and day 60-89.

Results

Results: Higher concentrations of anti-GBS SIgA in colostrum were associated with absence of infant colonisation with serotype III ($p=0.022$) and serotype V ($p<0.001$). Increased concentration of TGF- β in colostrum was associated with increased risk of colonisation at day 6 (AOR 1.45 (1.1-1.9) but equally increased clearance of GBS between birth and day 60-89 ($p=0.029$).

Conclusions

Conclusions: Enhancing maternally-derived antibody and cytokine concentrations in breastmilk through vaccination in pregnancy may reduce infant colonisation and thereby lower the risk of GBS disease.

Clinical Trial Registration (Please input N/A if not registered)

ORAL PRESENTATION SESSION 04: INVASIVE VIRAL INFECTIONS

ESP17-0187

ENTEROVIRUS A71 (EV-A71) OUTBREAK ASSOCIATED WITH SEVERE NEUROPATHOLOGIES IN PEDIATRIC POPULATION IN SPAIN DURING 2016

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Background

Human enteroviruses (EV) are a common cause of neurological pathologies in children therefore EV characterization is important both in patient management and epidemiological investigation.

Methods

From January to November 2016, 870 EV-positive samples from children <14yr were received in the CNM for serotype identification. Patients were admitted in 44 hospitals of 15 Spanish Autonomous Communities with suspicious of neurological diseases -meningitis (M), encephalitis (E), rombo-encephalitis (RE), meningo-encephalitis (ME), acute flaccid paralysis or myelitis (AFP/AFM)-, fever without source (FWS), hand-foot-mouth-disease (HFMD) or respiratory illnesses (RI). EV were genotyped by amplifying with 4 specific RT-PCRs for EV-A, B, C and D species, sequencing and phylogenetic analysis.

Results

Of 870 EV-positive samples, 651 EV were genotyped (75%). The most frequent serotype detected was EV-A71 (218/651, 33%), followed by EV-D68 (22%), E-30 (12%) and E-5 (8%). EV-A71 was detected in respiratory samples (63%), stools (32%) and CSF (4%). EV-A71-positive children mean age was 2.6+5.3 yr (range, 1d-13yr). Male/female rate was 1:7. As the other serotypes, the highest EV-A71 incidence was between May and July (84%). Clinically, infections were more associated with severe neuropathologies (E, RE, ME, AFP/AFM) than with FWS, M or HFMD (62 vs 33%, p<0.0001). Non-EV-A71 types were detected only in 9% of the severe cases.

Conclusions

A large EV-A71 outbreak occurred in Spain during 2016. Until then, EV-A71 was a low circulation EV type in our country but this year it has emerged causing an increase of severe cases of encephalitis and other neurological illness in children between 2-4 yr. Spanish EV surveillance system implemented since 1998 within the National Polio Eradication Plan, provides valuable information about circulation of EV, emergence of new types and clinical association.

ORAL PRESENTATION SESSION 07: VACCINE IMPACT & RELATED EPIDEMIOLOGY

ESP17-0195

A NATIONAL REGISTER-BASED STUDY OF PEDIATRIC VARICELLA HOSPITALIZATIONS IN DENMARK 2010-2016

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Background

Childhood varicella immunization is not implemented in Denmark and the national burden of disease not known. We aim to estimate the incidence of pediatric varicella hospitalizations and describe general patient characteristics. Secondly, we aim to assess determinants for pediatric varicella hospitalization, taking advantage of unique national registers.

Methods

We designed a nationwide, population based, retrospective register study of pediatric varicella hospitalizations 2010-2016 and applied a case-cohort design and logistic regression comparing hospitalized varicella patient to a sample of the entire pediatric population in Denmark. Varicella patients were identified in The Danish National Patient register, complications and underlying disease was assessed using ICD10 codes. From the Danish Civil registration system we randomly selected 10 referents for each case of varicella.

Results

We identified 1832 pediatric patients hospitalized with varicella; 48% were admitted and 57% were short contacts. The incidence of pediatric varicella admissions was 11 /100.000 children 0-18 years of age/year. Of admitted children 67% had complications and 30% had underlying disease. The frequency of complications was not higher in children with underlying disease. All categories of underlying disease increased the odds of hospitalization as well as male gender and not having been born in Denmark.

Conclusions

The burden of pediatric varicella disease in Danish hospitals is substantial, and by and large of the same magnitude as in other European countries comparable to Denmark. With this study we have provided solid epidemiological data necessary for considering implementation of varicella vaccine in Denmark

ORAL PRESENTATION SESSION 06: HOST RESPONSE TO INFECTION AND NEW DIAGNOSTIC TOOLS

ESP17-0238

IDENTIFICATION OF A CIS-REGULATORY REGION ASSOCIATED WITH GENETIC SUSCEPTIBILITY TO MENINGOCOCCAL DISEASE CONTROLLING FACTOR H EXPRESSION IN LIVER CELLS

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Background

Background: Genetic variants within *complement factor H (CFH)* and the five *complement factor H-related (CFHR)* genes have been associated with susceptibility to a range of human diseases. Factor H (FH) acts as a negative regulator of the alternative complement activation pathway and its circulating plasma levels, mainly secreted by the liver, have been associated with susceptibility to infectious and autoimmune diseases, leading to hypothesize the existence of a putative regulatory region within *CFH-CFHR1-5* controlling FH expression. However, due to the sequence complexity of this genomic region its discovery has remained elusive.

Methods

Using a capture-targeted approach followed by deep sequencing in 475 Western European individuals (238 MD patients vs. 237 controls) we have characterized the extremely complex *CFH-CFHR1-5* gene interval and fine-mapped the association signal of susceptibility to MD to a regulatory region in 4,194 individuals of European descent (1,522 MD patients, 2,676 controls).

Results

Dual-luciferase studies demonstrated that the lead SNP in *CFHR3*, rs75703017 (P-value=1.1x10⁻¹⁶, OR=0.63 (95% CI 0.55-0.71)), lies in a liver-specific regulatory region that has been shown to loop and interact with *CFH* at the genomic level. Protective *CFHR3* genotypes were strongly associated with low FH plasma levels (pQTL=1.41x10⁻¹¹), whereas deletion of this candidate region through genome editing in human embryonic stem cells subsequently differentiated to hepatocytes, showed a substantial increase of FH transcript levels, confirming the regulatory role of the associated variants.

Conclusions

Our data demonstrate that FH is the ultimate complement protein associated with MD susceptibility and that its expression levels are controlled through a cis-regulatory element located in intron 1 of *CFHR3*, independent of FHR3 protein levels, thus providing a molecular mechanism relevant to complement dysregulation related diseases.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 12: HIV/AIDS

ESP17-0275

HCV TREATMENT AND PROGRESSION TO FIBROSIS IN VERTICALLY HIV/HCV VS HCV-INFECTED CHILDREN

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Background

There are scarce studies addressing the progression to liver fibrosis and treatment response in vertically HIV/HCV co-infected children.

Methods

Retrospective, multicenter cohort study including vertically-HIV/HCV co-infected patients (COP) from the Spanish National Cohort of HIV-infected children (CoRISpe) and vertically HCV mono-infected patients (MOP) from a National Hepatology Reference Center, paired by sex and age, up to December 2015. Treatment-related characteristics and progression to hepatic fibrosis were described.

Results

We studied 142 patients (71 COP/71 MOP). There was no progression to liver disease below the age of 9 years. At the age of 20, 9/38 (23.7%) COP vs. 3/54 (5.5%) MOP had progressed to advanced fibrosis ($p=0.012$). Genotype (GT) distribution: GT1 50% vs 88.3%, GT2 4.5% vs 1.7%, GT3 22.7% vs 6.7% and GT4 22.7% vs 3.3% (all $p<0.01$). Peg-IFN/RBV for HCV treatment was given to 22 (29.7%) COP vs 52 (70.3%) MOP; 2 COP were treated with Peg-IFN/RBV/telaprevir and Peg-IFN/RBV/boceprevir. At treatment initiation, COP were older than MOP: 17 y. [15.75-19.25] vs 13 [8.25-15] ($p<0.001$) and HCV-RNA was similar: 5.8 log [5.2-6.6] vs 5.6 [5-

6.1] ($p=0.65$). COP had a worse hepatic condition: 40% moderate-advanced fibrosis and 15% cirrhosis vs 88.6% without or mild fibrosis in MOP (all $p<0.01$). HCV curation rates were no different (40.9% COP vs 42.3% MOP) regardless the GT.

Conclusions

At the age of 20, over 20% HIV-HCV-co-infected patients presented liver disease, suggesting that this population should benefit from early treatment of HCV using new drugs available. No differences were observed in terms of HCV treatment outcomes with Peg-IFN/RBV or genotype between groups.

Clinical Trial Registration (Please input N/A if not registered)

ORAL PRESENTATION SESSION 01: BACTERIAL VACCINE MODELLING AND IMPACT

ESP17-0280

BELGIAN NASOPHARYNGEAL CARRIAGE STUDY OF *S. PNEUMONIAE* IN HEALTHY INFANTS (6-30 MONTHS) ATTENDING DAY-CARE CENTRES AND IN INFANTS WITH ACUTE OTITIS MEDIA: YEAR 1 RESULTS

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Background

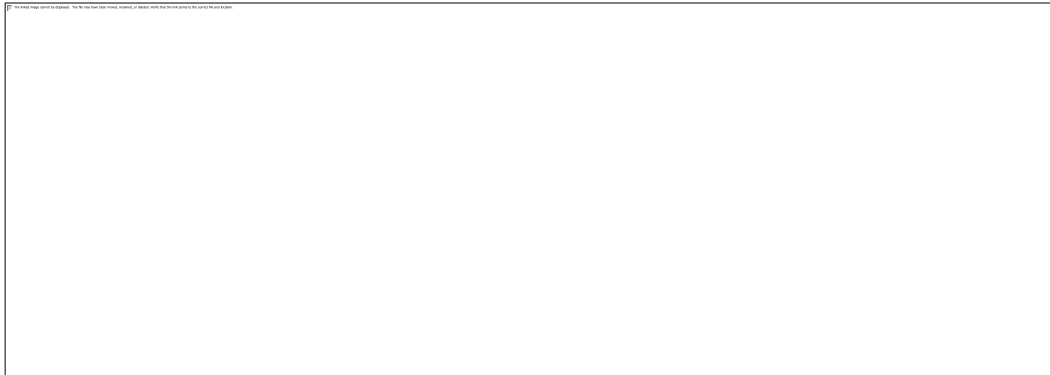
In Belgium, the infant pneumococcal conjugate vaccine (PCV) programme changed from PCV7 (2007-2011) to PCV13 (2011-2015) and in 2015-2016 to PCV10. To evaluate any impact on circulating pneumococcal serotypes, a 3-year nasopharyngeal carriage study in infants aged 6-30 months was initiated in 2016.

Methods

Two infant populations with higher reported carriage of *S. pneumoniae* were approached for this study: (1) Healthy infants attending one of the 85 participating day-care centres (DCC) randomly selected over the country; (2) Infants with acute otitis media (AOM), presenting at one of the 75 participating general practitioners and paediatricians. A single nasopharyngeal swab was transported in STGG medium to the pneumococcal reference laboratory to be immediately cultured after BHI enrichment or to be frozen. *S. pneumoniae* were cultured, screened for antibiotic resistance, and serotyped by Quellung reaction. Pneumococcal DNA was quantified using quantitative Taqman real-time PCR targeting *lytA*.

Results

Detection rate of *S. pneumoniae* carriage was high in the studied populations (DCC: 452/746; 60.6%; AOM: 30/43; 69.8%). *S. pneumoniae* positive samples showed low prevalence of PCV13 serotypes of which 19F and 14 were most frequent. Prevalence of 3, 6A and 19A was below 0.9% in both populations. 23B and 23A were predominant non-PCV serotypes in DCC, and 11A in AOM. Resistance to penicillin was rare (<0.5%) and absent against levofloxacin; 35-40% isolates were co-trimoxazole-resistant. Pneumococcal DNA loads were not related to vaccine serotype, but were significantly higher in infants with signs of common cold (27.2%, 123/452), compared to infants lacking these symptoms (Mann-Whitney U test, P<0.0001).



Conclusions

In 2016, baseline PCV13 serotype carriage was rare in healthy infants throughout Belgium. Continued surveillance will demonstrate whether this situation will be maintained under the recent PCV programme change.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 07: VACCINE IMPACT & RELATED EPIDEMIOLOGY

ESP17-0281

SUSTAINED DECREASE IN ROTAVIRUS RELATED HOSPITALISATIONS AND NOSOCOMIAL ROTAVIRUS INFECTIONS IN BELGIUM NINE YEARS AFTER THE VACCINE INTRODUCTION

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Background

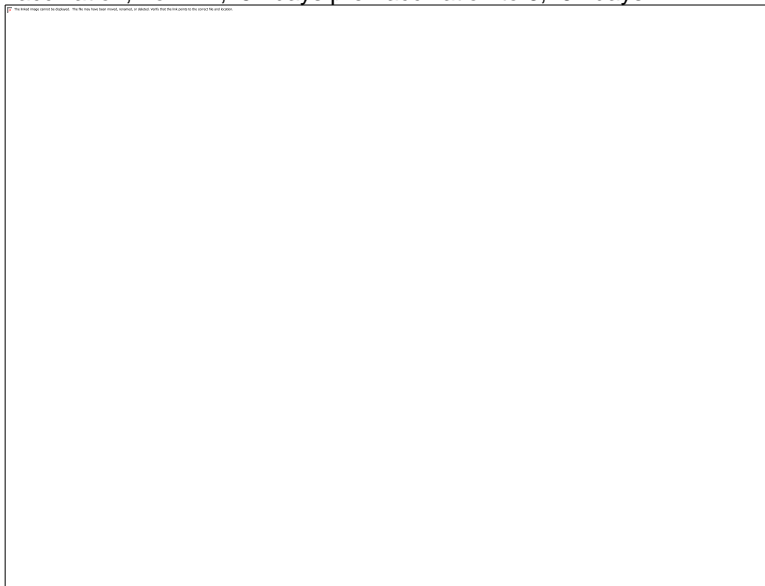
Rotavirus vaccination has been reimbursed in Belgium since November 2006. The average vaccine coverage rate is above 85%. The objective is to assess the impact of rotavirus mass vaccination on rotavirus-specific hospitalisations and nosocomial infections in children ≤ 2 -years-old between pre- and up to 9-years post-vaccine launch in 10 paediatric wards.

Methods

All rotavirus tests collected from hospitalised children ≤ 2 -years-old were analysed (Clinical Trial Registration: NCT01563146). The total number of positive rotavirus tests pre-vaccine launch (prior to 2007) was compared with post-vaccine launch (2007-2016) period. Data are presented as a percentage reduction (95% Confidence Interval- CI) per year post-vaccination using the annual average of the pre-vaccination period as a reference.

Results

Between June 2004 and May 2016, 4,639 (15%) out of 30,641 children ≤ 2 -years-old tested positive for rotavirus. Despite a high increase in rotavirus activity during the 8th year post-vaccination, a significant drop in rotavirus positive tests is seen from an annual average of 931 pre-vaccination to 102 during the 9th year post-vaccination (-89% [95% CI: 87%-91%]) (Figure 1). Reductions in nosocomial rotavirus infections occurred in parallel, from 139 cases pre-vaccination to 16 during the 9th year post-vaccination (-88% [83%-94%]). Finally, a 48% [47%-48%] reduction in acute gastroenteritis (AGE)-driven hospitalisation days is observed during the 9th year post-vaccination, from 11,752 days pre-vaccination to 6,161 days.



Conclusions

Sustained and continued decline in rotavirus in all-cause AGE-related hospitalisations and nosocomial infections is seen in young children 9-years after the introduction of rotavirus vaccination in Belgium.

Funding

GlaxoSmithKline Biologicals SA funded this study

ORAL PRESENTATION SESSION 05: INVASIVE COMMUNITY-ACQUIRED BACTERIAL INFECTIONS

ESP17-0288

MORTALITY FOLLOWING DISCHARGE IN CHILDREN ADMITTED TO A RURAL MOZAMBICAN HOSPITAL: DEVELOPMENT OF A PREDICTION MODEL TO IDENTIFY CHILDREN AT RISK OF DEATH

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Background

In low-income settings children have an increased risk of mortality following hospitalisation for any illness. However, insufficient evidence exists on how to tackle this important issue. We aimed to determine the burden of post-discharge mortality (PDM) and identify predictors of PDM in a rural Mozambican hospital

Methods

A review of paediatric deaths taking place at community level over the last 11.5 years was done through a demographic surveillance ongoing in a southern district of rural Mozambique. We used a morbidity surveillance system ongoing in Manhiça District Hospital to exclude hospital deaths. We determined PDM over three time-periods: 1st: 0-30 days, 2nd: 31-60 days and 3rd: 61-90 days following hospital discharge. We identified predictors of PDM and derived a simple prediction tool to identify children at high risk of death after discharge.

Results

Data from 18043 observations of 12842 children who had been hospitalised were reviewed. Mortality in the 1st period was 1.9% (338/18043), decreasing to 1.0% (181/18043) and 0.6% (118/18043), in the second and third periods. Overall PDM was 3.5% (637/18043). The derived multivariate prediction model included as predictors being an infant (children aged 1-5years HR 0.52); children aged >5years HR 0.52 compared to children <1year), severe malnutrition (HR 3.13), history of diarrhoea (HR 1.46), increased respiratory rate (HR 1.29), oral candidiasis (HR 2.22), oedema (HR 1.68), depigmented hair (HR 1.39), prostration (HR1.29), positive blood culture (HR 1.34), positive HIV status (HR1.67), absconding from hospital (HR 4.40) and having been transferred to another hospital (HR 5.47).

Conclusions

Mortality following discharge is a poorly recognised contributor to child mortality. A simple prediction tool that uses several easily collected variables can be used to identify children at high risk of death after discharge.

ORAL PRESENTATION SESSION 08: VACCINES - ELUCIDATING MECHANISMS

ESP17-0289

GENE EXPRESSION STUDIES OF NEISSERIA MENINGITIDIS USING THE DIRECT MULTIPLEXED DIGITAL DETECTION NANOSTRING NCOUNTER SYSTEM

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Background

Transcriptomic analysis of pharyngeal samples from carriers with different densities of *Neisseria meningitidis* (Nm) may help to predict whether the new protein based meningococcal vaccines might prevent transmission. RNA extraction and detection of Nm gene transcripts from *in vivo* mucosal samples, as for all bacteria at relatively low densities in such complex samples, is challenging. In this study we established a gene expression profiling platform using Nm cultures for a panel of 50 candidate vaccine and transmission-related genes using the NanoString nCounter system.

Methods

Nm strains were cultured on Colombia blood agar at 37°C for 16 hours in 5% CO₂, inoculated into broth media and, in order to modulate gene expression profiles, exposed to different temperatures (26°C, 37°C, 40°C) or to iron depleted and replete conditions. RNA was extracted using the RNeasy minikit (Qiagen). A multiplexed probes were designed to hybridise with the selected Nm genes. After overnight hybridisation, the mixture was purified and genes were counted using the nanoString digital analyser. Quality control was checked, and data analysed using Stata.

Results

There was tight concordance between duplicate signals for the gene panel. Exposure to heat, cold and iron depletion caused a range of modulation of gene expression across the panel. After exposure to 40°C, for the genes in the meningococcal vaccine Bexsero, expression of PorA and NadA was up-regulated whereas expression of fHbp and NHBA were down-regulated. Gene expression signals could be detected as low as one gene count.

Conclusions

These are the first reported data on meningococcal transcriptomics using the NanoString nCounter platform. We demonstrated the feasibility of gene expression profiling using this platform and the potential for studying Nm in clinical samples from the human upper respiratory tract

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 04: INVASIVE VIRAL INFECTIONS

ESP17-0308

CLINICAL FEATURES OF AN OUTBREAK OF BRAINSTEM ENCEPHALITIS AND ENCEPHALOMYELITIS ASSOCIATED WITH ENTEROVIRUS-A71 IN CATALONIA, SPAIN (2016)

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Background

The purpose of this study is to describe and analyse the characteristics and clinical management of an outbreak of brainstem encephalitis and encephalomyelitis related to Enterovirus (EV) infection in Catalonia (Spain), 2016.

Methods

Data were prospectively collected from all children with neurological symptoms associated with detection of RNA EV admitted to a reference children's hospital in Catalonia (Spain) between April and June 2016.

Results

Forty-four patients were included. Median age at disease was 27.8 months (p25-p75:19.1-37.3). Forty-one were diagnosed with brainstem encephalitis and 3 with encephalomyelitis according to WHO guidelines for HFMD management. Fever was the first symptom, and they progressively developed myoclonic jerks, tremor, ataxia and a minority cranial nerves involvement. A low rate of patients (8/44) had vesicular HFMD exanthema. Eight cases (14%) were admitted in intensive care unit, chiefly for observation purposes. Two patients were admitted with severe autonomic nervous system (ANS) dysfunction and cardiopulmonary failure, both were < 12 months-old. Thirty-three patients (58%) received IVIG depending on the severity of the disease (according to a stage-based approach) and 26 patients (46%) subsequently received steroids following previous experiences in other settings. All the most severe patients received treatment, so no conclusions can be drawn concerning its effectiveness. No patients receiving IVIG and/or steroids developed paresis/ANS dysfunction. All the patients but 3 with encephalomyelitis had a good clinical course and had no significant sequelae at day 30 from the onset of disease. No deaths occurred. EV-A71 was the unique type found in the patients of this series.

Conclusions

Despite initial concern about the severity of the symptoms, patients receiving treatment did not present any major complication and the majority had a good clinical course at 30-day follow-up.

ORAL PRESENTATION SESSION 12: HIV/AIDS

ESP17-0311

IMPAIRED RESPONSE TO MEASLES IMMUNIZATION IN HIV INFECTED CHILDREN: A MAJOR IMMUNIZATION CHALLENGE

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Background

HIV-infected children are known to have impaired response to immunizations, and are considered to be at greater risk of vaccine-preventable diseases. Determinants of poor vaccine response are not well characterized and current recommendations support revaccination of children.

Methods

A total of 120 HIV infected children integrated into the Spanish Cohort of HIV-infected Children (CoRISpeS) were included. Measles antibody titers were determined at baseline and after administration of a booster dose in unprotected participants. Clinical and immunovirological parameters were obtained from the Madrid Cohort Database and analyzed in relation to serologic response to the booster dose.

Results

We included 20 HIV-infected children (mean age 12 years [9-17], 61% female), 93.5% on ART and 80% virologically suppressed. The median CD4 T-cell count was 750 cel/mcl (34%). Mean CD4/CD8 ratio was 1.03 [0.68-1.4], and 48% had a CD4/CD8 ratio <1. Despite having completed the standard immunization schedule, at baseline only 62 patients (52%) showed protective titers against measles. Forty-one patients received a booster dose during the study, with a lack of response in ten (24%), and a final measles seroprotection rate of 73% at the end of study period. Patients with impaired response to measles showed lower CD4 counts (609 [479-960] vs 744 [625-863], p=0.005) and CD4/CD8 ratio (0.9 [0.5-1.2] vs 1.3 [0.9-1.6], p=0.003). The risk of impaired response was triple in patients with a CD4/CD8 ratio <1 (OD 3.2 [CI95%:1.4-7.4], p=0.002).

Conclusions

In our study, impaired response to measles immunization was common among HIV-infected children, highlighting the need of testing vaccine response in routine clinical practice. While optimal immunization strategies are defined, revaccination increases the rate of seroprotection. If further confirmed, a CD4/CD8 <1 could be used as a predictor of vaccine response in HIV-infected children.

ORAL PRESENTATION SESSION 11: ANTIBIOTIC STEWARDSHIP AND ANTIMICROBIAL RESISTANCE

ESP17-0323

PREVALENCE, CLINICAL MANIFESTATIONS AND RISK FACTORS FOR METHICILLIN-RESISTANT VS. METHICILLIN-SUSCEPTIBLE STAPHYLOCOCCUS AUREUS (MRSA VS. MSSA) IN-HOSPITAL

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Background

Common risk factors for MRSA infection include prior antibiotic use and hospitalization. Data on local epidemiology of MRSA in children in Israel are scarce. Our goal was to compare MRSA and MSSA prevalence, risk factors and clinical manifestations in children in southern Israel.

Methods

Our medical center is the sole hospital in southern-Israel. The medical files of all *S. aureus* in-hospital infections recorded from 2005 through 2015 were reviewed retrospectively. Infections included were skin and soft tissue infections (SSTI), osteoarticular infections (OAI) and other bacteremia/invasive infections (BI).

Risk factors evaluated for MRSA included age, ethnicity, burns, congenital insensitivity to pain with anhidrosis (CIPA), type of infection hospitalization in the pediatric intensive care unit (PICU) and mortality.

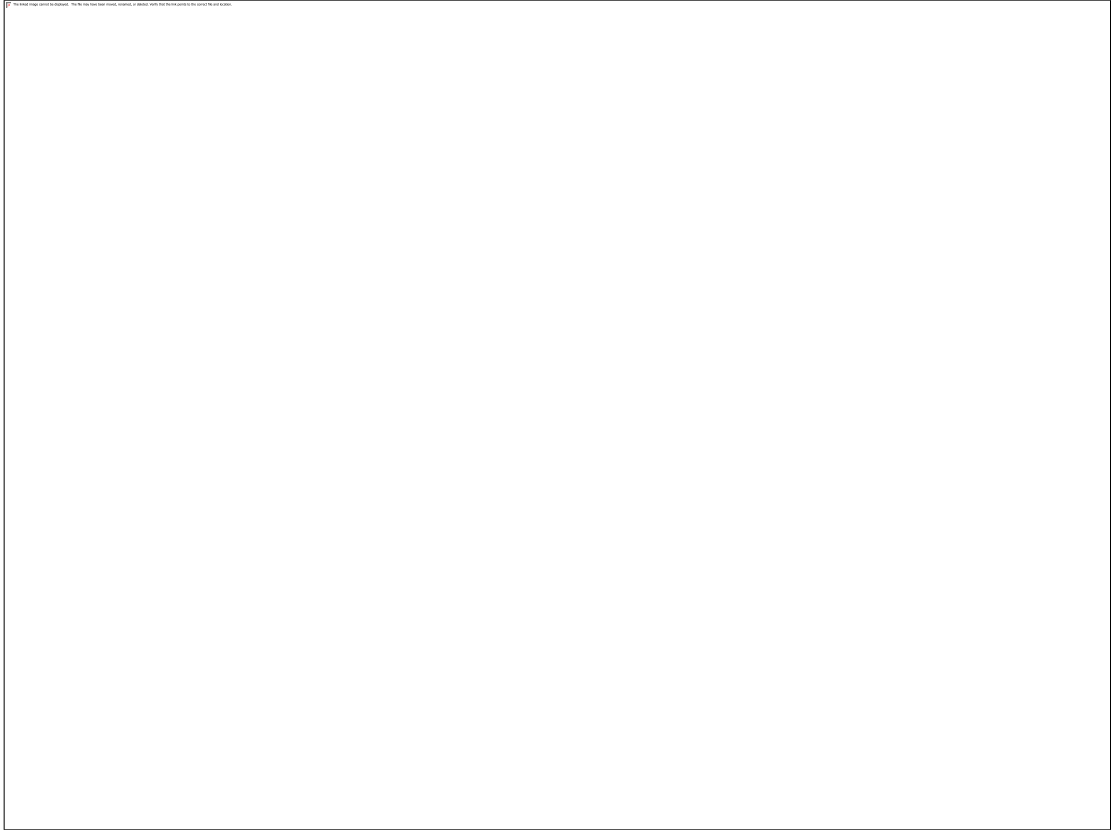
Results

1,062 infections (15% MRSA) were identified; 65% SSTI, 19% OAI (7% bacteremic, 12% non-bacteremic) and 16% BI.

MRSA was more frequent in <5y (18% vs. 13%), Bedouin-ethnicity (19% vs. 8%), burns (24% vs. 15%), CIPA (90% vs. 15%) and SSTI (17% vs. 12%). (**Figure**)

In BI, MRSA was more frequent in hospital-associated, PICU and mortality episodes.

Compared to MSSA, MRSA isolates were more frequently resistant to clindamycin (30% vs. 14%), erythromycin (34% vs. 15%), co-trimoxazole, tetracycline, rifampin, ciprofloxacin and gentamicin (4% vs. 0.5%, for all). All isolates were vancomycin susceptible.



Conclusions

MRSA is more commonly multidrug resistant and is associated with more severe morbidity than MSSA in our region. Our data should be used to better identify and treat children with MRSA disease.

ORAL PRESENTATION SESSION 02: PREGNANCY, CONGENITAL AND PERINATAL INFECTIONS

ESP17-0389

MOTHER'S OWN BREAST MILK IS A SOURCE OF MECA-POSITIVE STAPHYLOCOCCUS EPIDERMIDIS

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Background

mecA-positive *S. epidermidis* (MRSE) often causes late-onset sepsis in preterm neonates, possibly by translocation from gut, and more commonly colonizes breast milk (BM) of mothers of preterm than term neonates. We aimed to describe the extent of gut colonization of preterm neonates with MRSE genetically similar to those in mother's BM.

Methods

Stool from BM-fed preterm neonates (n=49; median (IQR) gestational age 28 (25-30) weeks, birth weight 1.15 (0.81-1.56) kg) hospitalized in neonatal intensive care unit and BM of their mothers were collected weekly in the first month of life and cultured onto mannitol salt agar. Staphylococci were identified by MALDI-TOF MS; *mecA* determined by PCR; genetic similarity identified by multilocus variable-number tandem-repeat analysis (MLVA).

Results

MRSE colonized gut of 45 (91.8%) neonates and BM of 38 (77.6%) mothers. MLVA-type genetically similar to mother's BM MRSE (BM-MRSE) colonized 27 (55.1%) neonates. BM-MRSE was the only or earliest gut-colonizing MRSE in 6 (12.2%) and 5 (10.2%) neonates, respectively. BM-MRSE (n=144 isolates) colonized gut later than other MRSE (n=301 isolates) (at 15 (10.75-22) vs 12 (7-19) days of life; p=0.007), but similar proportion of stool samples (33% (20-50%) vs 25% (20-40%)). MRSE comprised larger proportion of all *S. epidermidis* in neonates colonized compared with neonates not colonized with BM-MRSE (Figure). BM-MRSE (n=209 isolates) colonized BM at similar time as other MRSE in BM (n=151 isolates) (13 (7-17) vs 14 (8-19) days postpartum), but

larger proportion of BM samples (67% (33-75%) vs 33% (31-54%); $p=0.008$). BM-MRSE caused none of four *S.*

epidermidis late-onset sepsis.

Conclusions

In preterm neonates, mother's BM colonized with MRSE may enrich neonatal gut with MRSE. Prevention of colonization of mother's BM with MRSE could reduce gut colonization with MRSE in neonates.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 02: PREGNANCY, CONGENITAL AND PERINATAL INFECTIONS

ESP17-0390

GENETIC RELATEDNESS OF STAPHYLOCOCCUS EPIDERMIDIS COLONIZING GUT AND SKIN OF NEONATES AND BREAST MILK

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Background

Colonization of preterm neonates with staphylococci originating from breast milk (BM) has not been defined at the strain level. We aimed to determine genetic relatedness between *Staphylococcus epidermidis* colonizing BM and skin and gut of BM-fed neonates during the first month of life.

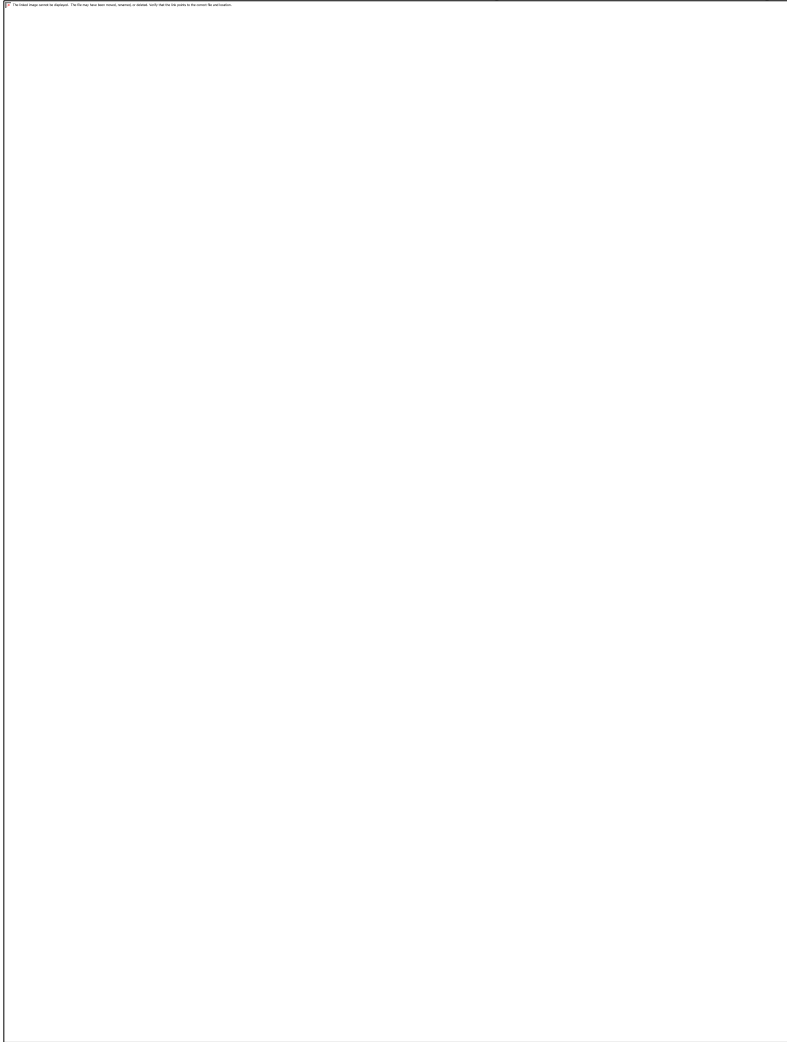
Methods

Stool and skin swabs of 20 healthy term and 49 preterm BM-fed neonates hospitalized in neonatal intensive care unit and BM from mothers were collected once a week and cultured onto mannitol salt agar. Staphylococci were identified by MALDI-TOF and genetic relatedness by multilocus variable-number tandem-repeat analysis (MLVA).

Results

S. epidermidis colonized skin of 48 (98%) and gut of 47 (95.9%) preterm neonates (median (IQR) gestational age 28 (25-30) weeks, birth weight 1.15 (0.81-1.56) kg), skin and gut of all term neonates, BM of all mothers. Genetically related MLVA-types in BM and gut were isolated from 95% (n=19) of term and 83.7% (41/49) of preterm neonates, genetically related MLVA-types in BM and on skin from all term, but 34.7% (n=17) of preterm neonates (p<0.001). Within the first month of life, significant change occurred only in the cumulative proportion of preterm neonates colonized in gut with MLVA-types genetically related to those in BM, increasing from 14.3% (7/49) to 83.7% (41/49) (p<0.001). Similarity between MLVA-types colonizing gut or skin and BM increased in

preterm, but decreased in term neonates during the first month of life (Figure).



Conclusions

Skin and gut of healthy BM-fed term neonates are colonized with *S. epidermidis* MLVA-types genetically related to those in mother's BM. In contrast, in early life BM-fed preterm neonates become colonized with *S. epidermidis* distinct from strains in BM, but gut is gradually enriched with strains genetically related to those in BM.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 10: VACCINE EFFECTIVENESS AND IMPACT

ESP17-0394

IMPACT OF PCV7/PCV13 SEQUENTIAL IMPLEMENTATION ON COMMUNITY-ACQUIRED ALVEOLAR PNEUMONIA IN YOUNG CHILDREN, AS AN INDIRECT MEAN OF DETERMINING THE ETIOLOGIC ROLE OF STREPTOCOCCUS PNEUMONIAE

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Background

Community-acquired alveolar pneumonia (CAAP) is mostly considered a bacterial disease, *Streptococcus pneumoniae* (Pnc) being the main pathogen. However, since a multitude of viral/bacterial potential pathogens are detected, it is unclear to what extent Pnc is the single most important pathogen. We attempted to determine whether comparing the impact of PCV7/PCV13 implementation on CAAP with that on invasive pneumococcal disease (IPD) will help to clarify this question.

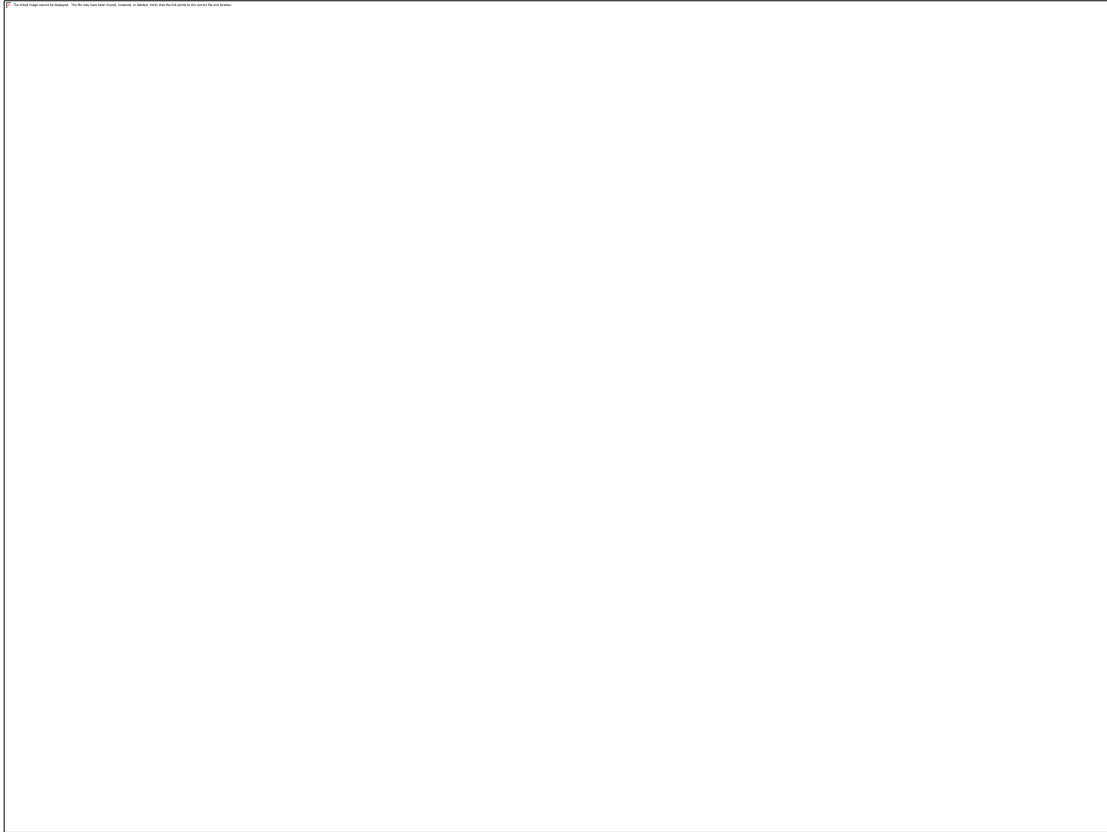
Methods

Two ongoing population-based active surveillance projects in children <5 years initiated in Jul-2004: 1) Nationwide IPD (Vaccine 32;3452, 2014); 2) All hospital CAAP visits in southern Israel (Vaccine 33:4623, 2015). PCV7/PCV13 were introduced in Jul-2009 and Nov-2010, respectively, at 2, 4, 12 m (2+1 regimen) rapidly achieving > 90% 3-dose coverage.

Incidences were calculated using population <5 years old in southern Israel and nationwide. Incidence rate ratios (IRRs) post PCV were measured, and years 2014-2016 were compared to 2004-2008 (pre-PCV7).

Results

9,679 CAAP visits to the Pediatric Emergency Room were recorded; 6,449 (66.6 %) were hospitalized. Nationwide, of 3,076 IPD episodes, 1,072 (34.9%) were diagnosed as bacteremic pneumonia. CAAP hospital visits IRR dynamics resembled those of bacteremic pneumonia IPD (**Figure-1A**). IRRs of ambulatory hospital visits were similar to those of non-pneumonia IPD, while those of hospitalized children significantly increased during PCV7 but then decreased during PCV13, albeit to a significantly lower extent than outpatients (**Figure-1B**). This pattern remained even after selecting only those with $\geq 20,000$ peripheral WBC/mm³ (**Figure-1C**).



Conclusions

Our findings suggest a major role of Pnc in CAAP resulting in hospital visits of young children. It is also suggested that the additional PCV13 serotypes, non-PCV13 serotypes and potentially other pathogens are more important in hospitalization compared with ambulatory episodes.

ORAL PRESENTATION SESSION 08: VACCINES - ELUCIDATING MECHANISMS

ESP17-0411

IMMUNOLOGICAL RESPONSES TO MF59-ADJUVANTED INFLUENZA VACCINE IN YOUNG CHILDREN AND ADULTS

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Background

Adjuvanted influenza vaccines in children have been shown to be more effective in preventing influenza than non-adjuvanted vaccines. In this study we explored the gene expression profile, immune response and reactogenicity following immunisation with MF59-adjuvanted trivalent influenza vaccine (MF59-ATIV) in children and adults.

Methods

Ninety healthy children aged 13 to 24 months and thirty adults were enrolled in the 2015-2016 influenza season in the United Kingdom. Children received 2 doses of MF59-ATIV (Fluad®), and adults received 1 dose. Blood samples were taken at baseline, day 1, 3 and 28 post-dose 1 and 2 (children only) to measure differential gene expression, haemagglutination inhibition (HAI) titres and innate immune response. Reactogenicity data were collected from 3 days pre-vaccination to day 3 post-vaccination.

Results

71 children and 28 adults provided blood samples and reactogenicity data for analysis. At 28 days after final vaccine dose, 98% of children and adults had geometric mean HAI titres $\geq 1:40$ to both influenza A vaccine strains (H3N2, H1N1). 80% of children and 57% of adults had geometric mean HAI titres $\geq 1:40$ for the influenza B vaccine strain. There were transient changes in the frequency of neutrophils, monocytes and dendritic cells, and increased frequency and activation of CD14+CD16+ monocytes in both children and adults. Low rates of local and systemic adverse events following vaccination were observed. We will present early gene signatures that relate to common innate and adaptive immune pathways following immunisation with MF59-ATIV.

Conclusions

The MF59-ATIV was immunogenic, resulted in innate immune cell activation and had an acceptable reactogenicity profile amongst the participants in this trial. Correlations of these results with transcriptomic data will provide insight in to the mechanism of action of the MF59 adjuvant.

Clinical Trial Registration (Please input N/A if not registered)

Clinicaltrials.gov NCT02529904

ORAL PRESENTATION SESSION 07: VACCINE IMPACT & RELATED EPIDEMIOLOGY

ESP17-0416

SHEDDING OF ROTATEQ® VACCINE STRAINS UP TO 8 MONTHS OF AGE IN HEALTHY INFANTS

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Background

Finland adopted vaccination with live reassortant rotavirus vaccine RotaTeq® on a three dose schedule at the age of 2, 3 and 5 months as a part of National Immunization Program in 2009. Shedding of RotaTeq® vaccine strains and also prolonged (>14 days) shedding have been previously reported but not extensively studied.

Methods

This study began in November 2015. Children received RotaTeq® vaccine according to Finnish vaccination schedule in their welfare clinics. At least 2 stool samples were collected: after the 1st dose of vaccine and the second before the 3rd dose of the vaccine. Further stool samples (1.5 and 3 months from the 3rd dose) were obtained if the previous sample was detected RV positive. Stool samples were studied with RT-PCR for RV VP7, VP4 and VP6, and positive amplicons were sequenced.

Results

Two or more stool samples were obtained from 252 (83.7 %) of 301 recruited children, and 49 (16.3 %) gave only one sample. Of 301 children, 273 (90.7 %) were shedding RotaTeq® vaccine strain up to 10 days after the 1st dose of the vaccine. Vaccine virus was detected in 54 (21.4 %) of 252 children before the 3rd dose of the vaccine. Of these 54 children, 11 (20.0 %) continued to shed 6 weeks after the 3rd dose, and in 2 cases RotaTeq® strain was detected in stools at the age of 8 months. RotaTeq® G1 was detected in 38 (70.4 %) of 54 cases which were positive before the 3rd dose.

Conclusions

Prolonged shedding of RotaTeq® vaccine strains is common in healthy children. In long-term shedders the vaccine virus infection may start after the first dose. The clinical significance of prolonged shedding is not known.

Clinical Trial Registration (Please input N/A if not registered)

Eudra-CT 2014-004252-60

ORAL PRESENTATION SESSION 03: VACCINE SAFETY

ESP17-0426

A POST-MARKETING EVALUATION OF THE SAFETY OF THE TRIVALENT AND QUADRIVALENT FORMULATIONS OF LIVE ATTENUATED INFLUENZA VACCINE (LAIV) IN CHILDREN AND ADOLESCENTS WITH HIGH-RISK CONDITIONS

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Background

This study assessed the safety of live attenuated influenza vaccine (LAIV) among children and adolescents aged 2–17 years with high-risk medical conditions in the United Kingdom (UK), as defined in the UK's National Health Service annual flu letter in season 2013–2014 (trivalent LAIV; LAIV3) and 2014–2015 (quadrivalent LAIV; LAIV4).

Methods

This was a post-marketing, observational, prospective cohort study. LAIV recipients were identified from the Clinical Practice Research Datalink (CPRD), which maintains a database of anonymised longitudinal medical records from UK primary care. These records were linked to the Hospital Episode Statistics (HES) database.

Incidence rates of all-cause hospitalisations were monitored through 42 days and 6 months following LAIV administration and compared with rates observed among inactivated influenza vaccine (IIV) recipients and unvaccinated controls, matched by high-risk condition, age, healthcare utilisation and region. Incidence rates of hospitalisation for lower respiratory events (LRE) were also analysed.

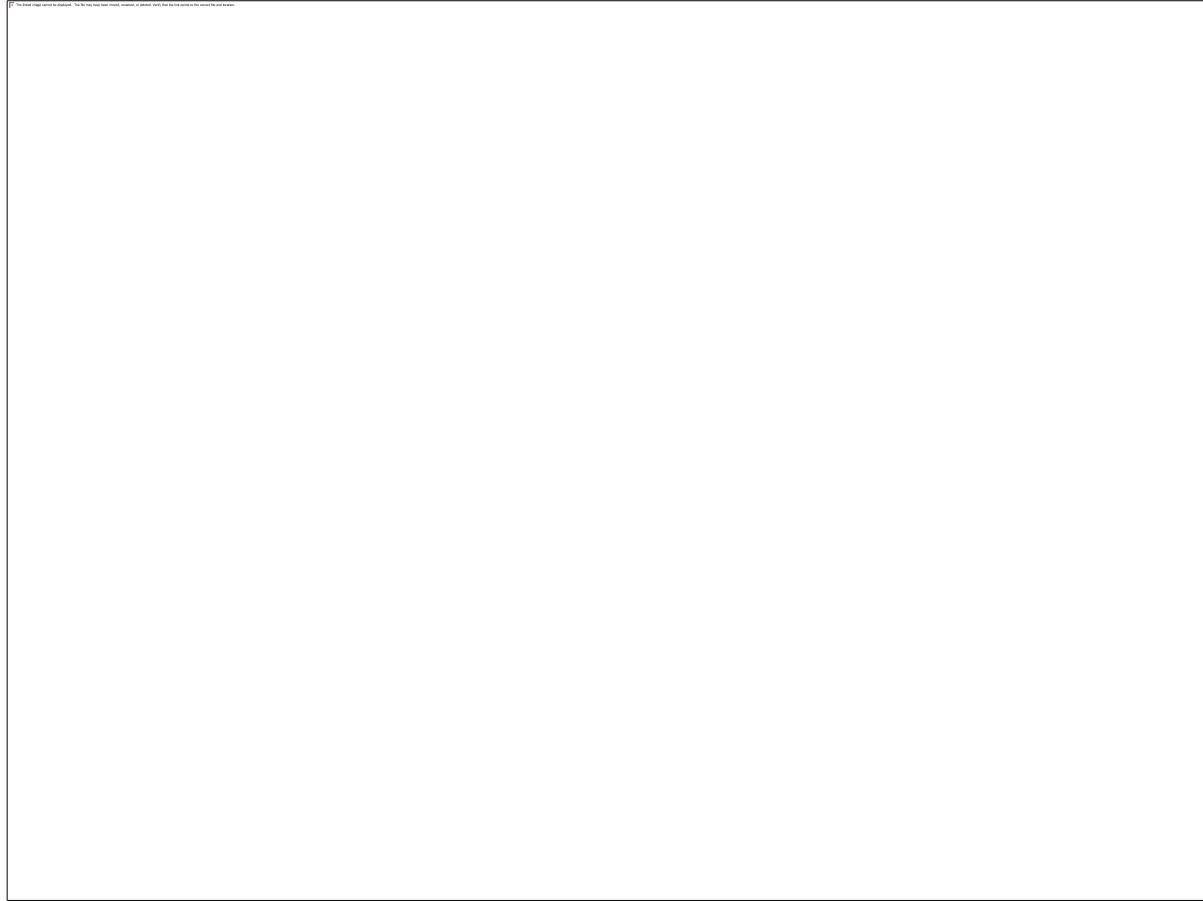
Results

A total of 4718 and 6745 eligible LAIV recipients were retained for analysis in 2013–2014 and 2014–2015, respectively. Most recipients (n=8533; 74%) presented with asthma/chronic respiratory disease.

The risk of hospitalisation after LAIV administration did not vary significantly versus matched unvaccinated controls, with similar risk with LAIV3 in 2013–2014 and LAIV4 in 2014–2015.

The risk of hospitalisation after LAIV appeared lower than after IIV. However, this finding should be interpreted with caution, as IIV recipients may present with more severe underlying high-risk conditions, resulting in residual

confounding that could not be fully accounted for in this analysis.



Conclusions

This study did not identify any increased risk of hospitalisation after administration of LAIV3 and LAIV4 in children and adolescents aged 2–17 years with high-risk medical conditions.

Study supported by AstraZeneca.

Clinical Trial Registration (Please input N/A if not registered)

ORAL PRESENTATION SESSION 09: PARASITIC AND MYCOBACTERIAL INFECTIONS

ESP17-0443

WORSENER ANEMIA IN MOZAMBICAN CHILDREN AFTER TREATMENT WITH ARTESUNATE AND OTHERS ANTIMALARIAL REGIMES

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Background

Parenteral artesunate is recommended as first-line therapy for severe malaria. While its efficacy is established, data on safety are scarce among African children. This study aims to determine whether the use of artesunate in children with malaria is associated with an increased risk of delayed anaemia and higher need of blood transfusions

Methods

We conducted a retrospective analysis for the period 2001-2015 using the outpatient and inpatient morbidity databases, and linking them with the demographic surveillance system ongoing in the Manhiça district Hospital, in Mozambique. Recurrent hospital admissions or outpatient visits after a documented treatment for malaria were analysed to determine whether the use of parenteral artesunate is associated with an increased risk of anaemia or blood transfusion. Children were classified in different groups according to treatment received: oral artemisinin (OART), intravenous artesunate (IVART) or others (No OART-IVART).

Results

Recovery of normal hematocrit levels after malaria episode was analysed. No statistical differences were found although seemed to be slower in IVART group (Figure 1). Children treated with artesunate presented a prevalence of hemolysis episodes of 7.14 % and no statistical differences were found between groups. We found an Incidence rate of blood transfusions (episodes /1000 Children-month at risk) of 25.04 in IVART group with no statistical differences between groups.



Conclusions

No statistical differences between treatment groups in number of hemolysis episodes was found.

Recovery of normal hematocrit levels after malaria episode is slower in children treated with intravenous artesunate, as compared to those treated with quinine.

Even if there were no statistical differences, the group receiving intravenous artesunate received more frequently blood transfusions after their malaria episodes

ORAL PRESENTATION SESSION 01: BACTERIAL VACCINE MODELLING AND IMPACT

ESP17-0444

GENOMIC COVERAGE ESTIMATES OF MENINGOCOCCAL GROUP B VACCINE FOR SEROGROUP B AND NON-SEROGROUP B MENINGOCOCCAL DISEASE ISOLATES IN THE UNITED KINGDOM

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Background

Measures to prevent endemic group B invasive meningococcal disease (IMD) with conjugate polysaccharide vaccines were unsuccessful due to poor immunogenicity and concerns about autoimmunity. Alternative vaccine candidates include sub-capsular proteins, universally expressed in all meningococci studied, which could provide broad coverage against multiple clonal complexes (cc). Since the 4CMenB vaccine Bexsero is not serogroup B specific, this study aims to estimate genomic coverage of major serogroups causing disease in the UK.

Methods

All culture-confirmed IMD cases from the UK between 2010/11 to 2015/16 (n=3010) were WGS and publicly-available on pubMLST.org/neisseria. BASTs were analysed using the Bacterial Isolates Genome Database (BIGSdb) and embedded tools. Statistical analyses were performed using R v3.2.4. Bexsero vaccine contains BAST-1 (fHbp 1;NHBA 2;NadA 8;PorAVR1 7-2;PorAVR2 4). BAST does not provide information on gene expression or cross-protection.

Results

The proportion of isolates that exactly matched at least one antigen in BAST-1 were 30.8-38.8% serogroup B isolates (predominantly cc41/44), 0.2% serogroup W isolates (cc11), 15.4% (2010/11) and 14.3% (2014/15) (cc32) serogroup C isolates but no matches in 2011/12 and 2015/16 and 1.3-9.2% serogroup Y isolates. By including matches to at least one exact or cross-reactive antigen, serogroup B matches increased to 68.0-79.7%, serogroup W increased from 51.9% (2010/11) to 91.7% (2015/16), serogroup C increased from 30.8% (2010/11) to 90.5% (2014/15) but serogroup Y had the lowest coverage estimates from 1.4-14.5%.

Conclusions

Although Bexsero is licensed for serogroup B IMD, vaccine antigens can be present on all studied meningococci, independent of capsular type. There are limited immunogenicity studies of Bexsero coverage of non-B serogroups, but based on genomic analysis of vaccine antigens, Bexsero could afford protection against serogroup W and C IMD through cross-protective immune responses.

Clinical Trial Registration (Please input N/A if not registered)

ORAL PRESENTATION SESSION 11: ANTIBIOTIC STEWARDSHIP AND ANTIMICROBIAL RESISTANCE

ESP17-0464

PEDIATRIC PATIENT CARE: WHAT IS THE VALUE OF EXTENDED MULTI-PLEX RESPIRATORY VIRUS MOLECULAR TESTING?

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Background

Multiplex real-time RT-PCR respiratory viral studies have added significant cost to healthcare. The benefits are questionable if not associated with improved outcomes as measured by duration of hospitalization, reduced antibiotic prescription and appropriate reduction and optimization in infection control practices. The London Health Sciences Microbiology Laboratory introduced an abbreviated testing algorithm during the respiratory season of 2015 to reduce costs.

Methods

We performed a retrospective cohort study comparing the outcomes of the abbreviated testing algorithm to the full virus panel algorithm. We assessed the following; length of stay (LOS), days of antimicrobial therapy (DOT) and duration of infection control (IC) for 234 pediatric patients admitted. One hundred and twelve patients were tested using the Seegene Anyplex™ II RV16 and one hundred and twenty two were tested using the Seegene Allplex™ Respiratory Panel 1, 2, 3.

Results

Patients charts were reviewed and data collected for the full panel review audit (November 1st –December 15th 2015) and were compared to data collected for the abbreviated testing algorithm (December 16th 2015 to January 31st 2015). In the abbreviated cohort 18.9% and 5.7% received additional testing with panels 2 and 3 respectively.

	Seegene Anyplex™ II RV16	Seegene Allplex™ Respiratory Panel 1, 2, 3	P-value
LOS	9.16	6.48	0.29
DOT	3.48	3.64	0.8
IC hours	133.6	125.2	0.81
Age (years)	4.28	3.51	0.093
Comorbid conditions	1.20	1.29	0.24

Conclusions

Results showed that there were no statistically significant differences, the patients in the abbreviated cohort received prescribed antibiotic treatment 4.4% longer and the LOS was reduced by 2.68 days (P=0.29). We conclude from this data that extended panel viral molecular testing does not improve pediatric patient care, while an abbreviated testing protocol represents a safe, cost effective alternative.

ORAL PRESENTATION SESSION 04: INVASIVE VIRAL INFECTIONS

ESP17-0470

THIRTY-YEAR TRENDS IN ADMISSION RATES FOR CHILDHOOD ENCEPHALITIS IN ENGLAND AND IMPACT OF IMPROVED DIAGNOSTICS AND MEASLES AND MUMPS VACCINATION-A POPULATION BASED OBSERVATIONAL STUDY

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Background

Encephalitis is a serious neurological disorder, yet data on admission rates for all-cause childhood encephalitis in England are lacking. We aimed to estimate admission rates for childhood encephalitis in England over 33 years, to describe trends in admission rates and to observe how these have varied with the introduction of vaccines and improved diagnostics

Methods

A retrospective analysis of hospital admission statistics for encephalitis for individuals aged 0-19 years was conducted using the English national Hospital Inpatient Enquiry (HIPE, 1979 -1985) and Hospital Episode Statistics (HES, 1990 -2011). Annual age-specific and age standardised admission rates in single calendar years and admission rate trends for specified aetiologies in relation to introduction of polymerase chain reaction (PCR) testing and measles-mumps-rubella (MMR) vaccination.

Results

There were 16571 encephalitis hospital admissions (average hospital admission rate (AR): 5.97/100,000/year (95%CI 5.06-6.82)). Hospital ARs declined from 1979-1994 (annual percentage change, APC, 3.30%; 2.88%-3.66%; $p < 0.0001$) and increased between 1995 and 2011 (APC=3.30%; 2.75%-3.85%; $p < 0.0001$). Admissions for measles and mumps encephalitis decreased by 35- and 60-fold respectively following the introduction of the two-dose MMR vaccine. Hospital ARs for encephalitis of unknown aetiology have increased post-PCR.

Conclusions

Hospital admission rates for all-cause childhood encephalitis in England are increasing. Admissions for measles and mumps encephalitis have decreased substantially. The numbers of encephalitis admissions without a specific diagnosis are increasing despite availability of PCR testing, indicating the need for strategies to improve aetiological diagnosis in children with encephalitis.

ORAL PRESENTATION SESSION 11: ANTIBIOTIC STEWARDSHIP AND ANTIMICROBIAL RESISTANCE

ESP17-0481

CHARACTERIZATION OF MYCOBACTERIUM TUBERCULOSIS MDR/XDR GENES USING NEXT-GENERATION SEQUENCING FROM UKRAINE CLINICAL ISOLATES

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Background

The incidence of multi-drug resistant *Mycobacterium tuberculosis* (MTB) in children generally reflects drug resistance patterns in the adult population. In the Ukraine, MTB is becoming increasingly drug resistant. Next generation sequencing (NGS) is an important tool for identifying antibiotic resistance mutations. Extensively drug resistant tuberculosis (XDR-TB) is increasing, and NGS may help clarify the extent of XDR-TB in the Ukraine. NGS was used to characterize XDR genes from 75 MTB clinical isolates collected from the Ukraine including several MDR-TB strains.

Methods

Clinical isolates grown in Löwenstein–Jensen medium were inactivated in PrimeStore Molecular Transport Medium[®] and shipped from Kiev, Ukraine to San Antonio, Texas, USA at ambient temperature. Total DNA from MTB was extracted and subjected to NGS using the Illumina MiSeq. Mutational analysis of fluoroquinolone (FQ) resistance genes *gyrA/B* and second-line antibiotic resistance genes *16s/eis* was performed using LaserGene(DNAStar).

Results

Of 75 MTB strains, 24(32%) were confirmed as XDR. FQ resistance (*gyrA/B*) was noted in 44 strains (59%), and resistance to second-line antibiotics (*16s/eis*) was observed in 37(49%) of strains. The majority of FQ resistance was observed in the *gyrA* at residues 88, 90, 91, 94, and five isolates (11%) contained resistance mutations in the *gyrB* gene. The most common second-line antibiotic resistance mutation was observed at A1401G of the *16s* gene (49%), but less common *16s* and *eis* resistance mutations, including mixed-strains, were identified in 19(51%) strains.

Conclusions

Using NGS, many unique mutations were identified that would have been missed by other techniques. Since XDR-TB was identified in 32% of this high risk population other adult populations may harbor XDR-TB as well. These data suggest that children may become increasingly exposed to drug resistant MTB in their households and communities.

ORAL PRESENTATION SESSION 07: VACCINE IMPACT & RELATED EPIDEMIOLOGY

ESP17-0541

SEVERE AND COMPLICATED VARICELLA AND ASSOCIATED GENOTYPES POST INTRODUCTION OF A ONE DOSE VARICELLA VACCINE PROGRAM

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Background

Active surveillance of severe varicella remains an important mechanism to monitor disease in a single dose varicella immunisation program. The aim of this national, prospective observational study was to describe severe hospitalised varicella, associated varicella genotypes and determine any associations with increased severity of disease.

Methods

Nurses in five tertiary paediatric hospitals in Australia (NSW, Victoria, SA, WA, QLD) actively recruited children admitted with varicella for the Paediatric Active Enhanced Disease Surveillance (PAEDS) project. Swabs were taken from any lesions for genotyping. Associations with increased severity (intensive care management and/or hospital admission duration >7 days) were assessed.

Results

239 children with confirmed varicella were enrolled (August 2007-December 2015) including 34 (14%) that met the definition for severe disease. Median age at hospitalisation was 4 years (1-15 years). One third of admitted children (78/239, 33%) were less than 18 months of age at admission and ineligible for funded varicella vaccine in Australia. Of the remaining 161 children age-eligible for vaccination, 35% (n=56) had evidence of prior varicella vaccination. For children older than 18 months, 11% (6/56) of vaccinated children were classified as severe compared with 20% (19/95) for non vaccinated children; $p=0.138$). Among children admitted with varicella, 66 (27.6%) had an underlying immunodeficiency. Genotype results were available for 82 children (34%) with the majority identified as European origin (Clade 1,2,3; n=51) or Asian origin (Clade 4,5; n=29). More cases with genotypes of European origin were classified as severe (9/51, 15.7%) compared to those of Asian origin (1/29, 3.4%; $p=0.085$).

Conclusions

Severe varicella continues to occur despite successful introduction of a single dose varicella program. Genotypes of European origin predominated and may be associated with more severe disease in hospitalised cases.

ORAL PRESENTATION SESSION 10: VACCINE EFFECTIVENESS AND IMPACT

ESP17-0560

DYNAMICS OF ANTIBIOTIC PRESCRIPTION RATES FOR CHILDREN

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Background

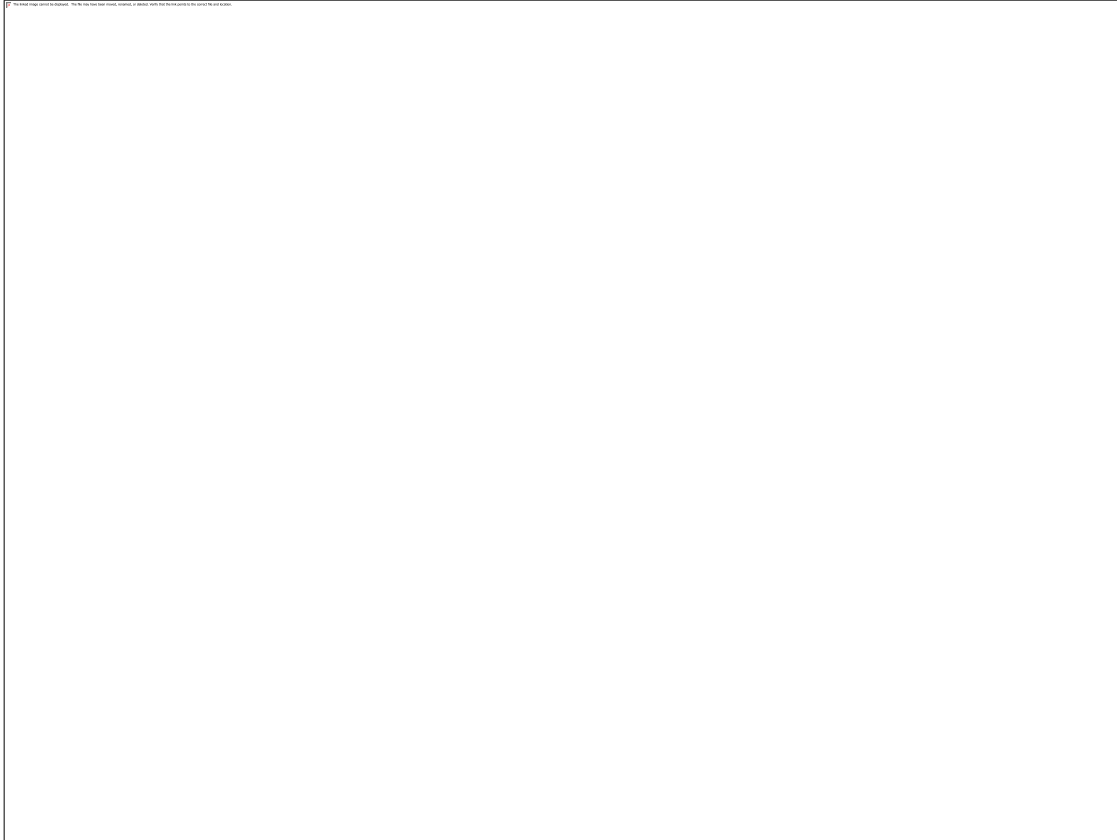
Acute respiratory infections (ARI), the leading cause of morbidity and antibiotic prescription in children <2y, declined post pneumococcal conjugate vaccine (PCV) introduction. Antibiotic prescription rates in young children in our region declined before PCV introduction (Barkai EID, 11:869, 2005), but the decline was expected to be enhanced following PCV7/PCV13 implementation. We conducted a community-wide study to determine dynamics of antibiotic prescriptions for children <2y post-PCV7/PCV13.

Methods

From Jul-2005 through Jun-2015, 75% of the all children <2y in southern Israel were insured by the Clalit Health Maintenance Organization (HMO) (n=21,956 and n=29,117, 2005 and 2015, respectively). All prescriptions issued at this HMO were recorded and yearly incidence rates were calculated by antibiotic categories. PCV7/PCV13 were introduced in Jul-2009/Nov-2010, respectively and rapidly reached ~90% coverage of ≥3 doses.

Results

Overall, 555,521 prescriptions were issued. Following PCV7/PCV13, a significant reduction in all-antibiotic prescriptions rates (per 1000) was observed (2565, 2005-06 to 1858, 2014-15) (**Figure**). The most commonly used were beta-lactams: amoxicillin (67% of prescriptions), which declined by 28%; followed by amoxicillin-clavulanate (13%, 41% decline) and 2nd/3rd generation cephalosporins (9%, 28% decline). Clarithromycin, erythromycin, clindamycin and trimethoprim-sulfamethoxazole rates declined already pre-PCV implementation to near-negligible rates. Azithromycin increased significantly by 13%. All-antibiotic rate reduction during 2010-11 to 2014-15 was significantly greater than during 2005-06 to 2010-2011 (9% vs. 20%, P<0.001).



Conclusions

A marked and significant reduction in antibiotic prescription for children <2y was seen following PCV13 implementation (a period representing also 3-6 years post any PCV implementation). Although significant reductions were also seen during the years between PCV7 and PCV13, the simple continuation of previously observed trends during this period cannot be ruled out.

ORAL PRESENTATION SESSION 03: VACCINE SAFETY

ESP17-0580

RISK OF HOSPITALISATION WITH FEVER FOLLOWING MENB VACCINATION

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Background

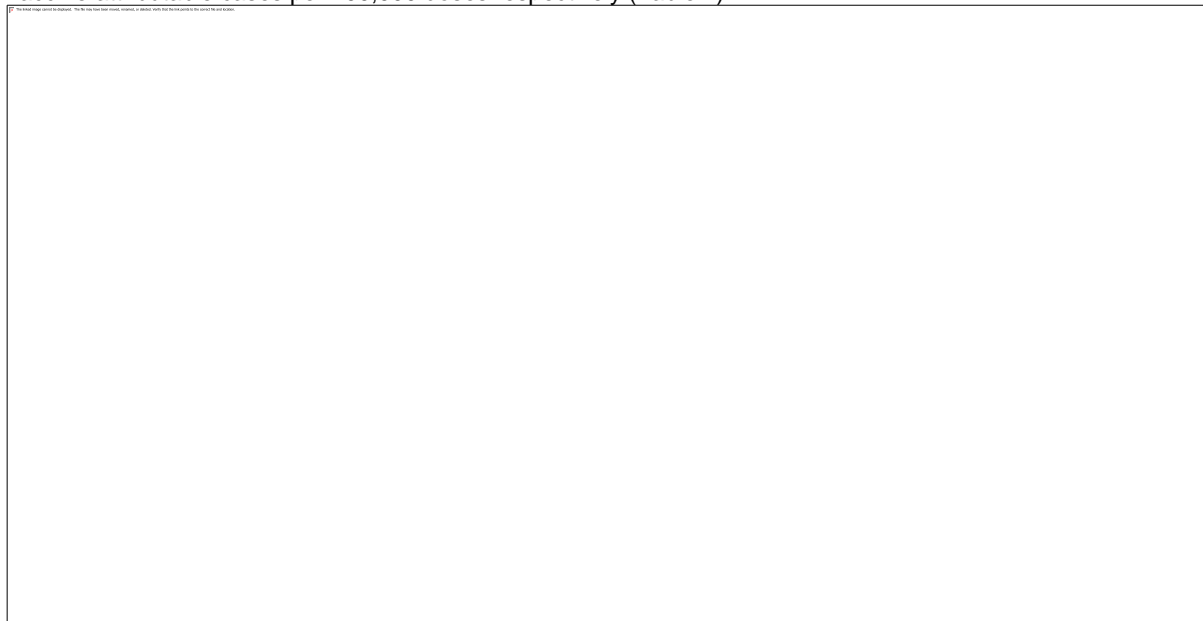
MenB vaccine (Bexsero®) was introduced into the UK childhood schedule in September 2015 at 8 and 16 weeks, and 12-13 months. Fever was a known side-effect, leading to three doses of prophylactic paracetamol being recommended following vaccinations at 8 and 16 weeks. A retrospective study was conducted to investigate increased hospital admissions for fever in infants using the self-controlled case series analysis (SCCS) method.

Methods

Fever hospitalisations for children aged under one between September 2014 and June 2016 were extracted from Scottish Morbidity Records (SMR). A fever admission was identified using International Classification Disease 10 (ICD10) code R50. Records for vaccinations scheduled at 8, 12 and 16 weeks were matched with fever cases. Risk periods were defined as the three days following each dose, and SCCS was conducted, enabling calculation of attributable risk.

Results

Post MenB vaccine introduction, there was a greater increased risk of admission after 8 week (RI, 10.78; 95% CI, 8.31-14.00) and 16 week (RI, 9.80; 95% CI, 7.10-13.62) vaccines, with a smaller increase after 12 week vaccines (RI, 2.20; 95% CI, 1.27-3.82), compared to pre-introduction. This equates to 146.2, 13.0 and 76.2 vaccine attributable cases per 100,000 doses respectively (Table 1).



Conclusions

There is a marked increased risk of admission to hospital with fever within three days of the routine childhood immunisation schedule at 8 and 16 weeks following the introduction of MenB vaccine. Communication and guidance for parents and health professionals on the importance of the use of prophylactic paracetamol may need reinforced.

ORAL PRESENTATION SESSION 10: VACCINE EFFECTIVENESS AND IMPACT

ESP17-0588

ASSOCIATION BETWEEN RESPIRATORY VIRAL INFECTIONS AND MENINGOCOCCAL CARRIAGE IN BRISTOL SCHOOL STUDENTS IN 2014-2015

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Background

Studies have shown an association between respiratory viral infections and meningococcal disease. Despite *Neisseria meningitidis* (*Nm*) being found as commensal in 10% of people, there have been no direct studies looking at *Nm* carriage association with respiratory viral infections. We aim to investigate the relationship between respiratory viruses and *Nm* detection rates from pharyngeal swab samples collected from healthy school students.

Methods

Pharyngeal swabs were collected into 1.5mL STGG broth from school students aged 15–19yrs as part of a longitudinal cohort study (6 swabs taken monthly) during the winter of 2014/15 in Bristol, UK. We have analysed 187 pharyngeal samples per visit (to date), using real time PCR methods for *Nm* (*sodC* gene) detection and for the presence of a panel of 11 viruses: adenovirus, influenza A viruses (H1N1/09, seasonal H1N1 and H3N2), influenza B, respiratory syncytial virus, human metapneumovirus, rhinovirus (RhV), parainfluenza virus types 1-3 and enterovirus.

Results

Table 1. Viral association with *Nm* carriage for all visits

	<i>Nm</i> +	<i>Nm</i> -	Totals
Virus+	14 (1.2%)	76 (6.8%)	90 (8%)
Virus-	78 (7%)	954 (85%)	1032 (92%)
Totals	92 (8.2%)	1030 (91.8%)	1122

Viral infection was positively associated with *Nm* carriage at the same time point (Table 1), Chi square $p=0.0144$. In the viral panel, RhV had the highest prevalence (5.9%) and was associated with *Nm* carriage, Chi square $p=0.0178$. No association was found between viral infection and *Nm* carriage either 1 or 2 months later.

Conclusions

Respiratory viral infection is associated with *Nm* carriage. This helps explain the seasonality of *Nm* disease, which might be reduced by effective vaccines against viral infections.

Acknowledgements

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Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 07: VACCINE IMPACT & RELATED EPIDEMIOLOGY

ESP17-0610

VACCINE ASSOCIATED PARALYTIC POLIOMYELITIS (VAPP) IN INDIA: ANALYSIS OF BURDEN AND TRENDS OVER TIME.

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Background

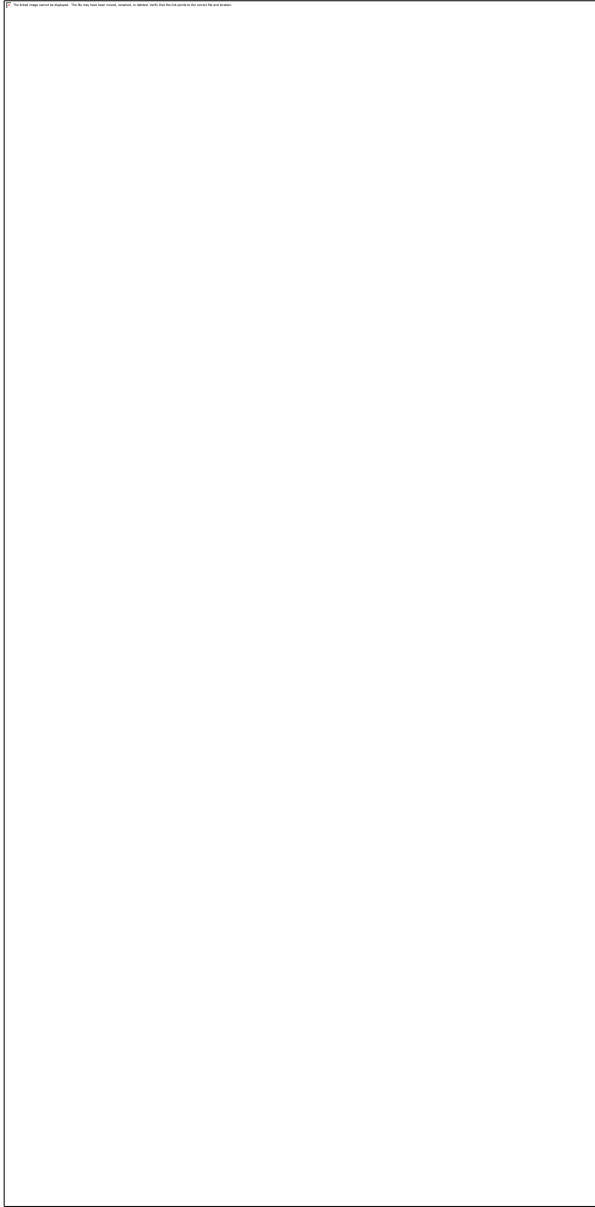
Extensive use of Oral Polio Vaccine (OPV) has eliminated natural poliomyelitis in India, but it raises safety concerns about Vaccine Associated Paralytic Poliomyelitis (VAPP). This study was undertaken to calculate the (i)burden of VAPP-compatible cases in India, (ii)trend over time, (iii)comparison with other South East Asian countries, and (iv)impact after certification of polio eradication.

Methods

Data on VAPP in India is neither available in the public domain, nor on request. Indirect estimates can be made by calculating VAPP-compatible cases, defined as cases of acute flaccid paralysis having a single strain of OPV virus, and the absence of any wild-polio virus strain. Weekly Vaccine Preventable Disease Surveillance Bulletins published by the World Health Organization for the South-East-Asia Region(WHO-SEAR) were examined from 1997 to present. Data for 2016 was calculated by annualizing data available upto 03/October/2016 (week 39). Data on acute flaccid paralysis surveillance was obtained from the same bulletins.

Results

The number of VAPP-compatible cases in India increased progressively from 2004 to 2011(Fig1A), but showed an apparent steady decline thereafter. The proportion of P2 cases increased dramatically after 2009(Fig1A). VAPP compatible cases in India far outnumber similar cases across all other South East Asian countries, which show a low, steady number for the past 18 years(Fig1B). The apparent decline in VAPP-compatible cases in India after certification of polio eradication, mirrors the non-polio AFP rate(Fig1C), hence reflects declining surveillance intensity, rather than a real decline in cases.



Conclusions

The burden of VAPP-compatible poliomyelitis in India is unacceptably high, increased over time and is out of proportion to all other countries in the region. Declining surveillance after certification of eradication, raises additional concerns.

Clinical Trial Registration (Please input N/A if not registered)

Not applicable

ORAL PRESENTATION SESSION 01: BACTERIAL VACCINE MODELLING AND IMPACT

ESP17-0616

EVOLUTION OF THE HOSPITALIZED PNEUMOCOCCAL DISEASE INCIDENCE FOLLOWING THE INTRODUCTION OF PNEUMOCOCCAL CONJUGATE VACCINATION IN SPAIN

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Background

Pneumococcal disease (PD) is a prevalent disorder, causing higher number of hospitalizations to Health Systems. This study was designed to analyse historical trends in hospitalized PD incidence in Spain before and after the introduction of pneumococcal vaccination in children with conjugate vaccines (VCN7 in 2001, VCN10 in 2009 and VCN13 in 2010, sharing the latest more than 90% of the market).

Methods

Retrospective study. Hospitalized PD (overall, invasive and non-invasive) data over the period 2000 to 2014 were obtained from the hospital discharge Minimum Basic Data Set of the Ministry of Health. General population incidence rates were calculated by age-strata (<1, 1-4, 5-9, 10-14, 15-44, 45-64, 65-69, 70-74 and 74+ years-old) as cases/100.000 inhabitant_year. Trend analyses and Mantel-Haenzel test were applied for comparative purposes.

Results

PD incidence rate reductions were seen in all age-strata groups, except individuals 74+ years-old. Relative reductions were above 40% in age-strata below 4 years and rather smaller in the other age-groups. Reductions were linear, and more pronounced from year 2010; $R^2=0.88$, $p<0.001$ and $R^2=0.67$, $p<0.001$ for children <1 and 1-4 years, respectively. An indirect immunity modest effect on non-vaccinated groups was observed ($R^2=0.38$ and 0.21 for 65-69 and 70-74 years, respectively). Elderly aged over 74 years showed a growing trend in incidence of hospitalized PD ($R^2=0.51$, $p<0.001$).

Conclusions

The introduction of the pneumococcal conjugate vaccines in children, mainly VCN13, has been associated with a relevant decrease in the incidence rate of hospital PD in children aged 4-year or less in Spain, with a modest herd effect in non-vaccinated groups over 65 years. This entails a meaningful decrease in the burden of disease for the Spanish National Health System.

ORAL PRESENTATION SESSION 02: PREGNANCY, CONGENITAL AND PERINATAL INFECTIONS

ESP17-0635

THE BURDEN OF NEONATAL INVASIVE PNEUMOCOCCAL DISEASE IN BLANTYRE, MALAWI

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Background

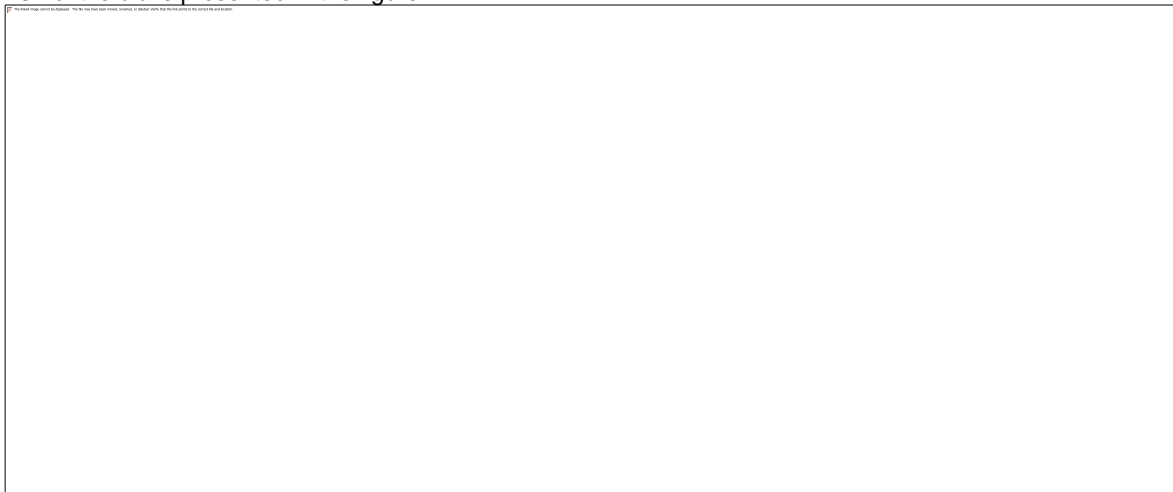
Invasive pneumococcal disease (IPD) in young infants is uncommon but associated with high morbidity and mortality. Accurate data on the burden of neonatal IPD in low income countries are lacking. Pneumococcal Conjugate Vaccine (PCV13) was introduced in Malawi in 2011. We aimed to identify the burden of IPD in infants aged <90 days in Blantyre, Malawi and evaluate the impact of PCV introduction on IPD in these infants.

Methods

We conducted a retrospective study of IPD in infants aged <90 days admitted to Queen Elizabeth Central Hospital (QECH), in Blantyre, Malawi. IPD was defined as *Streptococcus pneumoniae* identified by cultures from blood or cerebrospinal fluid. Cases were extracted from QECH's written and computerized laboratory archives, from January 2005 to December 2015.

Results

We identified 133 cases of culture confirmed IPD in infants aged <90 days. The median age at presentation was 30 days. There were 60 cases (45%) in infants <30 days, of whom 36 cases were early onset disease (0-7 days) with 10 presenting in the first 48 hours of life. Thirty-six cases (27%) had bacteraemia, 68 (51%) had meningitis, and 29 (22%) had bacteraemia and meningitis. The IPD incidence in infants aged <90 days per 100,000 infants <3months old is presented in the figure.



Conclusions

There has been a decline in IPD incidence in infants aged <90 days since 2007, this could be explained by an overall improvement in health care, food security and roll out of ART. Numbers have fallen further after introduction of PCV13, however causality remains to be proven and will be assessed through serotyping. Alternative preventative strategies such as maternal or neonatal immunisation need to be considered to protect neonates and young infants in this setting.

ORAL PRESENTATION SESSION 07: VACCINE IMPACT & RELATED EPIDEMIOLOGY

ESP17-0636

HOSPITAL ADMISSIONS FOR INFECTIONS BY AGE AND SEX: A REGISTER-BASED STUDY OF DANISH CHILDREN 1977-2014

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Background

There is increasing interest in sex differences in immunity in childhood. We examined the hospital admission rates for infections in Danish children by age and sex.

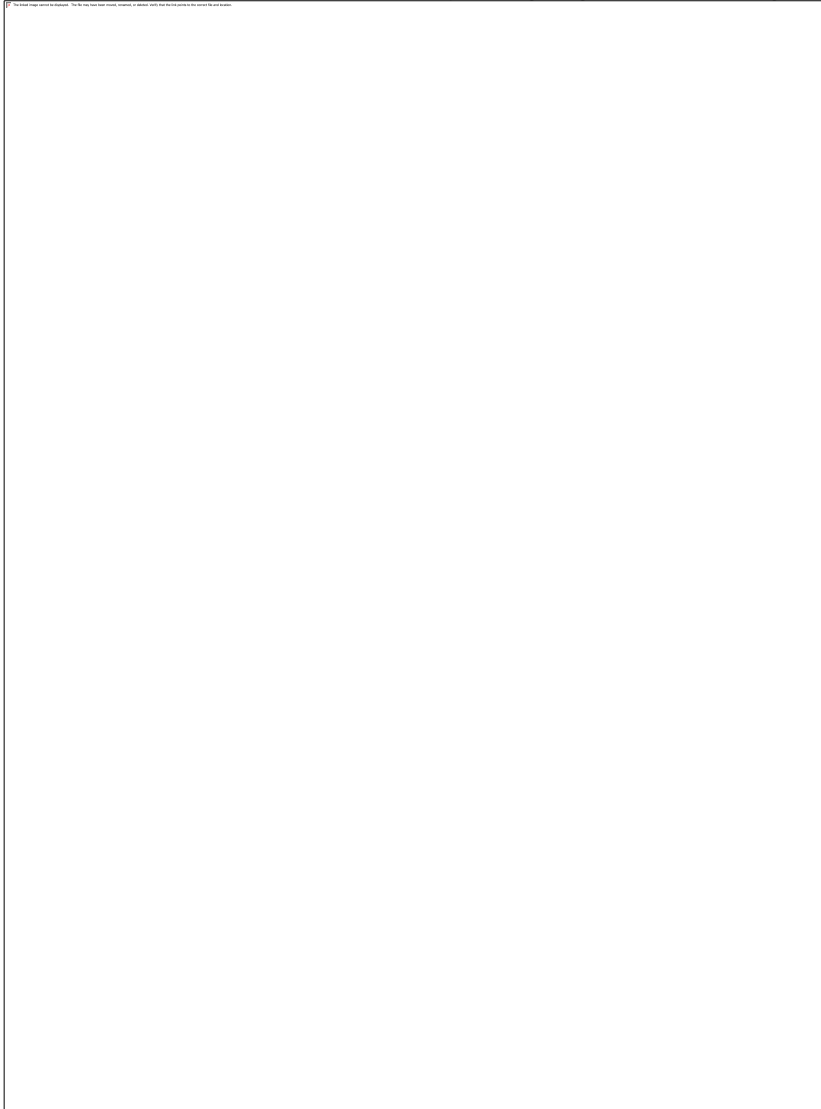
Methods

In the period 1977-2014, all Danish residents aged 0-14 years were followed for hospital admissions for infections in the Danish National Patient Registry. We examined total rate of admission for any type of infection and for different types of infections according to age and sex.

Results

This study included 3,689,999 children and 1,080,750 admissions for infections. The overall admission rate peaked at age 0 months (boys, 197.9 admissions per 1000 person-years; girls, 160.9 admissions per 1000 person-years; Figure) and 11 months (boys, 155.5 admissions per 1000 person-years; girls, 113.9 admissions per 1000 person-years; Figure). Boys had the highest admission rate for all types of infections until 9 years of age (Figure). After early infancy, the most frequent type of infection was upper respiratory tract infections, which dominated from 6 months to 14 years of age. Until 10 years of age, boys had higher admission rates for upper respiratory tract infections compared with girls, whereas boys had higher admission rates for gastrointestinal infections and lower respiratory tract infections compared with girls throughout childhood. For lower respiratory

tract infections, the difference between boys and girls got smaller with higher age.



Conclusions

In Denmark, boys had a higher rate of admissions for all types of infections compared with girls until 9 years of age. However, differences between boys and girls varied with age and different types of infections. These differences might be linked to differences in immune systems, hormones, and anatomy; further research is needed.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 01: BACTERIAL VACCINE MODELLING AND IMPACT

ESP17-0668

A MODEL TO OPTIMIZE MENINGOCOCCAL DISEASE PREVENTION STRATEGIES WITH B, C, AND ACWY VACCINES

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Background

Invasive meningococcal disease (IMD), an unpredictable and life-threatening disease, is caused by 5 distinct serogroups A, B, C, W, and Y. IMD is associated with 10-15% mortality rate and up to 20% of survivors recover with significant permanent sequelae. IMD incidence varies by serogroup, age, and geography. Vaccines against MnA, MnB, MnC, and MnACWY are available. We developed a model to identify optimal vaccination strategies, considering local epidemiology, available vaccines, costs, and quality of life data.

Methods

A dynamic transmission model was constructed to estimate cases and deaths, quality-adjusted life years (QALYs), and cost-effectiveness resulting from various vaccination strategies with MnB, MnC, and/or MnACWY over a 30-year time horizon. The model incorporates 3 vaccines into one model with adjustable vaccine assumptions against disease and carriage acquisition of different serogroups across infants, toddlers, and adolescents, number of doses needed, primary vaccine uptake rates, vaccine cost, and duration of protection. Using current UK disease epidemiology and assumed vaccine characteristics (MnB: 85.0% disease efficacy, 26.6% carriage efficacy, 5-year duration; MnC/MnACWY: 97.0% disease efficacy, 26.6% carriage efficacy; 5-year duration) as an example, five vaccination strategies were implemented into the model and results were compared to determine the most beneficial vaccination strategy using cost per QALY as the objective function (Table).

Results

Of the 5 strategies assessed, routine vaccination Strategy 5 has the lowest cost/QALY gained and avoids the most number of IMD cases over 30 years (Table).



Conclusions

Determining vaccination policies and recommendations can be a dynamic and complex decision process. This model can be a useful tool to assess the potential health impact of a holistic meningococcal disease prevention strategy.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 01: BACTERIAL VACCINE MODELLING AND IMPACT

ESP17-0683

DYNAMIC MODEL OF ADOLESCENT MENINGOCOCCAL SEROGROUP B VACCINATION WITH A MNB VACCINE IN THE CANADIAN POPULATION

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Background

In Canada, serogroups B, C, W and Y are the most prevalent serogroups of invasive meningococcal disease (IMD). Between 2006-2011, incidence of serogroup B (MnB) was highest with 0.33 cases per 100,000. Although infants have the highest incidence of MnB disease, adolescents and young adults are at highest risk of carrying and transmitting the bacteria. This analysis assesses impact of routine adolescent vaccination against MnB disease considering alternate ages of administration and vaccine uptake.

Methods

A transmission dynamic model was constructed to estimate cases and deaths averted over a 30-year time horizon. The model simulates yearly age-specific *Neisseria meningitidis* carriage rates based on current Canadian incidence and published carriage to incidence ratios. The model assumes the MnB vaccine reduces MnB carriage acquisition by 26.6% and IMD by 85%. Vaccine efficacy wanes at 10%/year with 5 years duration. Three implementation scenarios were examined: (1) age 14 with 75% uptake, along with school-based HPV program; (2) age 17 with 75% uptake, assuming school vaccination and; (3) age 17 with 30% uptake, lower due unestablished vaccination platform for older adolescents.

Results

Without vaccine, 3974 IMD cases and 256 deaths due to MnB are estimated over 30 years. Vaccinating 75% of 14-year-olds results in 688 cases and 33 associated deaths prevented. Vaccination at age 17 with 75% uptake produces the largest reductions in disease cases, with 1033 cases averted. With only 30% uptake, vaccination at age 17 results in 575 cases averted, slightly fewer than vaccination of twice as many 14-year-olds.

Conclusions

Routine MnB vaccination at age 17, achieving high coverage closer to the peak of adolescent incidence, results in the most cases averted.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 04: INVASIVE VIRAL INFECTIONS

ESP17-0713

RESPIRATORY ILLNESS AND RESPIRATORY SYNCYTIAL VIRUS (RSV)-RELATED HOSPITALIZATION (RSVH) IN INFANTS WITH PRIMARY MYOPATHIES AND OTHER NEUROMUSCULAR DISORDERS IN THE CARESS REGISTRY (2005-2016)

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Background

Children with neuromuscular disorders (NMD) may experience increased risks for respiratory illness (RIH) and RSV-related hospitalizations (RSVH). This study compared hospitalization hazards in NMD infants with primary myopathies versus those with other NMD in the Canadian RSV Evaluation Study of Palivizumab (CARESS).

Methods

CARESS is a prospective, observational study of infants who received ≥ 1 palivizumab injection across 32 Canadian hospital sites. Neonatal and demographic data were collected upon enrolment. Utilization and adherence data, including respiratory illness event information, was collected monthly. Infants were sub-categorized as: Primary myopathies (congenital infantile onset muscular disorders) and other NMD patients (acquired muscle weakness from diverse general disorders of the motor system). Demographic differences were assessed by chi-square and Mann-Whitney U tests. Cox proportional hazards analyses were conducted to compare RIH and RSVH between primary myopathies and other NMD infants.

Results

369 infants were identified; Primary myopathies; n=63 (17.1%), other NMD; n=306 (82.9%). Group differences were found in enrolment age and weight, birth weight, frequency of maternal smoking, and length of neonatal stay ($p < 0.005$). 73 NMD infants were hospitalized 89 times for respiratory illness; 15 patients were hospitalized 15 times for RSV infection. Crude RIH and RSVH rates were 22.2% and 4.8% for infants with primary myopathies, 19.3% and 4.5% for other NMD patients, and 19.8% and 4.6% overall. Infants with primary myopathies and other NMD had similar risks for both RIH (HR: 0.76, 95% CI 0.3-2.1, $p=0.59$) and RSVH (HR: 0.821, 95% CI 0.2-4.1, $p=0.81$).

Conclusions

Both NMD groups had similar RIH and RSVH risks. This implies that all NMD children, regardless of the severity of their underlying conditions, may benefit from palivizumab prophylaxis. These findings may influence future recommendations for RSV prophylaxis.

Clinical Trial Registration (Please input N/A if not registered)

ClinicalTrial.gov NCT00420966

ORAL PRESENTATION SESSION 06: HOST RESPONSE TO INFECTION AND NEW DIAGNOSTIC TOOLS

ESP17-0715

FACTORS AFFECTING MENINGOCOCCAL CARRIAGE DENSITY IN TEENAGERS

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Background

Understanding the asymptomatic transmission and carriage of meningococci is key to designing effective control programs against invasive disease. Previous studies assessing carriage have recorded the presence/absence of meningococci in the pharynx, however the density of bacteria may play an important role in transmission. We aimed to measure the distribution of carriage density, so that the effect of vaccines on density, and thus potentially transmission, could be evaluated in future.

Methods

We conducted a longitudinal cohort study of 15-19 year old students in Bristol, UK, nested within a multicentre carriage study led by Oxford University. We took pharyngeal swabs from students and placed them into 1.5ml STGG broth on site. These were transferred to the laboratory within 2-6 hours, processed and frozen at -80°C. We determined the presence/density of meningococci by qRT-PCR for *sodC*. Baseline carriage positive students and a sample of negatives were invited to participate in up to 5 further monthly swabs.

Results

We recruited 1815 students between September 2014-February 2015; 2 withdrew. At baseline 8.4% students were positive for *N.meningitidis*, with most carrying at low density (53.6% 0-<10 gene copies (GC)/ml), but with some carrying at high densities (1.3% 10000-<100000 GC/ml). 920 students entered the longitudinal study—meningococcal density was not stable over time. In adjusted regression analyses male gender, older school year and black ethnicity were associated with increased density, whereas Asian/mixed ethnicity and current antibiotic use was associated with lower density, when assessed at the 5% level.

Conclusions

There is considerable variation in meningococcal carriage density both between teenagers and within the same individual over time. Future studies assessing carriage, particularly those involving vaccines, should capture carriage density in addition to presence/absence to avoid potential indirect effects being missed.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 04: INVASIVE VIRAL INFECTIONS

ESP17-0722

RESPIRATORY ILLNESS AND RESPIRATORY SYNCYTIAL VIRUS (RSV)-RELATED HOSPITALIZATION (RSVH) IN INFANTS WITH CONGENITAL AIRWAY ANOMALIES (CAA) IN THE CARESS REGISTRY (2005-2016)

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Background

Infants aged <2 years with congenital airway anomalies (CAA) may experience increased risks for respiratory illness (RIH) and RSV-related hospitalizations (RSVH). This study compared RIH and RSVH hazards in CAA infants versus those prophylaxed for standard, approved indications (SI) and other serious medical disorders (SMD) in the Canadian RSV Evaluation Study of Palivizumab (CARESS).

Methods

CARESS is a prospective, study of children who received ≥ 1 injection of palivizumab across 32 Canadian sites. Neonatal and demographic data were collected at enrolment. Utilization, adherence, and respiratory illness event data were collected monthly. Demographic comparisons were performed using t-tests and chi-square tests. Cox proportional hazards analyses were conducted to compare RIH and RSVH risks across groups.

Results

23,597 infants (955 CAA, 3346 SMD, and 19,296 SI) were enrolled. Group differences ($p < 0.05$) were found in: enrolment and gestational age, birth and enrolment weight, proportion of Caucasians, daycare attendance, smoking exposure, siblings, multiple births, household crowding, and family history of atopy. Palivizumab adherence, defined as receiving all expected injections within appropriate dose intervals, was 74% overall and similar across groups. 1655 infants were hospitalized 1970 times. CAA infants had a crude RIH rate of 11.6% (SMD: 10.1%, SI: 6.3%) and a significantly increased RIH hazard relative to SMD (HR=1.6, 95%CI 1.3-1.9, $p < 0.0005$) and SI (HR= 1.4, 95%CI 1.2-1.6, $p < 0.0005$). Crude RSVH rates were: 1.8% (CAA), 1.5% (SMD), and 1.3% (SI), with no significant difference in hazard between CAA infants and the other two groups ($p = 0.93$).

Conclusions

CAA infants likely experience higher RIH since respiratory illness imposes a greater burden on already compromised airways. RSVH hazards appeared similar across indications. This implies CAA infants may benefit from palivizumab prophylaxis, similar to SMD and SI infants.

Clinical Trial Registration (Please input N/A if not registered)

ClinicalTrials.gov NCT00420966

ORAL PRESENTATION SESSION 09: PARASITIC AND MYCOBACTERIAL INFECTIONS

ESP17-0791

ATYPICAL MANIFESTATIONS OF SEVERE MIXED (*PLASMODIUM FALCIPARUM* AND *PLASMODIUM VIVAX*) MALARIA IN CHILDREN

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Background

The clinical research on the impact of mixed infection (*P.falciparum* and *P.vivax*) on human health is still controversial, either believed to be beneficial or detrimental, attributed to various factors. In this prospective hospital based clinical observational study, we have carried out detailed clinico-laboratory evaluation of mixed malaria to study the complete spectrum with its atypical manifestations.

Methods

Severe malaria was defined strictly on WHO criteria (2000). The species diagnosis was confirmed with polymerase chain reaction analysis. The possibilities of other disease/infections causing similar illness were investigated thoroughly and stringently.

Results

In this cohort study, the proportion of *P.falciparum*, *P.vivax* and mixed malaria was 206 (49.16%), 152(29.11%) and 61(14.56%) respectively. Severe malaria was present in 47.02%(197/419) children, with greatest risk among children of mixed infection [64.58%] in comparison to *P.falciparum* mono-infection [49.36%, RR=1.308{95%CI 0.957-1.673},p=0.065] and *P.vivax* mono-infection [40.16%, RR=1.608{95%CI 1.139-2.138},p=0.006]. Anemia(66.67%) was the commonest pernicious manifestation of mixed infection malaria followed by hepatic dysfunction (54.17%), renal dysfunction (35.42%) and cerebral malaria (22.9%). Although multiorgan dysfunction was present in 57.96% children, the risk was greatest in mixed infection [62.5%] in comparison to *P.falciparum* mono-infection [24.36%, RR=2.566{95% CI 1.741-3.571},p=0.0001] or *P.vivax* mono-infection [18.85%, RR=3.315{95% CI 2.109-5.034},p=0.0001]. The proportion of all these severe manifestations were highly significantly in <5 years age children (p<0.001). The risk of mortality in severe malaria was 3.68% in which mixed infection had greater risk [8.33%] in comparison to *P.falciparum* mono-infection [3.20%; RR=2.600{95%CI 0.600-10.811},p=0.219] or *P.vivax* mono-infection [2.45%; RR=3.389{95% CI 0.658-18.714}, p=0.100].

Conclusions

Mixed infection malaria had almost similar clinical and laboratory findings to those of *P. falciparum* and *P.vivax* mono-infection malaria. Their risk of subsequent clinical progression to severe illness including multiorgan dysfunction and mortality was even more with mixed infection malaria.

ORAL PRESENTATION SESSION 12: HIV/AIDS

ESP17-0799

FACTORS ASSOCIATED WITH TIME TO VIROLOGICAL RESPONSE IN CHILDREN WITH PERINATAL HIV IN EUROPE AND THAILAND INITIATING ANTIRETROVIRAL THERAPY (ART) VERY EARLY IN INFANCY

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Background

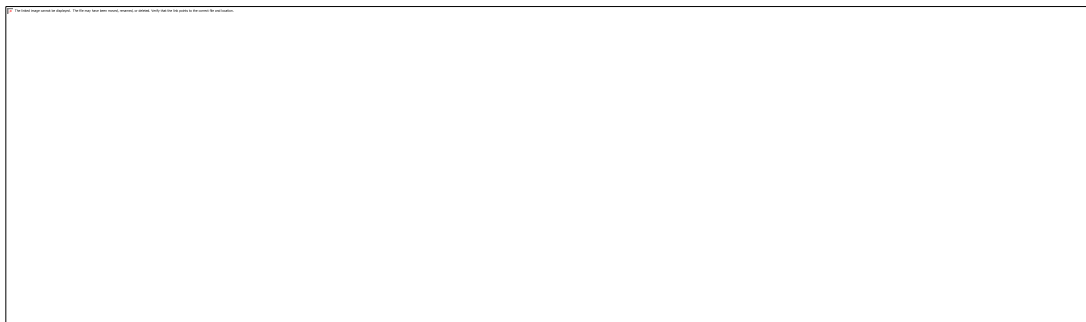
A major obstacle to curing HIV infection is persistence of virus as integrated proviral DNA in long-lived cells even after many years on ART. ART-free HIV remission is more likely to occur if viral suppression is achieved very early in infection. We investigated factors associated with time to virological suppression in early ART treated children from the European Pregnancy and Paediatric HIV Cohort Collaboration (EPPICC).

Methods

Children with perinatal HIV aged <6 months at start of standard combination ART (boosted PI or NNRTI plus ≥2NRTI) were included (n=420). Factors associated with time to suppression were investigated using an interval-censored flexible parametric proportional hazards model with baseline hazard modelled using a spline function. Missing VL and CD4 data at ART initiation were multiply imputed by chained equations (MICE).

Results

At ART initiation, median [IQR] age was 2.9 [1.4,4.1] months, CD4% 34% [24%,45%] and log₁₀VL 5.5 [4.5,6.0] copies/ml. 59% of children were female, 46% initiated ART with a boosted lopinavir-based regimen, 36% received nevirapine+2NRTI and 18% nevirapine+3NRTI. The median [IQR] gap between consecutive VL measurements was 9 [5,13] weeks. Overall, an estimated 84% (95% CI 80%,87%) achieved virological response by 12 months. In multivariable analysis, younger age, higher CD4% and lower VL at ART initiation were associated with significantly faster time to virological suppression (Table1). There was no significant effect of gender, being breastfed, having an AIDS diagnosis, geographical region, initial ART regimen or ethnicity at ART start on time to response. Complete case analysis produced similar results.



Conclusions

ART initiation at earlier ages was strongly associated with faster time to virological suppression independently of baseline CD4% and VL levels.

ORAL PRESENTATION SESSION 04: INVASIVE VIRAL INFECTIONS

ESP17-0810

HEPATITIS C VIRUS INFECTION IN RUSSIAN CHILDREN: RESULTS FROM A MULTICENTRE STUDY

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Background

The burden of HCV infection in European children is not well described. We provide detailed characterization of children with chronic HCV in 3 hepatology centres in Russia.

Methods

A cross-sectional study of children and adolescents (age ≤ 19 years) with chronic HCV followed-up in 3 centres (Moscow, St Petersburg, Krasnoyarsk) was conducted in November 2014 to July 2015.

Results

301 children (48% female) were under follow-up. Median age was 10.6 years (IQR 7.2, 14.6), 281(93%) were of white ethnicity. The most common route of infection was vertical (194, 64%) followed by nosocomial infection (69, 23%). Median age at diagnosis was 3.1 years (IQR, 1.1, 15.1). Six children were HIV-coinfected; 1 HBV-coinfected. Most common HCV genotypes were 1b: 155(51%) and 3: 111(37%). 82(27%) children had ALT >40 IU/L at the last visit.

Of 250 children with liver fibrosis assessment by TE (n=223) and/or biopsy (n=89), 41(16%) had significant fibrosis (≥ 7.2 kPa/F2). Based on ultrasound scans, 19/170 (6%) children had steatosis and 19(6%) had portal hypertension.

Overall, 203(67%) children received treatment (Table), 39(19%) had multiple courses. Most of treated children (189/203; 93%) experienced side effects, in 6(3%) drug reactions led to treatment discontinuation. Of those treated with PegIFN/ribavirin and available HCV viral load results 24 weeks post treatment completion, 66% (69/104) had sustained virological response (35 GT1; 34 GT3).



Conclusions

The described paediatric chronic HCV cohorts in Russia have considerable proportions of treatment experienced children (67%) and children with significant fibrosis (16%). With currently licensed treatment, the rate of side effects was substantial, although treatment was discontinued due to drug reactions only in few children. The study highlights the need to treat children early to prevent progression of liver disease with more effective and better tolerated treatment.

ORAL PRESENTATION SESSION 05: INVASIVE COMMUNITY-ACQUIRED BACTERIAL INFECTIONS

ESP17-0812

PREDICTIVE VALUE OF THOMSEN-FREIDENREICH ANTIGEN ACTIVATION IN PEDIATRIC LOBAR PNEUMONIA WITH PARAPNEUMONIC EFFUSIONS

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Background

Most pediatric parapneumonic effusions are caused by pneumococcal infections. Thomsen-Freidenreich antigen (TA) presents on erythrocytes, platelets, and glomeruli and is covered by N-acetyl-neuraminic acid. Neuraminidase-producing *Streptococcus pneumoniae* expose the normally hidden T antigen (TA) present, which in turn reacts with anti-TA antibodies normally present in the plasma. The aim of our study is to investigate the predictive value of TA activation in relation to pneumococcal infection and the severity of complicated pneumonia.

Methods

TA was testing routinely in patients who had lobar pneumonia with or without parapneumonic effusions at Department of Pediatrics, Mackay Memorial hospital from January 2010 to December 2015. We retrospectively reviewed charts and the age, gender, etiologies of infection, chest tube insertion or video-assisted thoracoscopic decortications (VATS), length of hospital stay, TA activation, white blood cell counts and C reactive protein (CRP) were analyzed.

Results

A total of 142 children with lobar pneumonia were enrolled, including 35 empyema, 31 effusions, 11 necrotizing pneumonia and 4 lung abscess. 22 patients (15.4%) had TA activation, and all pathogen were *Streptococcus pneumoniae*. TA activation had 100% specificity and 100% positive predictive value for pneumococcal infection. In the multivariate analyses, TA activation (OR, 15.8; 95% CI, 3.0–83.5; $P = 0.001$), fever duration before admission (OR, 1.2; 95% CI, 1.1–1.5; $P = 0.013$) and initial CRP level (OR, 1.1; 95% CI, 1.0–1.1; $P = 0.004$) were independent predictors of empyema.

Conclusions

TA activation is an useful indicator of pneumococcal infection and related to severity of complicated pneumonia. It is helpful for early and rapid detection especially in culture negative parapneumonic effusions.

ORAL PRESENTATION SESSION 12: HIV/AIDS

ESP17-0820

EPIDEMIOLOGICAL CHANGES IN HIV INFECTED WOMEN AND FURTHER DECLINE IN MOTHER-TO-CHILD HIV TRANSMISSION RATES IN MADRID, SPAIN (2000-2014)

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¹²The Madrid Cohort of HIV-infected mother-infants pairs, -, Madrid, Spain

Background

The aim of this study was to describe temporal patterns in the management of HIV-infected women and their newborns and to analyze the changes over time in the mother-to-child transmission (MTCT) rates in Madrid, Spain.

Methods

The Madrid Cohort of HIV-infected mother-infants pairs is a multicentre prospective observational study of HIV-1-infected pregnant women and their infants followed-up since birth. Pregnant women were recruited in 8 public hospitals. To observe changes in trends of MTCT rate and the characteristics associated with transmission, 2 study periods were considered: cohort period 1 (CP1) for births between 2000–2007 and CP2 for births between 2008–2014.

Results

1276 HIV-infected women and their infants were included, corresponding to 859 in CP1 (67.3%). Most of them were Caucasian, with a significant increase of women from Africa or Latin America in CP2 (48.2 vs 24.9, $p < 0.001$). Heterosexual contact (67.8%) was the main risk factor for HIV infection. More women started ART before week 14 in CP2 vs CP1 (23 vs 17.6; $p < 0.001$). Although there were no differences in women rates achieving suppressed viral load close to delivery (72.4% vs 64.8% $p = 0.11$) an increase in the rates of vaginal delivery was observed in CP2 (44.3 vs 35.2%, $p = 0.003$). Increasing combined postnatal prophylaxis occurred in CP2 (25.3 vs 11.2, $p < 0.001$). MTCT rates were low (1.6%) in CP1 and decline to 0.5% in CP2 ($p = 0.1$)

Conclusions

Important epidemiological changes with an increase in the rates of foreign women was observed. Mostly, these results highlight the sustained efforts to provide optimal and updated treatment and care to women and their infants. MTCT rates were low and declined over time in Madrid.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 06: HOST RESPONSE TO INFECTION AND NEW DIAGNOSTIC TOOLS

ESP17-0843

VITAMIN D RECEPTOR AND VITAMIN D BINDING PROTEIN POLYMORPHISMS AND SUSCEPTIBILITY TO INFECTIONS DURING INFANCY

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Background

The role of Vitamin D in innate and adaptive immunity has been recently demonstrated. The purpose of this study was to investigate any possible correlation between genetic variances in vitamin D pathway and susceptibility to infections in infancy.

Methods

The population of the study included 86 randomly selected infants (0-24 months), including 63 hospitalized due to infection, viral (35) or bacterial (28), and 23 age-matched healthy controls. The single nucleotide polymorphisms (SNPs) of Vitamin D Receptor (VDR) gene BsmI, FokI, Apal, and TaqI, and vitamin D binding protein (VDBP), Gc gene, rs 7041 and rs4588, were genotyped by polymerase chain reaction-restriction fragment length polymorphism.

Results

VDR TaqI polymorphism, t allele, was more frequent in infants with viral infection compared to controls (OR: 3.0 95% CI 1.3-6.7, p= 0.007). However, this was not confirmed in infants with bacterial infection (OR: 2.03 95% CI 0.9-4.7, p=0.14). Moreover, t allele was more frequent in the subgroup of infants with RSV bronchiolitis compared to controls (OR: 2.77, 95% ΔE 1.07-7.17, p= 0.05). FokI polymorphism was significantly increased in the control group compared to infants with bacterial urinary tract infection (OR: 6.55 95% CI 1.37-31.3, p= 0.011). Allele frequencies of BsmI and Apal polymorphisms were similar between the two groups. Haplotype Gc1F, wild type for both polymorphisms of Gc, was significantly more frequent in the control group compared to infants with viral infection (OR: 3.5 95% CI 1.3-9.7, p= 0.01); whereas this was not observed compared to infants with bacterial infection (OR: 1.6 95% CI 0.6-4.0, p= 0.35).

Conclusions

Genotypic differences in VDR and VDBP polymorphisms between infants with infection and controls suggest that vitamin D pathway could be associated with the host defense against infections during infancy.

Clinical Trial Registration (Please input N/A if not registered)

ORAL PRESENTATION SESSION 06: HOST RESPONSE TO INFECTION AND NEW DIAGNOSTIC TOOLS

ESP17-0853

VIRAL LOADS, VIRAL EXCRETION AND CYTOKINE RESPONSE OF RESPIRATORY VIRAL INFECTIONS IN CHILDREN WITH CANCER, FEVER AND NEUTROPENIA

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Background

Respiratory viral infections (RVI) in fever and neutropenia (FN) episodes in children with cancer has been less characterized than bacterial infections. Our aim was to associate respiratory disease severity with viral loads, viral excretion period and levels of pro-inflammatory cytokines in children with cancer, fever and neutropenia with detection of a respiratory virus.

Methods

Prospective, multicenter, cohort study in children with cancer and FN admitted to three hospitals in Santiago, Chile (September 2013-October 2015). Children with molecular detection of a respiratory virus at admission were studied with consecutive nasopharyngeal and nasal wash sample (at day 1, 3, 7 and 15-30) for quantitative PCR (for RSV, rhinovirus, influenza and parainfluenza). A panel for 38 cytokines was performed; the results were associated with clinical outcome.

Results

A total of 337 episodes of FN were enrolled of whom 43% were male, 55% had leukemia as underlying malignancy and the median age was five years. RVI was detected in 28% (94/337). Most detected viruses were rhinovirus, followed by RSV, parainfluenza and influenza. Consecutive viral loads and excretion period for each virus are showed in figure 1. Clinical outcome in terms of upper or lower respiratory tract disease, days of hospitalization, oxygen requirement, admission to PICU and death rate were not associated with viral loads or cytokine levels in consecutive samples.

Conclusions

Viral loads were not associated with clinical severity, viral excretion, or a higher cytokine response, measured in nasal lavage. Our data showed a favorable outcome in all RVI episodes. To our knowledge this is the first report about clinical outcome associated with viral loads and cytokine response in RVI causing FN episodes in children with cancer (FONDECYT 1130911).

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 11: ANTIBIOTIC STEWARDSHIP AND ANTIMICROBIAL RESISTANCE

ESP17-0873

NEW RECOMMENDATIONS TO ENHANCE PEDIATRIC TRIALS IN ANTIBACTERIAL DRUG DEVELOPMENT FROM THE CLINICAL TRIALS TRANSFORMATION INITIATIVE (CTTI)

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Background and Objective

Children should have access to new antibacterial drugs that have undergone appropriate evaluation for safety and efficacy, yet there is often a significant delay in completing pediatric antibacterial drug trials after approval in adults. The Clinical Trials Transformation Initiative's (CTTI) Pediatric Trials in Antibacterial Drug Development (ABDD) Project, a collaboration between FDA, academia and industry, sought to identify and address issues on barriers to successfully completing pediatric antibacterial drug trials to achieve pediatric labeling.

Methods

The multi-stakeholder project team gathered evidence from: 1) interviews with parents and industry representatives; 2) surveys of healthcare providers and clinical investigators, and 3) consensus generated during an expert meeting that also included regulators.

Learning Points Discussion

Recommendations by this group include:

- Establish global collaborations and networks using master protocols to facilitate collecting evidence regarding safety, pharmacokinetics, and efficacy.
- Engage regulatory agencies early in the development of antibacterial drugs.
- Train research and hospital staff on the challenges and best practices for the informed consent process with the families of seriously ill neonates and children.
- Design the informed consent process to empower patients/families to get the information they need to understand a trial's risks and benefits.
- Critically review neonatal study design to limit blood draws.
Broaden eligibility criteria to be as inclusive as possible for more efficient enrollment.
- Provide education and support for healthcare providers to increase their involvement with or referral to pediatric antibacterial clinical trials.
- Improve consistency of adverse event reporting.
- Engage all stakeholders in discussion around pediatric labeling for antibacterial drugs to expedite the availability and increase the appropriate use of safety and efficacy information.
- Report pediatric trial results promptly in order to make the data available to the healthcare providers.

ORAL PRESENTATION SESSION 03: VACCINE SAFETY

ESP17-0898

AUSVAXSAFETY: A NEW ACTIVE VACCINE SAFETY SURVEILLANCE SYSTEM IN AUSTRALIA

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Background

Review of Australia's vaccine safety surveillance system following unexpected serious adverse events following immunisation (AEFI) with influenza vaccine in 2010 revealed limitations in the quality of available post-marketing pharmacovigilance data. Harnessing novel safety surveillance tools that utilise consumer feedback, we formed a new national network, AusVaxSafety, in 2014 to conduct real-time active surveillance of select national immunisation program vaccines.

Methods

AusVaxSafety compiles vaccine safety data continuously via electronic data extraction (using tools such as SmartVax) following routine immunisation encounters in ~ 130 sentinel hospital- and community-based clinics, general practices and Aboriginal Medical Services. Solicited feedback from parents or patients is provided via automated SMS and/or email-based surveys sent 3 days post vaccination. Reports of medical attended adverse reactions are followed up. AEFI reporting rates are analysed cumulatively, including through Bayesian analytical methods and feedback of results to providers and the public occurs.

Results

By September 2016, data from ~10,000 children demonstrated a safe profile for influenza vaccines, with <1% of reactions involving medical attendance. In the first 9 months of surveillance of pertussis-containing booster vaccines, data from more than 7,400 children receiving an 18 month dose and 6,600 receiving a 4 year dose was obtained with medical attendance in <2% of reactions. Injection site reactions were more common after the second dose. Recently implemented zoster vaccine safety surveillance (> 3700 participants) shows a very low rate of medically attended events and no safety signals.

Conclusions

AusVaxSafety surveillance effectively engages immunisation providers and the public, has high participation rates and has confirmed reassuring safety profiles for specific vaccines. This has provided a basis for extension to report on all nationally funded vaccines in Australia.

ORAL PRESENTATION SESSION 07: VACCINE IMPACT & RELATED EPIDEMIOLOGY

ESP17-0913

CONTINUED DECREASE OF ALL CAUSE GASTROENTERITIS EPISODES IN PRIMARY CARE IN VACCINATED AND UNVACCINATED CHILDREN IN THE UK THREE YEARS AFTER ROTAVIRUS VACCINE INTRODUCTION

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Background

Rotavirus is the main cause of severe acute gastroenteritis (AGE) in children and a vaccine preventable disease. The UK introduced rotavirus universal vaccination in July 2013. This study aims to evaluate the impact of rotavirus vaccination program on all cause AGE episodes in primary care in children < 5 years using the Clinical Practice Research Datalink (CPRD) database.

Methods

We included all children registered in CPRD between 1st July 2010 and 30th June 2016. Cut-off date to define pre- and post-vaccination periods was 1st July 2013. AGE primary care episode GP was defined as at least one AGE episode event with a disease-free period not shorter than 14 days. We calculated crude episode rates of AGE, overall and stratified per age group and calendar time.

Results

There were 118 AGE episodes per 1,000 person-years in the pre-vaccination period compared to 86 post-vaccination among children < 5 years, a 27% reduction. During the first, second and third year post-vaccination, there were 90, 90 and 72 AGE episodes per 1,000 person-years respectively, signaling a reduction in the incidence of 24% in the first two years of introduction and 39% in the third year. The reduction in the incidence was observed even in those age groups that were not eligible for vaccination. Incidence among 3-4 year olds in year 3 post-vaccination was 30 AGE episodes per 1,000 person-years compared to 45 pre-vaccination (35% reduction).

Conclusions

The introduction of rotavirus vaccination in the UK has resulted in a significant impact on all cause AGE episodes in primary care in children < 5 years. The decrease is seen among vaccinated as well as unvaccinated children, confirming an important herd effect.

ORAL PRESENTATION SESSION 07: VACCINE IMPACT & RELATED EPIDEMIOLOGY

ESP17-0922

A RANDOMISED CONTROLLED TRIAL TO ASSESS THE IMPACT OF SMS AND CALENDAR REMINDERS ON INFANT IMMUNISATION TIMELINESS AT 12 MONTHS OF AGE IN AUSTRALIA

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Background

Although many countries have achieved high coverage rates for infant immunisation, infants may receive vaccinations late, leaving them susceptible to infectious diseases when they are most vulnerable. In Australia, 25% of MMR doses due at 12 months are late (> 30 days overdue) as are 32% of MMRV due at 18 months.

This study aimed to assess the effectiveness of an intervention to improve on-time (within 30 days of due date) compliance with immunisations scheduled at 12 months in Australia's National Immunisation Program.

Methods

Consenting parents of infants <16 months of age were recruited from medical practices, Local Government Immunisation Clinics, Community Health Services and Aboriginal Medical Services in South Australia and New South Wales and randomly assigned to one of four groups:

- SMS reminder messages only (two weeks before and two days before each due immunisation)
- Printed reminder calendar only (displaying dates of future immunisations)
- Both SMS messages and calendar
- No intervention (control)

Immunisations dates were obtained from Australian Childhood Immunisation Register and compared to recommended scheduled time points. Relative risks and 95% confidence intervals of on-time compliance in intervention versus no-intervention groups were calculated using the method of Stokes, Davis and Koch.

Results

SMS messages but not reminder calendars significantly increase the frequency of on-time compliance with immunisations scheduled for age 12 months: No intervention 207/279 (74%, reference), SMS 228/277 (82%, relative risk [RR] 1.45; 95% CI 1.05-2.00), Calendar 210/281 (75%, RR 1.02; 0.77-1.35), Both 245/281 (84%, RR 1.61; 1.14-2.22).

Conclusions

SMS technology is a simple and effective intervention for improving timeliness of immunisation in infants especially in the second year of life when completion of immunisations may be less of a priority for busy parents.

Clinical Trial Registration (Please input N/A if not registered)

ACTRN12614000970640

ORAL PRESENTATION SESSION 12: HIV/AIDS

ESP17-0929

INCREASED RISK OF HOSPITALIZATIONS FOR INFECTION IN HIV EXPOSED UNINFECTED INFANTS BORN IN A EUROPEAN COUNTRY COMPARED TO HIV-UNEXPOSED INFANTS

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Background

Many studies, mostly conducted in resource-limited settings, suggest that HIV-exposed uninfected (HEU) children have increased infectious morbidity and mortality compared to their unexposed counterparts. In this study we compare the incidence of hospitalizations for infections during the first two years of life in a cohort of HEU and HIV-unexposed control children.

Methods

This prospective cohort study included 132 children born after 35 weeks of gestation to HIV seropositive mothers and 123 control children born to seronegative mothers of comparable ethnic and social backgrounds. Mothers were asked to participate during pregnancy and their children were followed up from birth to the age of 2 years. Informations on hospitalizations for infectious diseases were collected over the follow up period.

Results

The incidence rate of hospitalization for infection in the first year of life was 27.0 (95%CI 18.7; 37.8) per 100 child-year in infants born to seropositive mothers and 16.4(95%CI 9.7; 25.9) in control children (IRR 1.65 (95%CI 0.91,3.10)).The incidence rate of hospitalization for viral infection was significantly increased (IRR 2.18 (95%CI 1.01; 5.09)).Risk factors associated with hospitalization for infections in infants born to HIV-positive mothers were administration of antibiotics during delivery 2.26(95%CI 0.99-5.17) and initiation of antiretroviral therapy during pregnancy 2.85(95%CI 1.28-6.34).The incidence rates are no longer different in the second year of life.

Conclusions

This prospective study demonstrates for the first time in an industrialized country an increased risk of hospitalization for infection in HEU infants compared to unexposed control children.This observation confirms the importance of a close follow-up of these infants over their first years of life and suggest that the initiation of antiretroviral therapy in HIV-infected mothers before pregnancy as recommended in the new international guidelines, would improve the outcome of their children.

ORAL PRESENTATION SESSION 08: VACCINES - ELUCIDATING MECHANISMS

ESP17-0933

CYTOKINE RESPONSES TO KILLED PATHOGENS AND INNATE LIGANDS IN BCG-VACCINATED AND NON-BCG-VACCINATED NEONATES

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Background

Bacille Calmette Guérin (BCG) vaccine reduces all-cause mortality in neonates in high mortality settings. We investigated the influence of BCG vaccination at birth on *in vitro* cytokine responses in blood taken 7 days after vaccination.

Methods

Participants were recruited from a randomised controlled trial of BCG in neonates born in Melbourne, Australia with the primary outcomes of allergic sensitisation, eczema and lower respiratory tract infection (misbair.org.au). Participants were randomised 1:1 to vaccination with BCG-Denmark 0.1 ml id within 10 days of birth or no BCG vaccination. Blood collected 7 days later was stimulated in a 16-well *in vitro* whole blood assay with bacteria (n=9), mycobacteria (n=2), and toll-like receptor (TLR) ligands (n=5). Twelve cytokines were measured following a 20-hour incubation. Cytokine data was log-transformed and a regression model incorporating the unstimulated cytokine values was used to assess the effect of BCG vaccine, sex, mode of delivery and maternal BCG on cytokine responses. Where appropriate, interaction analysis was done.

Results

Compared to non-BCG-vaccinated controls (n=93), BCG-vaccinated infants (n=119) had increased IL6 production at baseline and decreased IL1ra, IL6, IL10 MIP-1 α , MIP-1 β and MCP1 production in response to stimulation with TLR ligands peptidoglycan (TLR2) and R848 (TLR7/8). MCP1 production was decreased in BCG-vaccinated infants in response to stimulation with heterologous bacterial antigens. A statistically significant interaction between BCG and sex was seen in only 2 cytokine-stimulant pairs.

Conclusions

BCG vaccination influenced neonatal cytokine responses to heterologous antigens. This was characterised by a muted inflammatory response in BCG-vaccinated infants in the context of comparatively high levels of IL-6 in at baseline.

Clinical Trial Registration (Please input N/A if not registered)

Clinical Trials Registration: NCT01906853

ORAL PRESENTATION SESSION 10: VACCINE EFFECTIVENESS AND IMPACT

ESP17-0950

PNEUMOCOCCAL VACCINATION ASSOCIATED WITH FEWER EPISODES OF ACUTE OTITIS MEDIA IN DUTCH CHILDREN

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Background

Introduction of pneumococcal conjugate vaccines (PCV) has been associated with reduced childhood acute otitis media (AOM). We studied the impact of PCV on AOM incidence using longitudinal routine primary care data of children born before and after PCV introduction.

Methods

A total of 18,237 children born between January 2004 and December 2015 in two urbanized areas in the Netherlands were prospectively followed from birth to age 7 years. Children were assigned to three periods according to their date of birth: 1. pre-PCV period (children born between January 2004 and March 2006), 2. post-PCV7 period (born between April 2006 and February 2011) and 3. post-PCV10 period (born between March 2011 and December 2015). A negative binomial model using a generalized estimating equations (GEE) procedure was used to study the association between PCV introduction and number of general practitioner (GP-) diagnosed AOM episodes. Age was included in the main model as a categorical covariate (one-year age categories). Primary care follow-up duration was used as the offset variable to indicate exposure time.

Results

Of the 18,327 newborns (total follow-up: 88,903 child-years; median follow-up per child: 57 months, IQR: 66 months), 7,670 (37%) experienced at least one GP-diagnosed AOM episode. These children contributed to a total of 18,428 AOM episodes. Compared with the pre-PCV period, significantly fewer GP-diagnosed AOM episodes were observed in the post-PCV period (incidence rate ratio: 0.92; 95% CI: 0.85 to 0.99). This association was not age-dependent ($P_{interaction} = 0.31$). Further analyses are currently ongoing; results will be available at the meeting.

Conclusions

Introduction of PCV in the Netherlands is associated with 8% fewer primary care AOM episodes.

ORAL PRESENTATION SESSION 10: VACCINE EFFECTIVENESS AND IMPACT

ESP17-0957

10-YEAR FOLLOW-UP OF HEALTHY ADULTS AT HIGH RISK OF VZV EXPOSURE AFTER PRIMARY VARICELLA VACCINATION: RELATIONSHIP BETWEEN ANTI-VARICELLA ZOSTER VIRUS ANTIBODY TITRES AND BREAKTHROUGH DISEASE

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Background

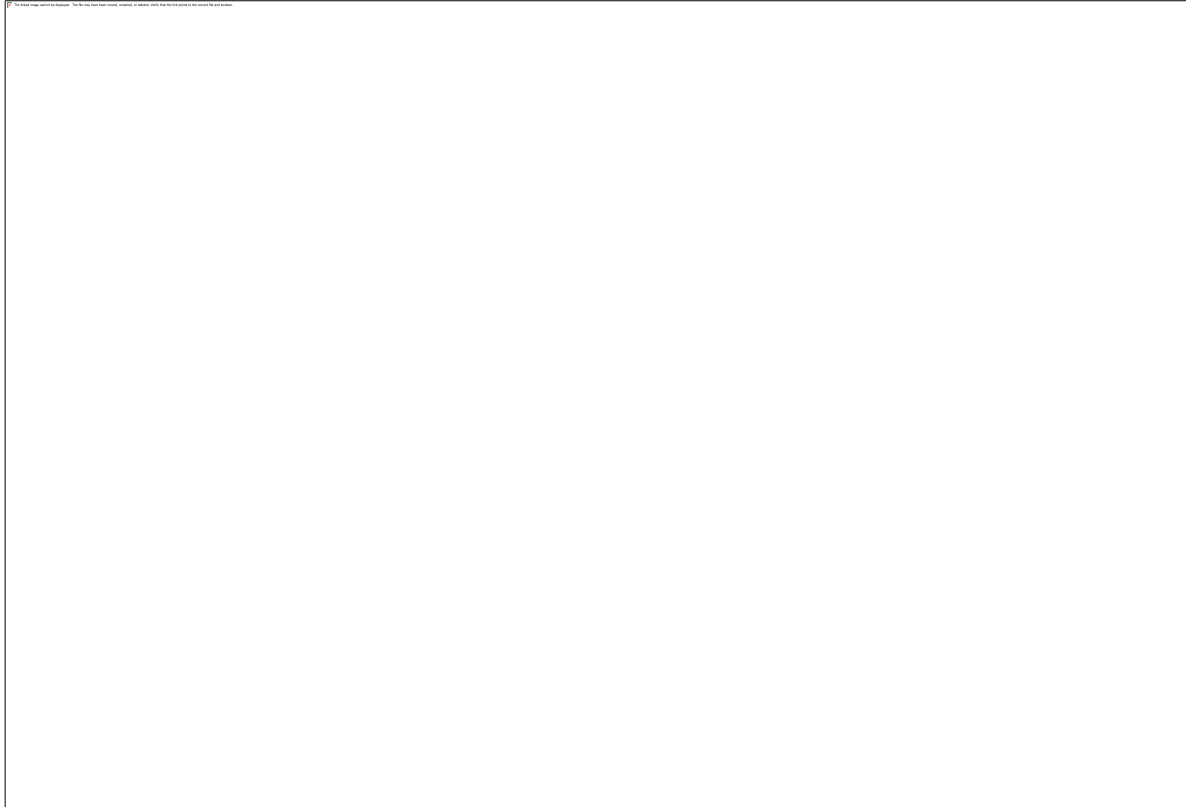
Long-term data on the relationship between anti-varicella zoster virus (VZV) antibody levels and breakthrough varicella disease in adult vaccinees is limited. This 10-year follow-up, which primarily assessed anti-VZV antibody persistence, also investigated the relationship between anti-VZV antibody titres, VZV contact and breakthrough disease post-hoc.

Methods

This open, single-group, multi-centre study in Australia (1995–2007) assessed the immunogenicity and reactogenicity of 2 doses of GSK's live attenuated varicella vaccine (Oka strain) given 8 weeks apart in healthy seronegative healthcare workers (N=168). For 10 years following vaccination, blood samples were collected annually to evaluate anti-VZV antibody persistence, and occurrence of breakthrough varicella disease and contact with VZV were assessed. Subjects were classified post-hoc into 2 groups according to the occurrence (break) or absence (no break) of breakthrough disease during the follow-up period.

Results

(Table) Over the 10-year follow-up, 122 subjects reported ≥ 1 contact with varicella or herpes zoster, from which 8 (6.6%) reported breakthrough varicella. Annual incidence of breakthrough varicella did not increase over time; no cases were reported in years 7–10. Anti-VZV geometric mean antibody titres (GMTs) post-dose 2 were approximately 3-fold higher in no break subjects versus break subjects. Anti-VZV titres of break subjects with ≥ 2 blood samples available (7/8, 87.5%) were observed to increase ≥ 16 -fold between any 2 visits during the follow-up. This increase was also observed in 38/160 (23.8%) of no break subjects.

**Conclusions**

Eight cases of breakthrough varicella were reported among 122 subjects with VZV contact in 10 years; the annual rate of breakthrough did not increase with time post-vaccination. Significantly higher GMTs post-dose 2 were observed in subjects without breakthrough. Possible evidence of immunological boosting could be observed in 23.8% of subjects without breakthrough varicella.

Funding: GlaxoSmithKline Biologicals SA

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 09: PARASITIC AND MYCOBACTERIAL INFECTIONS

ESP17-0978

COMPLEMENT FACTOR H LEVELS ASSOCIATE WITH SEVERITY OF PLASMODIUM FALCIPARUM MALARIA

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Background

The host factors which determine severity of *Plasmodium falciparum* malaria are poorly understood. Complement Factor H (FH) is a negative regulator of complement activation and plasma levels vary between individuals. *P. falciparum* binds FH to avoid complement-mediated killing. We hypothesized that high plasma FH levels would be associated with increased parasite load and severe malaria (SM).

Methods

We used plasma samples from 152 Gambian children with *P. falciparum* malaria, 85 (56%) SM (prostration, cerebral malaria, hyperlactatemia and/or severe anemia). Pre-treatment samples were used for determination of parasite load (parasitemia and *P. falciparum* histidine rich protein 2 (*PfHRP2*)), full-blood count and lactate. Plasma FH and FH-related protein levels were measured when subjects had fully-recovered, 28 days after treatment, using in-house ELISA.

Results

Convalescent FH levels were not related to age, but were significantly higher in SM than uncomplicated cases (mean (95%CI): 325(310-341) vs. 288(268-309) µg/mL; $P=0.004$). FH levels were positively correlated with blood parasitemia ($r=0.23$, $P=0.006$) and lactate ($r=0.23$, $P=0.005$), but not with hemoglobin or *PfHRP2* (an indicator of combined circulating and sequestered parasite load). In a multivariate model, FH, age and *PfHRP2* were all significant independent predictors of disease severity. Using the ratio of *PfHRP2*:parasitemia as a proxy for parasite sequestration, there was a borderline significant negative correlation between FH levels and sequestration ($\rho=-0.195$, $P=0.048$).

Conclusions

Our findings implicate natural variation in plasma levels of FH as a determinant of susceptibility to severe malaria in children. Binding of FH may protect *P. falciparum* against complement-mediated killing, resulting in high parasite load. However, our results indicate that FH also influences severity independently of parasite load, possibly by modulating parasite sequestration in the microvasculature.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 08: VACCINES - ELUCIDATING MECHANISMS

ESP17-0987

ANTIBODY PERSISTENCE AND RESPONSE TO A BOOSTER DOSE 24 TO 36 MONTHS FOLLOWING VACCINATION OF INFANTS AND CHILDREN WITH MENINGOCOCCAL RECOMBINANT SEROGROUP B VACCINE (4CMENB)

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Background

This phase IIIb, open-label, randomized, multicentre, extension study (NCT01894919) explored the antibody persistence and booster response 24-36 months post-vaccination in subjects who received different schedules (2 or 3 primary doses and 1 booster dose [infants]; 2 catch-up doses [2-10-year-olds]) of 4CMenB in the parent study (NCT01339923).

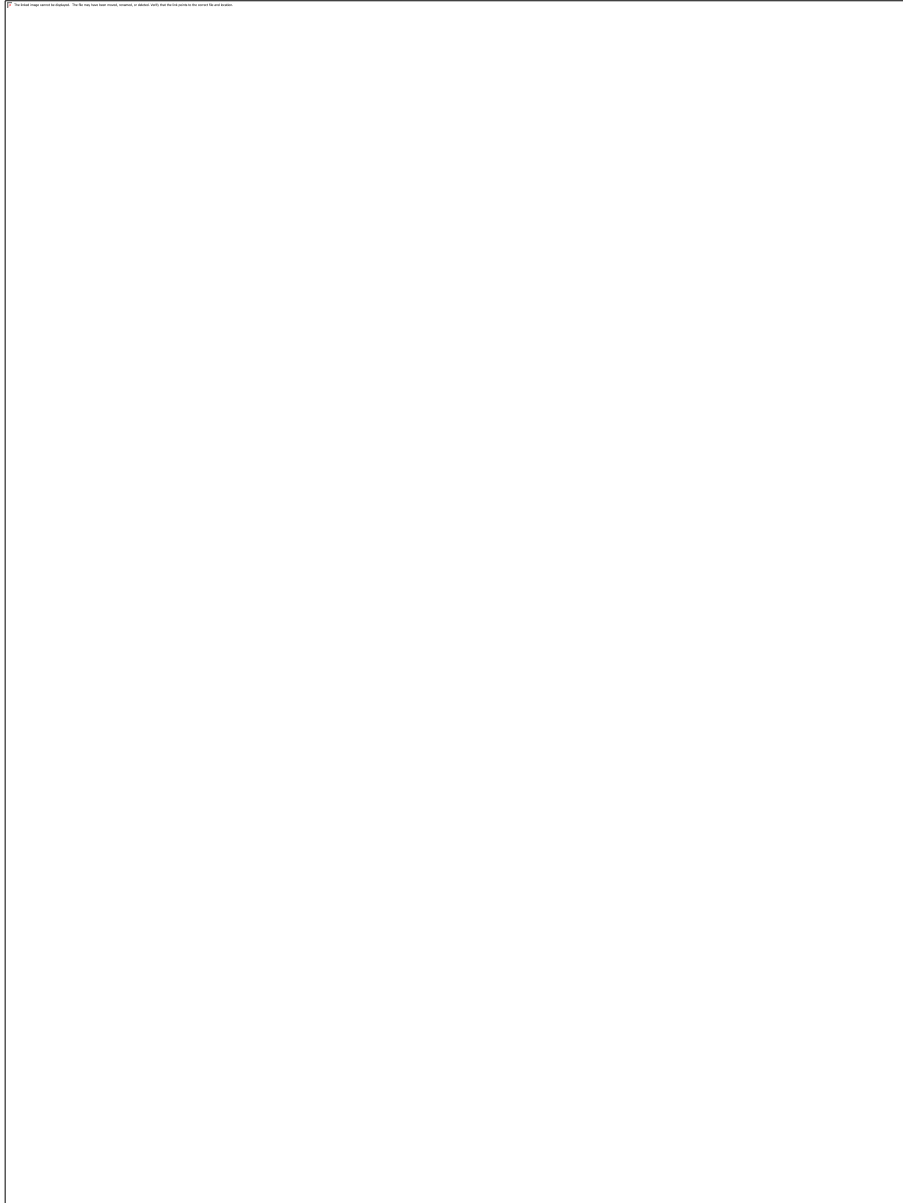
Methods

Healthy children aged 35-47 months to 12 years (N=851) were enrolled. Follow-on subjects (who completed the parent study) were 1:2-randomized (2-5-year-olds were 1:1-randomized) to non-vaccination and vaccination subsets; subjects in vaccination subsets received 1 booster dose of 4CMenB. Vaccine-naïve subjects (newly enrolled) received 2 catch-up doses of 4CMenB, 1 month apart. Immune responses were assessed using exogenous human complement serum bactericidal assay (hSBA) against meningococcal B indicator strains H44/76 (fHbp), 5/99 (NadA), NZ98/254 (PorA) and M10713 (NHBA). Safety was also evaluated.

Results

Antibody levels against all test strains declined across all follow-on groups (0.022-0.24-fold) at 24-36 months versus 1 month post-vaccination. Antibody persistence and booster response against all indicator strains were comparable between subjects who had received a reduced 2+1 or licensed 3+1 schedule of 4CMenB (**Table**). A booster dose of 4CMenB induced higher hSBA titres in all follow-on subjects versus a first dose of 4CMenB in vaccine-naïve subjects (**Table**). Two catch-up doses of 4CMenB at an accelerated schedule (months 0,1) in vaccine-naïve subjects induced robust antibody responses against all strains (**Table**). The safety profile of

4CMenB was acceptable, with no major concerns and no serious adverse events reported.



Conclusions

Antibody persistence following the reduced 2+1 schedule was comparable to that following the 3+1 schedule, with similar acceptable safety profiles, and similar excellent booster responses. Two catch-up doses of 4CMenB at an accelerated schedule in vaccine-naïve subjects induced robust antibody responses.

Funding: GlaxoSmithKline Biologicals SA

Clinical Trial Registration (Please input N/A if not registered)

NCT01894919

ORAL PRESENTATION SESSION 01: BACTERIAL VACCINE MODELLING AND IMPACT

ESP17-1030

10-VALENT PNEUMOCOCCAL CONJUGATE VACCINE (PCV10) DECREASES METABOLIC ACTIVITY BUT NOT NASOPHARYNGEAL CARRIAGE OF STREPTOCOCCUS PNEUMONIAE AND HAEMOPHILUS INFLUENZAE

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Background

The effect of pneumococcal vaccination is widely variable when measured by nasopharyngeal carriage of vaccine and non-vaccine targets. The aim of this study was to compare the carriage rates and metabolic activity of *Streptococcus pneumoniae*, *Staphylococcus aureus*, *Haemophilus influenzae* and *Moraxella catarrhalis* among children who were vaccinated or not with PCV10.

Methods

We included children with acute respiratory infection aged 6-23months from a cross-sectional study (CHIADO-IVAS). Nasopharyngeal aspirates were collected and respiratory pathogens were quantified by nCounter digital transcriptomics (Nanostring) and metagenomic sequencing of 16S ribosomal RNA (Illumina). The metabolic rate was calculated by the ratio between RNA transcripts and 16S DNA reads.

Results

Out of the 80 patients in this study, 53 were vaccinated with PCV10 and 27 were unvaccinated. There was no difference in nasopharyngeal carriage rates of *S. pneumoniae*, *S. aureus*, *H. influenzae* or *M. catarrhalis* by either transcriptomic analysis or 16S metagenomics. However, unvaccinated children presented a higher metabolic rate for *S. pneumoniae* compared to PCV10-vaccinated children (Median [25-75th percentiles]: 126 [22.75-218.41] vs. 0[0-47.83], p=0.004). Furthermore, unvaccinated children presented a positive correlation between mRNA counts and 16S DNA reads for *S. pneumoniae* (r=0.707; p<0.001) and *H. influenzae* (r=0.525; p=0.005), in contrast to vaccinated children. No such effect was observed for non-vaccine bacteria *S. aureus* and *M. catarrhalis*.

Conclusions

Vaccination by PCV10 exerts a pathogen-specific effect on pneumococcal metabolic rate. Pathogen RNA/DNA ratio might represent a more sensitive readout for vaccine follow-up, as compared to nasopharyngeal carriage.

ORAL PRESENTATION SESSION 05: INVASIVE COMMUNITY-ACQUIRED BACTERIAL INFECTIONS

ESP17-1050

CLINICAL FEATURES AND OUTCOMES OF SEPSIS AND SEVERE FOCAL INFECTIONS IN CHILDREN IN EUROPE (THE EUCLIDS PROJECT)

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Background

Sepsis and severe focal infections (SFI) represent a significant burden of disease in hospitalized children and are an important cause of admission to paediatric intensive care units (PICU). We aimed to describe the characteristics and outcomes of children with sepsis and SFI across Europe.

Methods

Eligible patients were children from 1 month-to-18 years with sepsis or SFI admitted to any of the 195 hospitals in the 15 countries in Europe constituting the EUCLIDS consortium clinical network (www.euclids-project.eu). From July-2012 to December-2014 a total of 3549 eligible patients with complete data were recruited.

Results

3549 children were included. Median age 40.0 months (IQR=12.5–97.1). 54.3% male. 52.2% (n=1852) had sepsis and 47.8% (n=1697) SFI. The mortality rate was 2.1% (n=68). The main focal syndromes were pneumonia (n=596, 16.8%), central nervous system infection (n=564, 15.9%) and soft tissue infection (n=291, 8.2%). A causal microorganism was identified in 55.7% (n=1978) of the cases. The most prevalent bacterial causative agent was *N.meningitidis* in 20.6% (n=382) of the samples. Others commonly reported included *S.aureus* (17.0%; n=316), *Group A Streptococcus* (17.0%; n=316) and *S.pneumoniae* (13.3%; n=307). Viruses were detected in 201 (5.7%). 38.5% (n=1362) patients required PICU admission with a median duration of stay of 4 days (IQR=2-9). During hospitalization, 35.5% (n=949) of the children required oxygen, 23.4% (n=749) invasive ventilation and 12.1% (n=384) inotrope support.

Conclusions

The mortality rate in previously healthy children hospitalized due to sepsis or SFI in Europe is relatively low. The burden of disease lies predominantly in children under 5 years. A significant proportion of children required PICU admission. Despite the application of the best standard of diagnostic investigations, a causative microorganism was identified in hardly half of the patients.

Clinical Trial Registration (Please input N/A if not registered)

ORAL PRESENTATION SESSION 03: VACCINE SAFETY

ESP17-1081

POST-MARKETING SAFETY STUDY OF HUMAN ROTAVIRUS VACCINE (HRV) ON 5 OUTCOMES USING 2 US HEALTH INSURANCE CLAIMS DATABASES

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⁴GSK, -, Philadelphia, USA

Background

GSK's human rotavirus vaccine (HRV) was licensed in the US in 2008. HRV is a 2-dose live-attenuated oral rotavirus vaccine administered at 2 and 4 months of age.

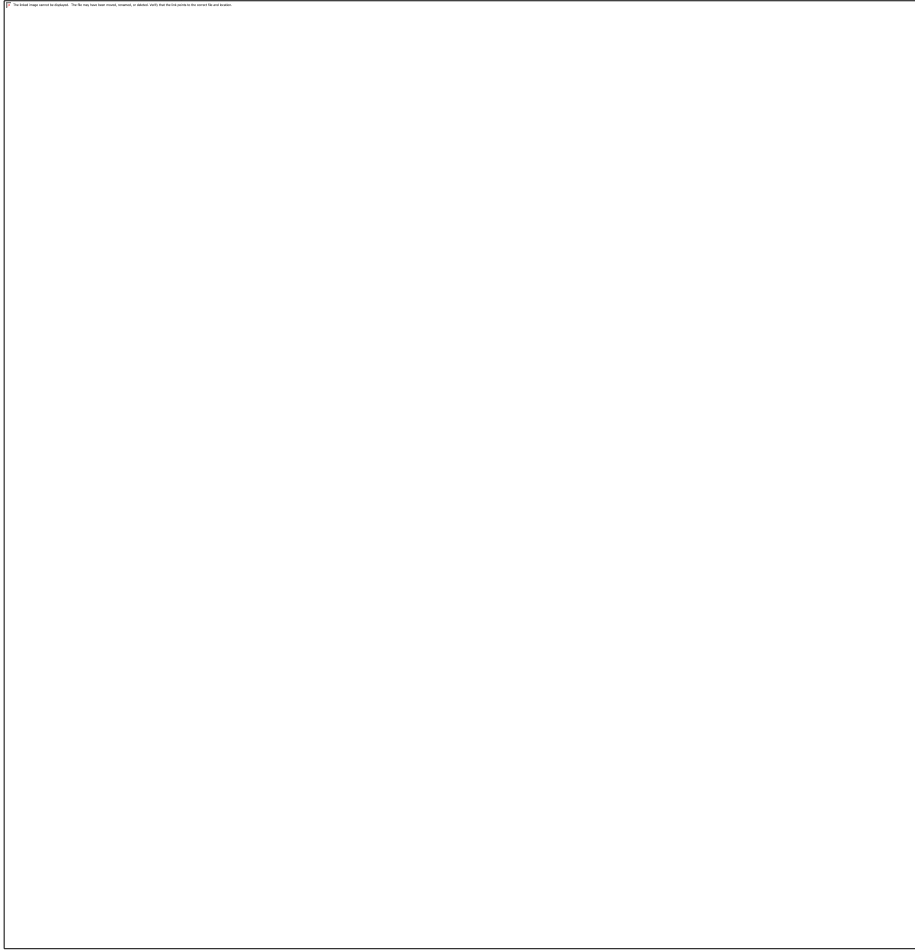
Methods

This retrospective and prospective observational cohort study assesses the incidence of intussusception (IS), Kawasaki disease (KD), convulsions, lower respiratory tract infection (LRTI) hospitalisations, and all-cause mortality within 60 days following vaccination with HRV, compared to inactivated poliovirus vaccine (IPV) in concurrent and historical IPV cohorts, using 2 large administrative claims databases from the US. IPV recipients were frequency-matched to HRV recipients in a 3:1 ratio. Potential IS, KD, and convulsions events were identified in claims and confirmed by medical record review. LRTI events were identified in claims. Deaths were identified in claims and via external linkage to the National Death Index. Incidence rates were compared using Poisson regression analyses adjusted for gender, age at vaccination, database, and calendar quarter of vaccination.

Results

There were 57,931 infants (HRV cohort) frequency-matched to 173,384 and 159,344 infants (concurrent and historical IPV cohorts, respectively). The adjusted incidence rate ratios (IRRs) of IS, LRTI hospitalisations, convulsions and mortality in the 0–59 days following HRV vaccination ranged from 0.36 to 2.25 across outcomes and vaccine doses (Table). No medical record-confirmed KD was identified in the HRV cohort in the 0–59 days. No cases of medical record-confirmed IS were identified in the 0–6 days following any dose of HRV. The increased risk of medical record-confirmed convulsions post-dose 1 (Table) was not confirmed by self-control

case-series analysis.



Conclusions

Infants vaccinated with HRV did not show evidence of increased risk for any of the 5 outcomes, compared to the 2 IPV control cohorts.

Funding: Research contract between Optum and GlaxoSmithKline Biologicals SA

Clinical Trial Registration (Please input N/A if not registered)

NCT00875641

ORAL PRESENTATION SESSION 05: INVASIVE COMMUNITY-ACQUIRED BACTERIAL INFECTIONS

ESP17-1113

VACCINATION AGAINST INVASIVE MENINGOCOCCAL B DISEASE: MODELING THE POTENTIAL PUBLIC HEALTH IMPACT OF DIFFERENT VACCINATION STRATEGIES IN ENGLAND

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Background

Invasive meningococcal disease incidence is highest in infants and young children. A second smaller peak occurs in adolescents, amongst whom meningococcal carriage rates are highest. Whilst meningococcal B vaccination programs in adolescents may directly protect vaccinees, the potential to interrupt transmission and indirectly protect other age groups is not established. This evaluation uses new data to reassess the potential public health impact of vaccination strategies targeting different age groups.

Methods

A previously published transmission dynamic model was updated with data on: 4CMenB vaccine effectiveness, disease epidemiology and demographics in England. Vaccination strategies evaluated were (a) infants-only (2, 4, 12 months), (b) adolescents-only (2 doses at 16 years) and (c) infants + adolescents. Vaccine impact on carriage acquisition (V_{CA}) was assumed to be: (i) 0%, (ii) 30% or (iii) 60%.

Results

In our model, infant-only strategies (ai/aII/aIII) deliver rapid short-term reductions which plateau over time, and varying carriage acquisition has modest impact. The rate and extent of disease reduction achieved through adolescent-only strategies (bi/bII/bIII) is highly sensitive to V_{CA} assumptions, especially for infants and young children. Combined infant and adolescent strategies (ci/cII/cIII) offer the potential fast reduction and sustained

disease control, depending heavily on V_{CA} assumptions [Figure 1].



Conclusions

The reassessment with updated data is aligned with previous publications. Infant vaccination provides direct protection to the highest risk group, preventing more cases in the short term irrespective of V_{CA} . Programs targeting adolescents have the potential to control the disease in the long-term depending on V_{CA} . Combined strategies are potentially the most effective. Emerging vaccine effectiveness data from England, and current uncertainty around carriage impact of meningococcal B vaccines, favor the ongoing use of infant programs.

Clinical Trial Registration (Please input N/A if not registered)

GlaxoSmithKline Biologicals SA funded this study (HO-16-18046).

ORAL PRESENTATION SESSION 11: ANTIBIOTIC STEWARDSHIP AND ANTIMICROBIAL RESISTANCE

ESP17-1129

IMPLEMENTATION OF A CLINICAL DECISION SUPPORT TOOL IN THE TREATMENT OF ACUTE TONSILLITIS AT A LARGE PAEDIATRIC EMERGENCY DEPARTMENT IN SOUTH LONDON

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Background

In the UK, antibiotics are not recommended for patients with acute tonsillitis, except in cases where ≥ 3 Centor criteria are present. Microbiological testing is not routinely used, but rapid point-of-care tests (POCT) detecting Group A *Streptococcus* (GAS), the most common bacterial cause of tonsillitis, are becoming available. This prospective survey evaluated the impact of introducing a POCT (Alere™ i Strep A) with a clinical decision support tool (CDST) on testing and treatment of GAS.

Methods

In December 2015, St. George's Hospital Paediatric Emergency Department (PED) implemented Alere™ i Strep A in parallel with a CDST outlining appropriate testing and treatment of GAS tonsillitis. We collected clinical information including presence of Centor criteria, POCT results and outpatient antibiotic prescriptions from patients ≤ 16 years seen between December 2015 and January 2017. We determined whether POCT testing and prescribing were appropriate based on clinical documentation.

Results

A total of 339 children were tested with the POCT. Of these, only 114 children (34%) fulfilled ≥ 3 Centor criteria, warranting testing. The remaining 225 children (66%) had less than three criteria present: 8 (2%) fulfilled no criteria, 86 (25%) one and 133 (39%) two criteria. Sore throat was documented in 107 (32%) cases. Of 107 children (32%) who were prescribed an antibiotic, 64 (60%) had a positive POCT.

Conclusions

Our results highlight common challenges with the introduction of a novel diagnostic. Despite dissemination of guidelines, training of staff and the availability of a highly accurate POCT, a majority of the surveyed children would not have received testing if guidelines were followed. Successful implementation of novel diagnostics and CDST requires continuous staff training and regular monitoring and evaluation activities to document a benefit in the target population.

ORAL PRESENTATION SESSION 10: VACCINE EFFECTIVENESS AND IMPACT

ESP17-1134

VISITS FOR ACUTE OTITIS MEDIA AND ANTIBIOTIC PRESCRIPTIONS FOLLOWING THE INTRODUCTION OF 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINATION IN CHILDREN IN THE UNITED STATES

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Background

In the United States, 13-valent pneumococcal conjugate vaccine (PCV13) in infants started in February 2010, replacing the 7-valent program implemented since 2000. We analyzed outpatient visits and antibiotic prescriptions for otitis media (OM) in children post-PCV13 implementation.

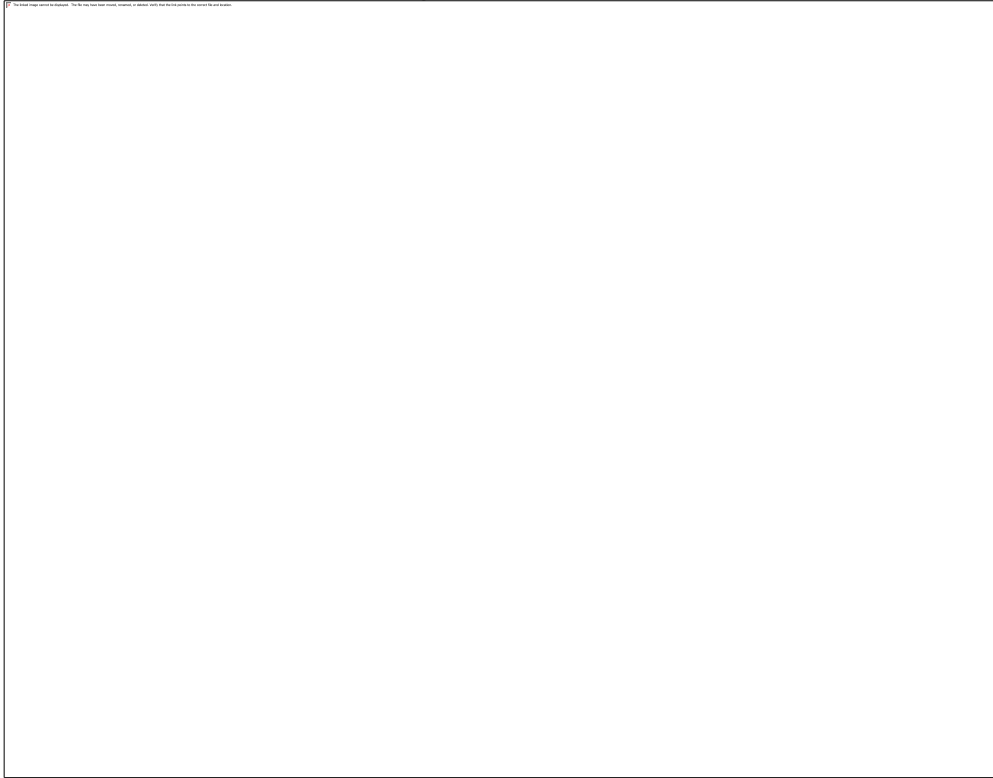
Methods

The National Disease & Therapeutic Index (NDTI™) of IMS was used. NDTI™ is a continental U.S. level medical audit of ~4,000 physicians randomly selected, who self-report on all office-based patient visits received during two randomly selected workdays per quarter. IMS performs national projections based on these data. Reports include diagnosis and treatment patterns. The diagnosis of interest was "unspecified" OM (ICD-9 code: 3829) --over 90% of all OM diagnoses-- in children ≤9 years. Analysis consisted of annual projections of outpatient visits and recommended antibiotic prescriptions (drug use) for OM, and estimated average antibiotic prescriptions per visit from 2011 through 2015.

Results

During 2011, there were an estimated 11.5 million OM visits with 10.2 million recommended antibiotic prescriptions. In 2015 there were 19.5% and 17.9% fewer OM visits and antibiotic prescriptions than in 2011 (Figure). However, the average antibiotic prescriptions per OM visit did not change in this period (0.9 prescriptions/visit). Compared to 2011, cumulatively there were 7.9 million and 6.5 million fewer OM visits and

antibiotic prescriptions from 2012 through 2015.



Conclusions

National projections of antibiotic prescriptions for OM paralleled reductions in OM visits in children ≤ 9 year post-PCV13 in the U.S., suggesting PCV13 may have contributed to this decrease. The consistent number of antibiotics per OM visit across the study period suggests antibiotic prescribing patterns did not contribute to the observed reductions.

ORAL PRESENTATION SESSION 05: INVASIVE COMMUNITY-ACQUIRED BACTERIAL INFECTIONS

ESP17-1135

COMPLEMENT REGULATOR FACTOR H AND ITS PROPOSED ANTAGONISTS IN INVASIVE BACTERIAL INFECTIONS

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Background

Complement is part of the innate immune defense against invading pathogens. Concurrent protection of human host cells against complement is acquired by factor H (FH), a negative regulator of the alternative pathway. Pathogens recruit FH from human plasma as escape mechanism from complement, thereby increasing survival in blood. Next to FH, pathogens also bind the highly homologous FH-related proteins (FHRs), which lack complement regulatory activity. Thus, binding of FHRs instead of FH by pathogens might prove to be beneficial for infection clearance. We developed novel assays to measure plasma levels and elucidate the proposed competition of FH and FHRs during well-characterized invasive bacterial infections in children.

Methods

Pediatric patients were included as part of the EUCLIDS study, from the Austrian node (n=140). Healthy controls were included as part of the Dutch meningococcal disease TRIOS study (n=79). In-house ELISAs were used to determine FH and FHR plasma levels.

Results

When compared to healthy controls, FH and FHR-5 were elevated in bacterial meningitis, pneumonia and osteomyelitis, but not in sepsis. Although FH and FHR-3 did not correlate with CRP, FHR-5 correlated strongly with CRP (n=76, p=0.0004/r=0.3980), particularly in patients with osteomyelitis (n=12, p=0.0019/r=0.7962) caused by *S. aureus*. Notably, FHR-5 levels were specifically increased in pneumococcal meningitis versus meningococcal meningitis (p=0.0303).

Conclusions

Our study shows that plasma levels of FH and FHR-5 are elevated during the acute phase of localized invasive bacterial infections. Moreover, we found indications for a novel role for FHR-5 as acute phase protein during invasive bacterial infections. Functional *in vitro* experiments with the various pathogens in this cohort will be needed to clarify the presumed protective role of FHR-5 in complement-mediated host defense by competition with FH in bacterial cell surface binding.

Clinical Trial Registration (Please input N/A if not registered)

ORAL PRESENTATION SESSION 08: VACCINES - ELUCIDATING MECHANISMS

ESP17-1162

NO SEROLOGIC EVIDENCE IN ADULTS 50 YEARS AND OLDER THAT ROUTINE PEDIATRIC VARICELLA VACCINATION PROGRAMS INFLUENCE THEIR DEGREE OF EXPOSURE TO VARICELLA

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Background

Close contacts with varicella disease can boost anti-varicella-zoster virus antibody titers (exogenous boosting). This effect has been considered necessary to control herpes zoster disease (HZ) in a widely used varicella dynamic transmission model which predicts a significant and prolonged increase in HZ incidence in countries implementing effective pediatric varicella vaccination programs due to suppression of this exogenous boosting.

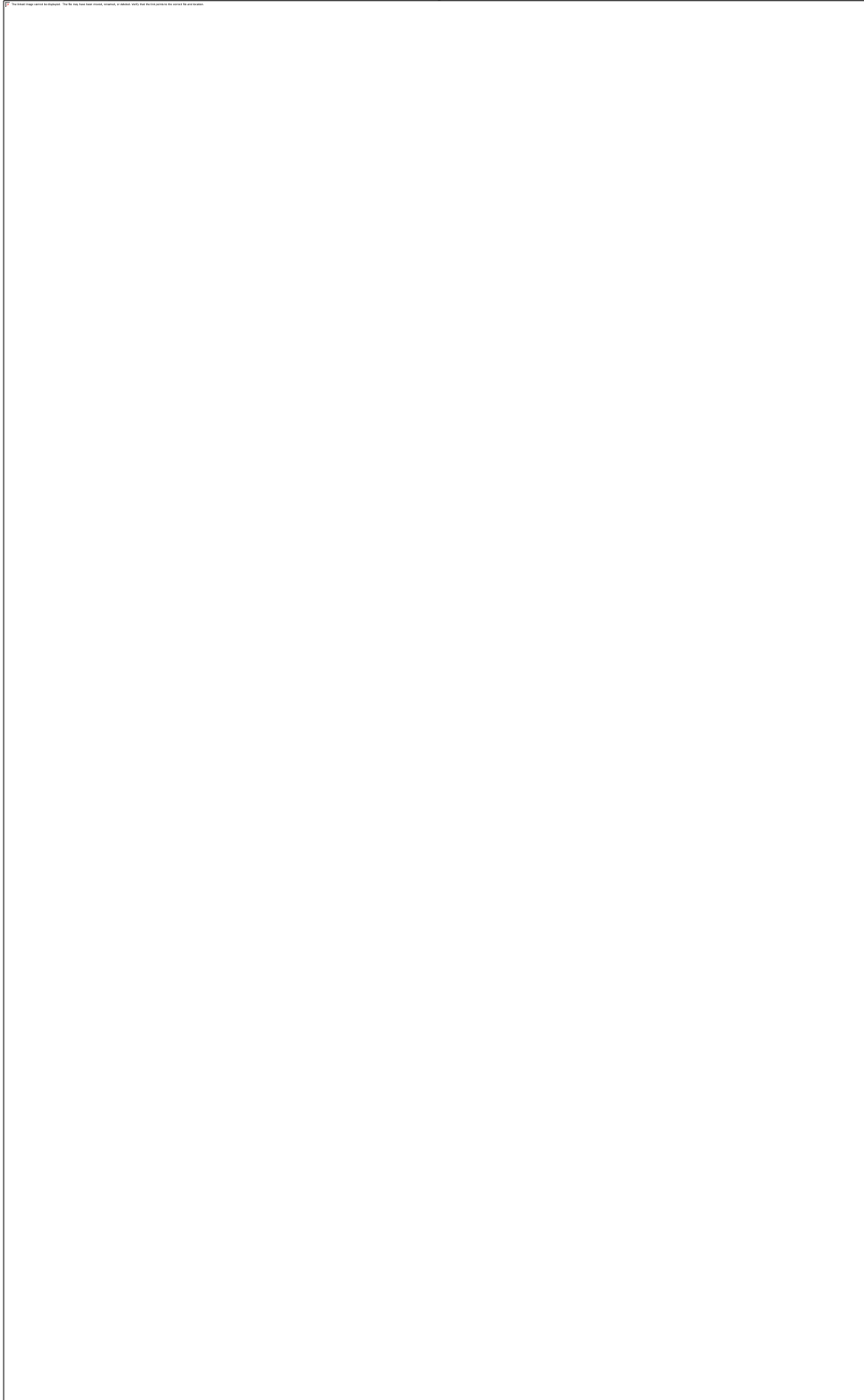
The impact of different varicella vaccination programs on anti-glycoprotein E (gE) antibody concentrations was assessed in subjects ≥ 50 years old recruited in 17 countries (Australia, Brazil, Canada, Czech Republic, Estonia, Finland, France, Germany, Hong Kong, Italy, Japan, Republic of Korea, Spain, Sweden, Taiwan, United Kingdom and United States of America) in the Zoster Efficacy Studies in Adults 50 (ZOE-50) and 70 Years of Age (ZOE-70) or older trials (NCT01165177 and NCT01165229) to evaluate if circulating varicella leads to frequent exposures and therefore to higher antibody concentrations. **Methods**

Baseline (pre-vaccination in ZOE-50 or ZOE-70) anti-varicella-zoster virus gE antibody concentrations were analyzed by country and by clusters of countries according to their national pediatric varicella vaccination programs at the time of enrollment into ZOE-50 and ZOE-70.

Results

99.2% of subjects were seropositive at baseline. Anti-gE geometric mean concentrations (GMCs) by country were similar, all within <2 -fold range, with overlapping 95% confidence intervals (CI). GMCs and 95%CI, by country and

clustered by pediatric varicella vaccination program are presented below.



Conclusions

Our serologic data provide no evidence that adults ≥ 50 years old have been routinely exposed to varicella, even in settings with endemic, circulating varicella. Our finding may partially explain the lack of evidence from countries that having introduced effective varicella vaccination programs is leading to increases in HZ rates in the general population.

Funding: GlaxoSmithKline Biologicals SA

Clinical Trial Registration (Please input N/A if not registered)

NCT01165177/NCT01165229

ORAL PRESENTATION SESSION 06: HOST RESPONSE TO INFECTION AND NEW DIAGNOSTIC TOOLS

ESP17-1187

KAWASAKI DISEASE (KD) PATIENTS PRESENTING WITH ≥ 10 DAYS OF FEVER AMONG 20 LATIN AMERICAN (LA) COUNTRIES: A PROSPECTIVE MULTINATIONAL STUDY OF THE REKAMLATINA NETWORK

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Background

Delayed diagnosis of KD (>10 days of fever) is associated with higher rates of coronary artery lesions (CALs), other complications, IVIG-resistance, and need of steroids and other drugs. We describe the only prospective multinational multicenter study from Latin America (LA) analyzing children with KD in whom the diagnosis was made >10 days of fever.

Methods

Ongoing prospective descriptive multinational study of children who met AHA's KD criteria, and were attended at 57 of the most important pediatric/general referral hospitals in 20 LA countries. Study period: June-1-2014 to December-31-2016.

Results

Among 718 enrolled pts, information about the length of fever was available in 697(97.1%) pts. Of these, 142(20.4%) presented ≥ 10 days fever before KD diagnosis was made. Mean days of fever onset were 14.5(10-36) days. 89(62.6%) were male pts, mean age at admission was 32.3(3-171) months; distribution by age groups was: <6months, 11(7.7%) pts; 7-24 months, 64(45.1%) pts; >25months, 67(47.2%) pts. A mean of 3 previous recent medical visits prior to diagnosis was documented. 138(97.2%) were hospitalized; with a mean length of admission of 6 days. 122(86%) pts received ≥ 1 antibiotics for other presumed diagnoses. A baseline echocardiogram was performed in all pts, showing >1 abnormality in 70(49.3%) pts. CAL's (dilatations and/or aneurysms) were detected in 33(23.2%) pts. IVIG was given in 134(94.4%) pts: 1 dose, 119(88.8%) pts; 2 doses, 15(11.2%) pts. Aspirin, steroids and infliximab were given in 139(97.9%), 31(21.8%), and 2(1.4%) pts, respectively. No myocardial infarctions or deaths occurred.

Conclusions

Of concern, delayed diagnosis occurred in a significant percentage of patients with KD. The proportion of children with cardiac abnormalities, mostly CALs, is among the highest reported from Latin America.

ORAL PRESENTATION SESSION 12: HIV/AIDS

ESP17-1189

PREGNANCY IN PERINATALLY HIV-INFECTED YOUTH

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Title of Case(s)

Pregnancy in perinatally HIV-infected youth.

Background

A growing cohort of perinatally infected female youth are reaching childbearing age and becoming pregnant. The objective of the study was to review pregnancy and neonatal outcomes among perinatally infected pregnant patients at a single center for HIV-1 children and adolescent care in Sao Paulo - Brazil.

Case Presentation Summary

A retrospective review of maternal and neonatal records for 26 perinatally infected adolescents between 2005 till now was performed. Clinical and therapeutic data of the youth, pregnancy outcomes, and neonatal HIV status were abstracted.

Thirty four pregnancies were reviewed, Girls had HIV diagnosis at age range 0 to 8 years and the age at first pregnancy was 14 to 25 years. Eight youths had two pregnancies each; three pregnancies resulted in abortion and two pregnancies are in course. Thirty babies were born from twenty five women; the gestational age was > 37 weeks for all of them. The cesarean delivery rate was 66% and only three babies were born with less than 2,500 g of weight. Nine youth were not receiving antiretroviral therapy at the beginning of pregnancy, but all of them received antiretroviral therapy after the diagnosis of pregnancy and 63% of them had undetectable HIV viral load at delivery. Prophylaxis of HIV transmission (MTCT) was done for all babies. Progression of HIV disease occurred in two mothers who died 23 and 32 months after delivery.

Learning Points/Discussion

The reproductive health of this group of adolescents and youth seems to be similar to that of HIV-uninfected one. Early introduction of reproductive health issues discussion is needed. Follow-up of this third generation of HIV-exposed infants needs to be addressed. There were no cases of MTCT of HIV in our cohort.

ORAL PRESENTATION SESSION 05: INVASIVE COMMUNITY-ACQUIRED BACTERIAL INFECTIONS

ESP17-1197

TREATMENT OF COMMUNITY ACQUIRED PNEUMONIA COMPLICATED BY EMPYEMA: COMPARING ORAL VERSUS OUTPATIENT PARENTERAL ANTIBIOTIC TREATMENT MODALITIES AND IDENTIFYING CRITERIA FOR LENGTH OF TREATMENT

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Background

No consensus exists on appropriate management of empyema complicating community-acquired pneumonia (Emp-CAP) in children; this is particularly problematic after discharge from hospital. The need for outpatient parenteral antibiotic therapy (OPAT) and the length of treatment need to be delineated. Objectives of this single-center, retrospective study were to: i) compare outcomes of Emp-CAP discharged on OPAT versus oral antibiotics (O-Abx); ii) evaluate inflammatory markers as indicators for treatment success.

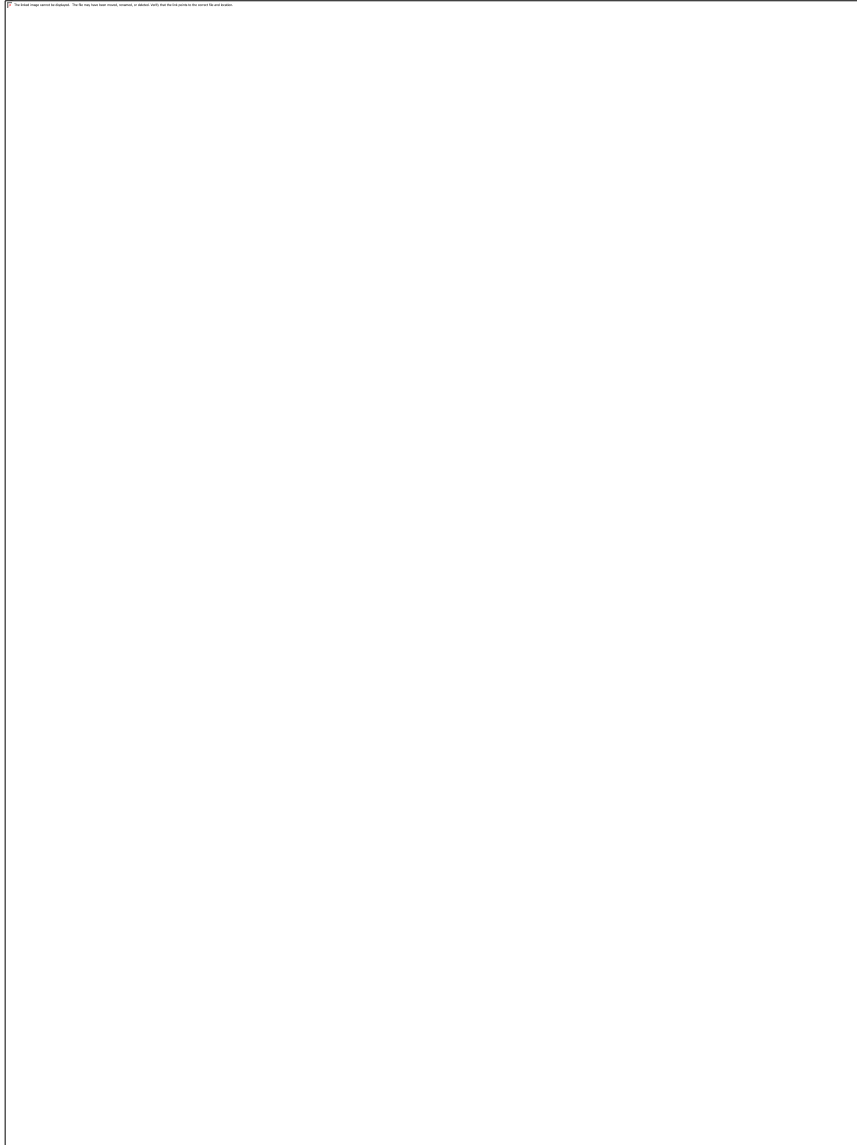
Methods

Records of children <18 yo hospitalized with Emp-CAP (01Jan2006-31Dec2016) were reviewed for patient characteristics, and hospital/ambulatory course. Patients at risk for opportunistic infections were excluded. White blood cell count (WBC), C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) were assessed on admit, switch to home treatment (switch), discharge (DC), and end of therapy (EOT). Outcomes, defined as success (improved with/without complications, no treatment change), or failure (readmissions/complications with treatment change) were compared between O-Abx and OPAT.

Results

There were 181 Emp-CAP cases [64(35.4%) culture positive: 35 pneumococcus, 14 MRSA, 8 *S. pyogenes*, 7 others] discharged to home; 166(91.7%) on O-Abx [134/166(80.7%) switched to O-Abx in-house] and 15(8.3%) on OPAT; 32/181(17.7%) were lost to follow-up. Treatment success was significantly more likely for O-Abx group [127/137(93%) vs. 7/12(58%); $p = 0.0027$]. WBC and CRP decreased significantly at each period measured; ESR improvement was highly significant at EOT (Table 1). Length of treatment (days) was not different between

groups (O-Abx: 30.2 ± 9.2 vs. OPAT: 33.2 ± 6.5).



Conclusions

O-Abx is a safe and efficacious treatment modality for Emp-CAP and can be initiated early in hospitalization. Clinical improvement and rapidly changing weekly WBC and CRPs may be used as markers of ongoing O-Abx treatment success and ESR may be used as marker of treatment completion.

ORAL PRESENTATION SESSION 08: VACCINES - ELUCIDATING MECHANISMS

ESP17-1208

PERSISTENCE AND 4-YEAR BOOSTING OF THE BACTERICIDAL RESPONSE ELICITED BY 2- AND 3-DOSE SCHEDULES OF MENB-FHBP

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Background

This study evaluated antibody persistence in adolescents receiving 2 or 3 doses of MenB-FHbp (Trumenba[®], bivalent rLP2086), a vaccine approved in the US to prevent meningococcal serogroup B (MenB) disease in individuals aged 10–25 years, and assessed safety and immunogenicity of a booster dose.

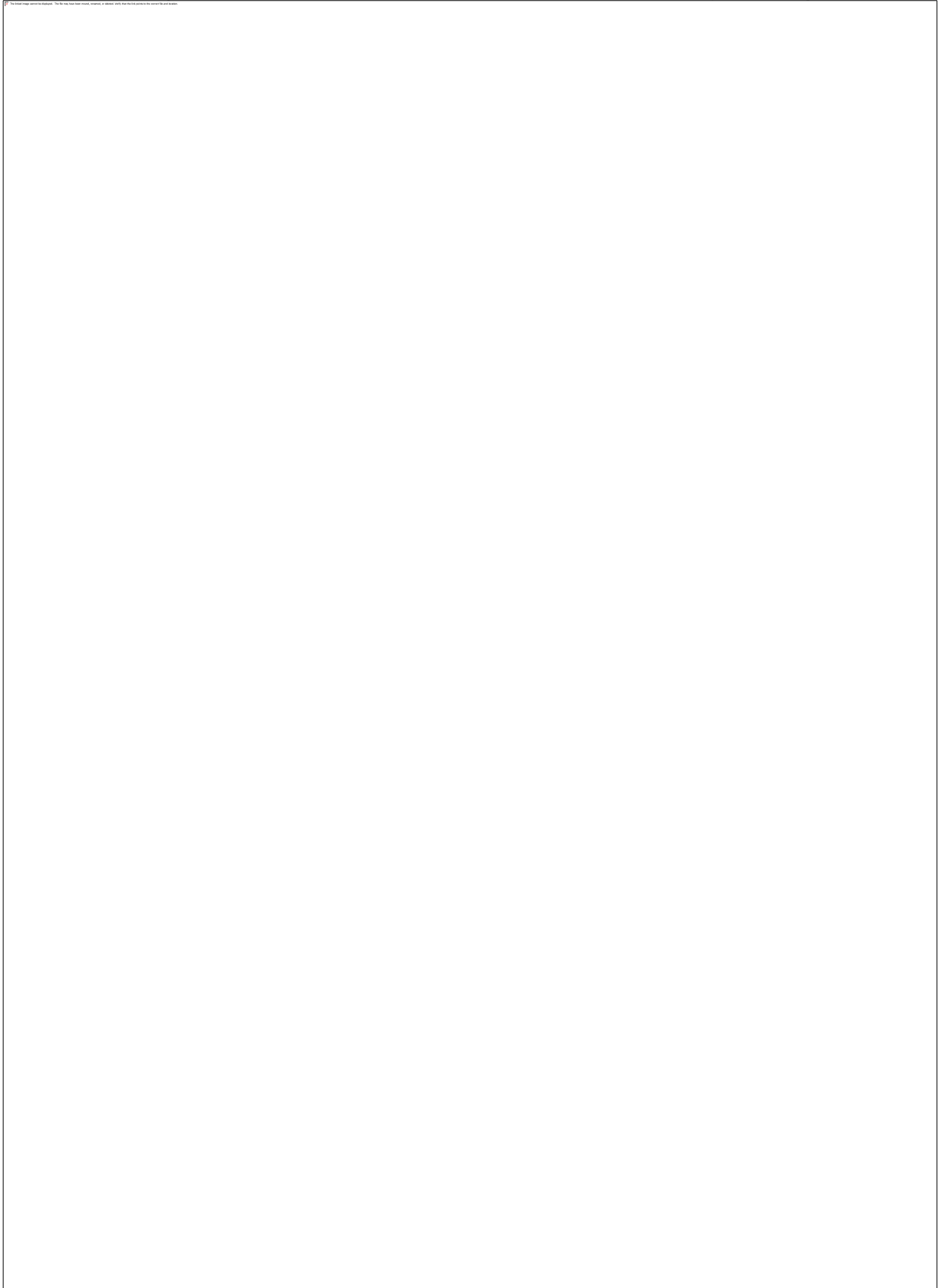
Methods

This was an open-label extension of a phase 2, randomized, placebo-controlled, single-blind, multicenter study in which European subjects aged 11–<19 years received MenB-FHbp per 0,1,6-month; 0,2,6-month; 0,6-month; 0,2-month; or 0,4-month schedules. Subjects were followed for 4 years to determine bactericidal antibody persistence, then received a MenB-FHbp booster dose. Immunogenicity was assessed by serum bactericidal assays with human complement (hSBAs), the accepted surrogate of efficacy against meningococcal disease, using 4 MenB test strains: PMB80 (FHbp variant A22), PMB2001 (A56), PMB2948 (B24), and PMB2707 (B44). Safety was also assessed.

Results

Proportions of subjects with hSBA titers ³1:16 for PMB80 (A22) or ≥1:8 for the other strains (titers ≥1:4 are considered protective) declined from levels observed 1 month after the last primary series dose, plateaued by approximately 12 months, and were generally similar across groups at 48 months. One month after the booster dose, proportions of subjects achieving these prespecified titer levels were comparable or superior to those 1 month after the primary series across groups. hSBA geometric mean titers (GMTs) followed similar patterns and

were consistently higher after the booster dose compared with 1 month after the primary series (**Figure**).



Conclusions

MenB-FHbp administration under various 2- and 3-dose schedules elicits similar immune responses through 48 months after the last primary dose. A MenB-FHbp booster dose given at 48 months induced bactericidal antibody titer increases indicative of immunologic memory, and was safe and well-tolerated.

Clinical Trial Registration (Please input N/A if not registered)

Clinicaltrials.gov NCT01299480, NCT01543087

ORAL PRESENTATION SESSION 02: PREGNANCY, CONGENITAL AND PERINATAL INFECTIONS

ESP17-1213

KEY DETERMINANTS FOR THE DEVELOPMENT OF RECURRENT INVASIVE INFECTIONS IN NEONATES: DATA FROM THE NEONIN NETWORK ([HTTPS://WWW.NEONIN.ORG.UK](https://www.neonin.org.uk)) ON BEHALF OF THE NEONATAL INFECTION SURVEILLANCE NETWORK (NEONIN)

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Second Department of Paediatrics at "P. & A. Kyriakou" Children's Hospital, Athens, Greece

Background

Infection is a major concern in the care of newborn babies. Neonatal infections constitute a major cause of hospital admission and prolonged stay. Recurrent infections contribute to increased mortality and morbidity. This study aims to identify the risk factors associated with recurrent invasive infections in neonates.

Methods

neonIN is an international web-based surveillance database for culture proven neonatal infections. Cases from January 2004 to December 2016 were extracted.

Two groups were compared: neonates with a single-positive culture (G1) to neonates with recurrent-positive cultures (G2). Repeated cultures with Coagulase-negative staphylococci (CONS) and fungi within 10 days were considered as single episode; for all other pathogens this was limited to 7 days.

Associations between the two groups and their characteristics were evaluated with chi-square test of independence and Mann-Whitney test.

Results

We identified 5895 infants, of which 885(15%) with recurrent positive cultures.

Neonates with a single-positive culture(G1) had a higher median birth-weight ($p<0.001$), a higher median gestational-age ($p<0.001$), were less likely to have received parenteral-nutrition ($p<0.001$) and to have a central-line present on the day of the culture ($p<0.001$) compared to the recurrent group (G2). The median day of life for the 1st episode was 10 days(IQR:3-23) vs 12 days(IQR:7-23) ($p<0.001$) for G1 and G2 respectively.

G2 neonates were more likely to have at least one underlying disease 39.3% vs 23.5% ($p<0.001$). Specifically, they were more likely to be SGA, have congenital gut abnormalities, and been treated for NEC compared to G1. (Table 1)

The most commonly isolated pathogen for both groups were CONS (including *S.capitis*, *haemolyticus*, *warneri* and *hominis*) at 53.3% for G1 vs 59.1% for G2.



Conclusions

Prematurity, LBW, SGA and GI pathology are important predisposing factors for the development of recurrent bacterial infections.

ORAL PRESENTATION SESSION 05: INVASIVE COMMUNITY-ACQUIRED BACTERIAL INFECTIONS

ESP17-1224

EMERGENCE AND EPIDEMIOLOGY OF MENINGOCOCCAL W CLADE ST-11 IN NEW SOUTH WALES, AUSTRALIA

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Title of Case(s)

Emergence and epidemiology of Meningococcal W Clade ST-11 in New South Wales, Australia

Background

Invasive meningococcal disease (IMD) is a severe infection caused by several serogroups of the bacterium, *Neisseria meningitidis*. The epidemiology of IMD has shifted over the past ten years. We reflect on the establishment of serogroup W meningococcal (MenW) disease in Australia's most populous state, its virulence and implications for vaccination policy.

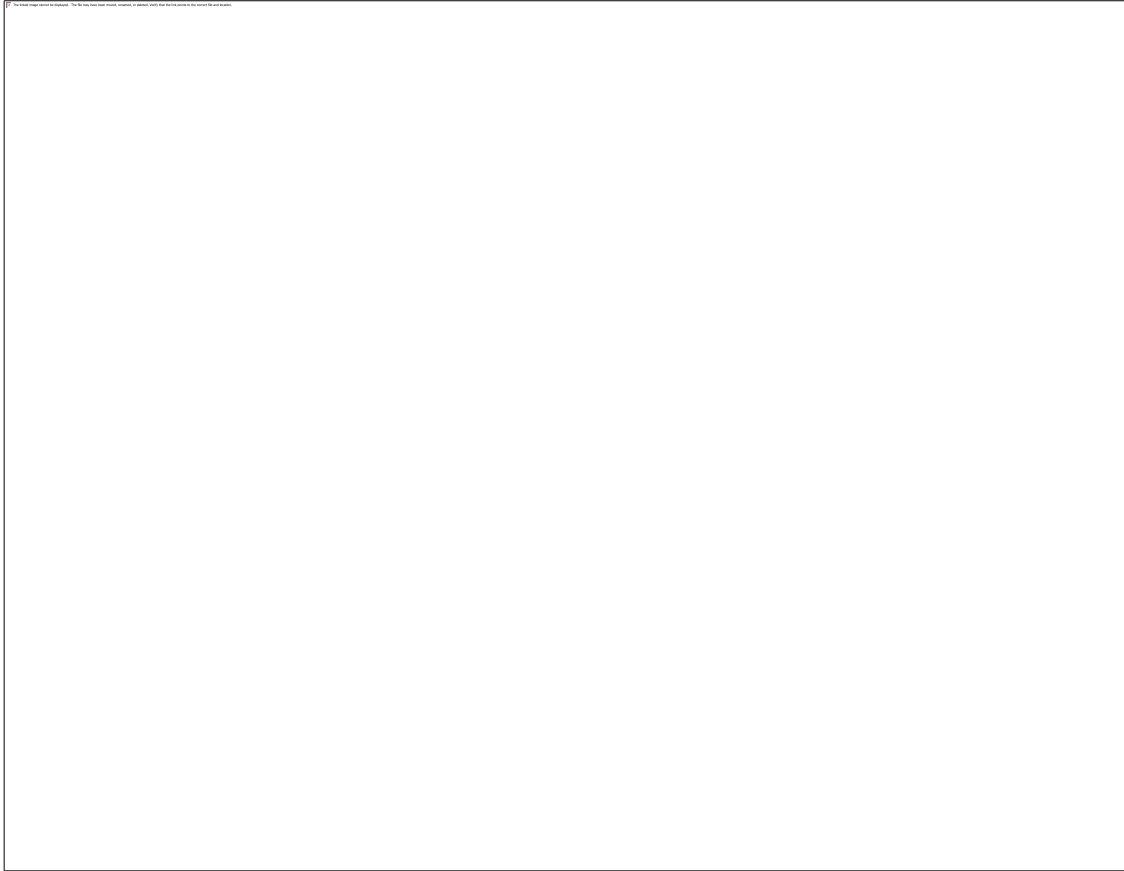
Case Presentation Summary

We examined a series of 2043 IMD cases notified in the state of New South Wales, Australia from 1996-2016. Meningococcal C (MenC) predominated prior to 2004, when MenC vaccine was introduced to the national schedule. Serogroup B disease then became dominant, with MenW occurring only sporadically pre-2013. MenW increased steadily from 2013, in 2016 becoming equal with MenB as the most common cause of IMD.

MenW was previously seen in older patients, but more recently became common among children and adolescents. Molecular sequencing has linked Australian MenW cases with a recently-emerged hypervirulent ST-11 strain responsible for epidemics in South America (2008-2012) and the United Kingdom (2013-2015).

We analysed the Case Fatality Ratio (CFR) for IMD by serogroup over the past four years. CFR for MenW was 12%, compared with MenC (14%), MenB (2%), MenY (9%), and an overall CFR of 6%. We analysed likelihood of death by serogroup, adjusted for age by strata. We found that MenW was associated with a much higher risk of

death (adjusted OR 4.8, 95%CI 0.9-27.0) when compared with MenB.



Learning Points/Discussion

Our analysis demonstrates the emergence of MenW in NSW, with a higher CFR among MenW cases and a shift to younger patients. Data are limited by small case numbers but support consideration of MenW vaccine introduction into the Australian schedule.

ORAL PRESENTATION SESSION 06: HOST RESPONSE TO INFECTION AND NEW DIAGNOSTIC TOOLS

ESP17-1228

USE OF BLOOD PCR TO IDENTIFY BACTERIAL PATHOGENS CAUSING LIFE-THREATENING INFECTION IN CHILDREN WITH NEGATIVE BLOOD CULTURES

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Background

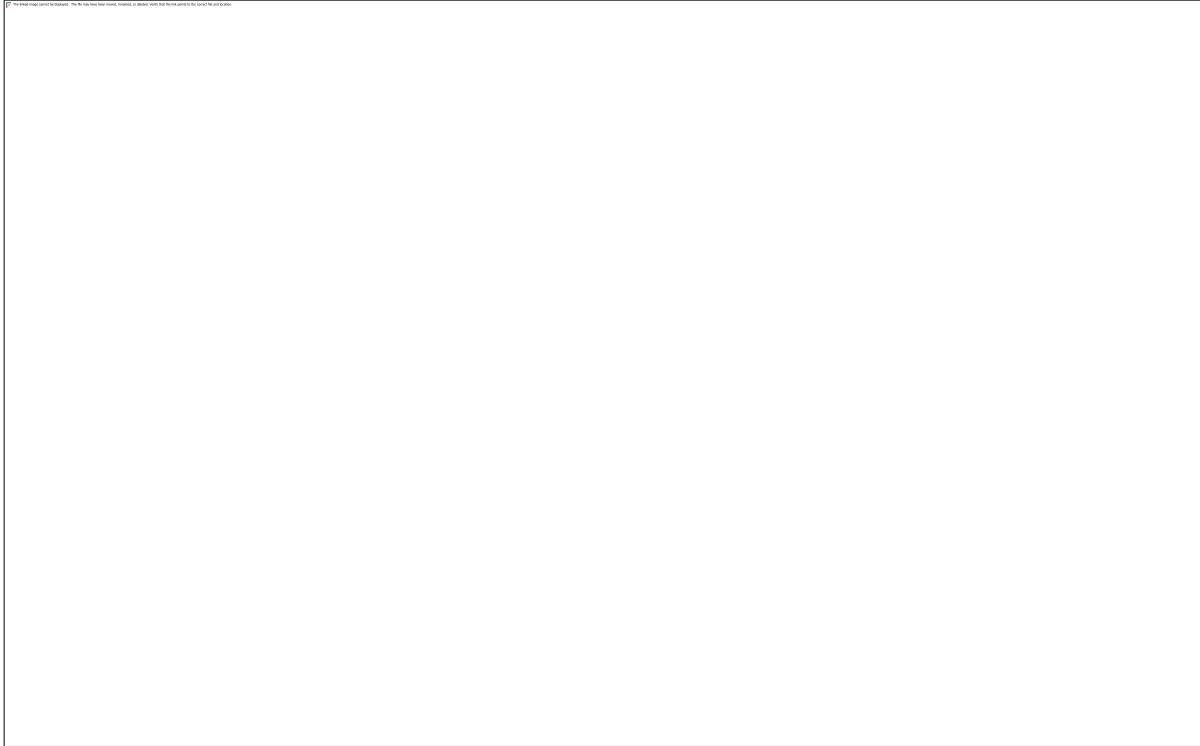
Children with prior antibiotic treatment or localized bacterial infection commonly have negative blood cultures. Pathogen identification is frequently unsuccessful or involves invasive sampling. Our previous analysis of the EUCLIDS cohort demonstrated that whole blood PCR positivity correlates well with blood culture positivity for selected pathogens. Here, we assess the performance of whole blood PCR for bacterial pathogen detection in patients with suspected bacterial infection, but negative blood cultures.

Methods

Children with suspected sepsis were recruited by the EUCLIDS consortium (2012- 2015) and retrospectively phenotyped using available clinical results into definite bacterial, definite viral infection or indeterminate infection. EDTA blood samples underwent pretreatment by lysozyme/lysozyme digestion and silica bead disruption followed by nucleic acid extraction. We used nested PCR to amplify bacterial pathogens including *Staphylococcus aureus*, *Neisseria meningitidis*, *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Streptococcus pyogenes*. Children with negative blood culture, but indeterminate (suspected) or definite bacterial infection, were further analysed.

Results

504 children had contemporaneous PCR and blood culture samples. 438 had negative blood cultures. The phenotype for 326/438 patients was suspected or definite bacterial infection, of whom 92 had a causative bacterial pathogen identified at a sterile body site (68 matching the PCR panel-pathogens). Blood PCR identified 25 pathogens in 23/326 patients. Of these, 9/25 were concordant with sterile site culture. Of the remaining 16, 3 were concordant with non-sterile site culture, 9 unconfirmed by culture data were consistent with clinical syndrome, and 4 had poor clinical correlation, consistent with environmental contamination.



Conclusions

Whole blood PCR can identify bacterial pathogens in some patients with negative blood cultures with the avoidance of invasive sampling. PCR has potential as a rapid, non-invasive test to improve diagnosis of bacterial infection.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 09: PARASITIC AND MYCOBACTERIAL INFECTIONS

ESP17-1246

EVALUATION OF IP-10, IL-2, IL-15, MCP-1 AND MIG RESPONSES FOR DISCRIMINATION BETWEEN LATENT TUBERCULOSIS INFECTION AND ACTIVE TUBERCULOSIS DISEASE IN BCG VACCINATED CHILDREN

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Background

The interferon-gamma release assays (IGRAs) contribute greatly to the diagnosis of tuberculosis (TB). However, they fail to distinguish active disease from latent tuberculosis infection (LTBI). Alternative biomarkers are being investigated for possible differentiation between close contact, active TB and LTBI.

Methods

The study was conducted on children who required TB screening because of contact or to discern active TB due to respiratory complaints, and healthy controls. Clinical/microbiological parameters, tuberculin skin test (TST), QuantiFERON TB-Gold In-Tube (QFT-IT) were evaluated and values of antigen-induced production of IP-10, IL-2, IL-15, MCP-1 and MIG were measured.

Results

196 children were prospectively enrolled including 34 patients with TB, 34 with non-tuberculous respiratory disease, 98 with LTBI and 30 healthy controls. QFT-IT positivity rate was %65 in TB and %22 in LTBI group. TST was negative in %29 of TB patients. In TB close contacts, TST and QFT-IT positivity rates were %75 and %33 respectively. IP-10 and MIG were significantly higher in the TB than in the others. IP-10 levels also significantly differed between the LTBE and the healthy group. IL-2 was higher in the LTBE than in the TB, while MCP-1 and IL-15 did not differ between the groups. It was observed that in the presence of TB contact, IP-10 and MIG increased independently of other variables. The area under the curve (AUC) for differentiating active TB from LTBI was 0.846 for IP-10, 0.821 for MIG and 0.711 for QFT-IT. The AUC for differentiating TB close contacts from children without any TB contact history was 0.941 for IP-10, 0.649 for MIG and 0.664 for QFT-IT.

Conclusions

Compared with QFT-IT, our study showed that IP-10 and MIG may also be a guide for LTBE-TB and control-TB contact differentiation.

Clinical Trial Registration (Please input N/A if not registered)

N/A

ORAL PRESENTATION SESSION 08: VACCINES - ELUCIDATING MECHANISMS

ESP17-1295

NEXT-GENERATION SEQUENCING APPROACH TO DISSECT IMMUNE RESPONSES TO CAPSULAR GROUP B MENINGOCOCCAL VACCINE IN INFANTS

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Background

Neisseria meningitidis is a globally important cause of meningitis and septicaemia. Capsular group B meningococcus (MenB) accounts for the vast majority of invasive disease in developed countries. The European Medicines Agency licensed a MenB vaccine (Bexsero®) in January 2013. However, this vaccine is associated with significant reactogenicity, with some vaccine studies showing post-vaccination fever rates up to 60%. Here we used RNA-sequencing to describe blood transcriptional signatures following routine infant immunisations with or without MenB vaccine, and related these to vaccine reactogenicity and immunogenicity.

Methods

One hundred and eighty-seven infants were randomized to receive routine immunisations +/- MenB vaccine. Blood samples were taken prior to a second dose of vaccine (2+1 schedule), and 6 hours, 24 hours, 3 days and 7 days post-vaccination. Gene expression profiles were assessed by Illumina® 100bp paired-end RNA-sequencing. A continuous temperature monitoring device, iButton®, was used to measure temperature for the first 24 hours after vaccination; in addition, repeated axillary temperatures were taken for the first week post-vaccination. Vaccine immunogenicity was assessed 7 days post-vaccination by ex vivo B-cell ELISpots, and serum bactericidal assay (functional antibody) titres were measured 28 days post-vaccination.

Results

We describe a peak in differentially expressed genes (DEGs) 24 hours after vaccination, with a large overlap in DEGs observed in the two vaccine groups (MenB vs routine immunisations) at 6 and 24 hours. In contrast, the genes DEGs at 3 and 7 days post-vaccination were distinct between the two vaccine groups and included differences in immunoglobulin variable gene usage. Furthermore, we correlated gene expression signatures with vaccine reactogenicity and immunogenicity.

Conclusions

These data demonstrate the utility of systems approaches to dissect complex immunobiology and discover biomarkers of vaccine reactogenicity and immunogenicity.

Clinical Trial Registration (Please input N/A if not registered)

NCT02080559

ORAL PRESENTATION SESSION 06: HOST RESPONSE TO INFECTION AND NEW DIAGNOSTIC TOOLS

ESP17-1297

CLINICAL UTILITY OF POLYMERASE CHAIN REACTION TESTING FOR STREPTOCOCCUS PNEUMONIAE IN PAEDIATRIC CEREBROSPINAL FLUID SAMPLES: A DIAGNOSTIC ACCURACY STUDY OF OVER 2000 SAMPLES FROM 2004-2015

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Background

Clinical utility of real-time PCR (RT-PCR) for diagnosis of pneumococcal meningitis compared to culture has not been described in detail in paediatric cohorts. The aim of this retrospective study was to review the diagnostic accuracy of RT-PCR testing of CSF samples for *Streptococcus pneumoniae* DNA in comparison to traditional bacterial culture. The hypothesis was that RT-PCR is more sensitive than culture and would detect more cases of pneumococcal meningitis.

Methods

Patients of the Children's University Hospital, Temple Street, Dublin were eligible for inclusion if aged less than 16 years, and they had a CSF sample tested for *S.pneumoniae* DNA by RT-PCR between 2004 and 2015. Medical notes and laboratory results of PCR positive/culture negative patients were reviewed.

Results

A total of 2,025 samples were included. RT-PCR had a sensitivity of 100% and specificity of 98% for the detection of *S.pneumoniae* DNA in comparison to culture. Of the 28 culture negative/PCR positive cases, 25 (89%) were probable meningitis cases and only three (11%) were suspected false positive results. Nineteen (76%) of the 25 probable cases required ICU admission and three died (12%). Six different serotypes were also found in the culture positive patients (18C, 6B, 14, 22F, 7F and 33F).

Conclusions

This study demonstrates that PCR testing of CSF samples for *S. pneumoniae* is sensitive and specific when compared to culture. PCR is particularly useful in detecting those cases where culture is negative, perhaps relating to pre-CSF sampling administration of antimicrobials.

ORAL PRESENTATION SESSION 05: INVASIVE COMMUNITY-ACQUIRED BACTERIAL INFECTIONS

ESP17-1334

PROGNOSTIC FACTORS AMONG CHILDREN WITH INVASIVE MENINGOCOCCAL DISEASE IN A TERTIARY-CARE HOSPITAL IN SPAIN

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Background

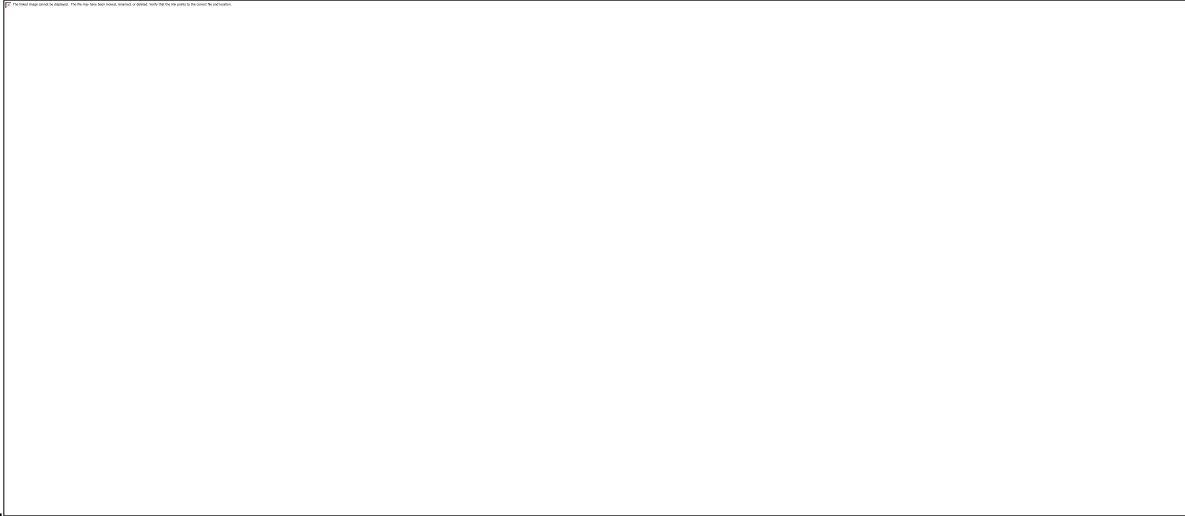
Invasive meningococcal disease (IMD) is a severe infection with a high risk of sequelae or death. The objective of this study is to analyse the features leading to poor outcome.

Methods

Descriptive ambispective cohort study of confirmed/suspected IMD in <14-year-old patients admitted to a tertiary-care hospital during 2005-2016. Epidemiologic, diagnostic and therapeutic characteristics were collected. Statistical analysis by subgroups was performed.

Results

Over the study period, 142 IMD were included. Meningitis was detected in 90 cases; the remained developed sepsis/septic shock. Median age was 24 months (IQR 9.75-60). Median length of stay in survivals was 7 days (IQR 7-10). Mean C reactive protein (CRP) was 152.1mg/L (± 77.5 SD), median procalcitonin 15.87ng/mL (IQR 7-49.6), mean leukocytes count 19,128/mm³ (± 7703 SD), 21 children presented leukopenia. Coagulopathy was present in 62 and thrombocytopenia in 20 patients. All patients received cefotaxime empirically, with the addition of vancomycin in 15. *N. meningitidis* was isolated in 78 cases (51 blood culture, 41 CSF culture), the most frequent meningococcal serogroup was B (61, 78.2%). Intensive care was required in 88 cases. Overall mortality rate was 8.5%, which was higher in sepsis/septic shock subgroup with 17.3% ($p < 0.05$) (see table below). In the subgroup analysis of deceased, the median age was 16 months (RIQ 11.75-44.75), admission levels of CRP were lower and procalcitonin levels higher ($p < 0.05$). Major complications appeared in 29 (44.8% <12 months), mostly neurological (9.8%). Eight cases had sequelae (five neurological, four vascular), mainly in <12 months group (< 0.05).



Conclusions

In our study, worst outcome was observed in <12 months group (20%), but mortality was higher in 12-24 months group (14%). At admission, procalcitonin was a better predictor of severity than CRP.

ORAL PRESENTATION SESSION 11: ANTIBIOTIC STEWARDSHIP AND ANTIMICROBIAL RESISTANCE

ESP17-1355

MANAGING PEDIATRIC COMMUNITY ACQUIRED PNEUMONIA WITH NARROW SPECTRUM ANTIBIOTICS IN THE TERTIARY CARE CENTER

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Background

Background: Pneumonia is the biggest killer of children under 5 years of age throughout the world. The clinicians usually use broad-spectrum antibiotics for treating it against the guidelines and consequent hazards. We collaborated with American Academy of Pediatrics initiative of Value in inpatient pediatrics (VIP) Improving Community Acquired Pneumonia (ICAP) Quality improvement project to change the paradigm.

Objectives: To increase the use of narrow spectrum antibiotics (Ampicillin/amoxicillin) to 80% in emergency & inpatients & to decrease the use of macrolides to 5% in under 5 age group.

Methods

Methodology: We implemented series of interventions including information dissemination, interactive discussions and webinars with all care providers. All interventions aimed at improving the knowledge/confidence of care providers and motivating them to use the narrow spectrum antibiotics for community acquired pneumonia. The rates of antibiotic use/selection were determined by individual chart review at baseline and then over 5 improvement cycles. The Baseline percentages were compared with the final cycle using Fisher's exact test.

Results

Rates of narrow spectrum antibiotic use increased and rate of macrolide decreased in all the clinical settings (emergency, inpatient, discharge) more than the set goals.

Conclusions

The narrow spectrum antibiotics work better than the broad-spectrum antibiotics and change can be brought through perpetual motivation. This real time experience of practicality of implementation of such approach can be an impetus for using narrow spectrum antibiotics for the clinicians.

ORAL PRESENTATION SESSION 03: VACCINE SAFETY

ESP17-1376

HOSPITAL-BASED VACCINE SAFETY ACTIVE SURVEILLANCE SYSTEM: PROOF-OF-CONCEPT STUDY ON RISK OF ASEPTIC MENINGITIS AND IMMUNE THROMBOCYTOPENIC PURPURA FOLLOWING MEASLES-MUMPS CONTAINING VACCINATION

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Background

Enhancement of vaccine pharmacovigilance capabilities in low and middle-income countries (LMICs) is a key activity for the WHO Global Vaccine Safety Initiative (GVSII). The objective of this proof-of-concept study was to evaluate the feasibility, data quality and sustainability of an international hospital-based active surveillance system for the assessment of epidemiological associations between rare adverse events and vaccines in any setting, including LMICs.

Methods

We conducted an international hospital-based multicenter retrospective observational safety study to evaluate the risk of ITP and aseptic meningitis following administration of the first dose of measles-mumps-containing vaccines, using the self-controlled risk interval method as primary analysis.

Results

Using data from 26 sentinel sites (49 hospitals) selected from 16 countries of the six WHO regions, we found an adjusted incidence rate ratio (IRR) of 5.5 (95% CI: 2.7-11.4) for ITP following first dose of measles-containing vaccination, and of 10.8 (95% CI: 4.0-29.2) for aseptic meningitis following mumps-containing vaccination. Our preliminary unadjusted strain-specific analysis showed a significantly elevated ITP risk for measles vaccines containing Schwarz (IRR:20.7; 95%CI:2.7-157.6), Edmonston-Zagreb (IRR:11.1; 95%CI:1.4-90.3), and Enders'Edmonston (IRR:8.5; 95%CI:1.9-38.1) strains. We also found an elevated risk for the Leningrad-Zagreb mumps strain (IRR:10.8; 95%CI:1.3-87.4). We did not have enough power to confirm the absence of risk for Jeryl-Lynn-derived mumps strains.

Conclusions

This proof-of-concept study has shown that an international hospital-based active surveillance system for epidemiological vaccine safety monitoring, with high participation of LMICs, using a common protocol and same study procedures, can generate reliable results. This paves the way for the implementation of systematic international hospital-based active systems for monitoring the safety of new vaccines introduced in LMICs.

Funding: Center for Biologics Evaluation and Research (CBER)-U.S. Food and Drug Administration (FDA) funded this project. GRIP, Global Research in Pediatrics, European Union Seventh framework Programme (FP7/2007-2013) provided additional funding under grant agreement n° 261060.

E-Poster Discussion Abstracts

EPOSTER DISCUSSION SESSION 10: VACCINATION PROGRAMMES INCLUDING PNEUMOCOCCAL IMPACT - STATION B

ESP17-0008

VACCINATION COUNSELLING: THE MEETING POINT IS POSSIBLE

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Background

There are recommendations for decision-making as regards parents who do not vaccinate their children, but there are few publications analysing this problem. In November 2014, a pioneer medical clinic opened in Spain, for counselling on immunisation practices. The aim of this study is to determine the success of the recommendations of the American and Spanish Paediatrics Associations according to the number of parents who finally accept vaccination.

Methods

A descriptive, cross-sectional, prospective and single-centre study was conducted from November 2014 to November 2016. Children under the age of 16 not properly vaccinated, according to the immunisation schedule of the region where the study was conducted, were included after signing informed consent.

Results

A total of 30 families were counselled. The median age of the children was 2 years, and 80% of them received no vaccine. Absolute non-acceptance of vaccination was practiced by 50% of parents. The main reasons for not vaccinating were: 100% thimerosal-containing, 90% risk of autism, 83% aluminum-containing, 70% presence of other stabilizers and preservatives, and 67% risk of anaphylaxis. The immunisation advice was said to be helpful by 93% of parents. Vaccination was accepted by 90% of parents (50% completely).

Conclusions

Anti-vaccination ideologies are strong and hard to change. Paediatricians not denying medical care to parents who endanger the lives of their own children are also hard to find. The meeting point is possible, and society needs it. Active listening, empathy, and good quality information were the keys to our results.

EPOSTER DISCUSSION SESSION 06: SEVERE BACTERIAL INFECTIONS - STATION F

ESP17-0018

LONG TERM FUNCTIONAL OUTCOME AFTER PEDIATRIC OSTEOMYELITIS DRIVEN BY INITIAL SEVERITY OF ILLNESS

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Background

Children with osteomyelitis present with a wide spectrum of illness, ranging from mild to severe. This prospective survey evaluates the impact of initial severity of illness on the 2 year outcomes of children treated for osteomyelitis.

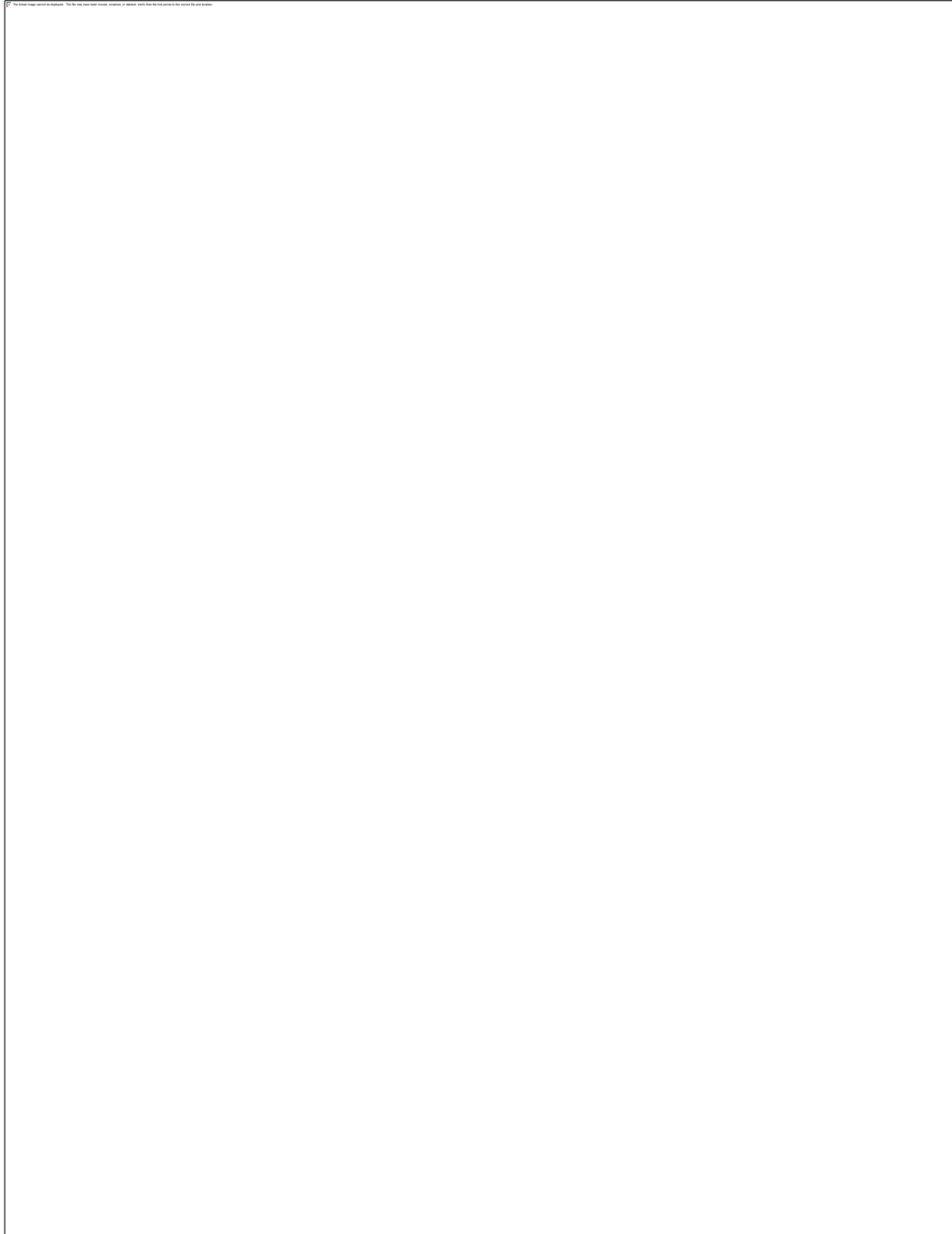
Methods

Affected children were prospectively studied from 2012-2014 and were cared for by a multidisciplinary team according to evidence-based clinical practice guidelines. Initial severity of illness scores (SIS) were calculated. Clinical and radiographic follow-up as well as Pediatric Outcomes Data Collection Instrument (PODCI) and Pediatric Quality of Life Inventory (PedsQL) survey data were obtained at 2 years. Mann-Whitney U test was used to compare means.

Results

90 (53%) children out of 170 enrolled returned for follow-up. Mean initial severity of illness score (SIS) was 3.1 (95%CI 2.3-3.9). Clinical and radiographic outcome was favorable for 86 (95.5%) children. Persistently visible physeal abnormalities at 2 years occurred in 8 children (8.8%). In 4 cases small central physeal arrests did not affect longitudinal growth or function. One child had complete growth arrest and AVN of the proximal humerus. Another had persistent angular deformity of the tibia related to healed pathologic fracture. There were two children with AVN of the femoral head. The 4 children with persistent clinically significant skeletal abnormalities were found to have worse presenting SIS (than the rest of the cohort: 6.7 (95%CI 3.3-10.1) vs 2.8 (95%CI 2.0-3.5) ($p=0.0171$)) and worse overall PODCI global function scores at 2 years 89.8 (95%CI 94.0-

97.5) vs 95.7 (95%CI 82.9-96.8) (p=0.0268).



Conclusions

Long term sequelae among children with osteomyelitis requiring ongoing orthopaedic surveillance is rare and may be anticipated by initial severity of illness. The majority of children with this condition do not require long term follow-up beyond the initial treatment period.

EPOSTER DISCUSSION SESSION 21: KAWASAKI DISEASE AND NON-INFECTIOUS CONDITIONS & INTERVENTIONS - STATION E

ESP17-0022

THE IMPACT OF VITAMIN D SUPPLEMENTATION IN PAEDIATRIC PRIMARY CARE ON RECURRENT RESPIRATORY INFECTIONS: A RANDOMIZED CONTROLLED TRIAL.

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Background

Paediatric respiratory tract infections (RTIs) are one of the most common reasons for physician visits and hospitalisation, and they are associated with significant morbidity and mortality rates. Evidence suggests that vitamin D supplementation in clinical practice may prove valuable in enhancing the host's immune system. We design a randomised controlled trial to evaluate the Impact of Vitamin D Supplementation in Paediatric Primary Care on Recurrent Respiratory Infections.

Methods

We enrolled 77 paediatric patients who had been diagnosed with recurrent respiratory tract infections (RRTIs) (≥ 6 RTIs per annum) in a primary care setting. 40 of these patients were randomly assigned to receive a vitamin D supplementation (400 UI/die) from October to March. The remaining patients did not receive any supplementation. The number of diagnosed RTIs, the duration of respiratory symptoms, the use of antibiotic therapies and the number of physician visits were recorded using a structured diary by parents.

Results

Baseline characteristics of the patients were similar between the two groups. Significant differences were found between the treatment and control group according to the average number of RTIs, upper respiratory tract infections (URTIs) and lower respiratory tract infections (LRTIs), duration of respiratory symptoms in days, use of antibiotic therapies and number of physician visits.



Conclusions

According to our data, vitamin D supplementation in clinical practice may reduce the global health burden of RRTIs in a primary care setting. Further studies are needed to confirm our data.

Clinical Trial Registration (Please input N/A if not registered)

Clinicaltrial.gov - NCT02617771

EPOSTER DISCUSSION SESSION 15: OTHER COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION G

ESP17-0029

THE INFLUENCE OF INOSINE PRANOBEX ON THE REPRODUCTION OF INFLUENZA VIRUSES IN THE CULTURE OF CELLS MDCK

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Background

Therapy of influenza remains one of the important problems. This is due both to the features of influenza virus (the possibility of the emergence of a new strain), and development of resistance to some anti-influenza drugs. There has been studied the influence of inosine pranobex, a well known immunomodulatory drug with anti-influenza activity, on the reproduction of influenza viruses in the culture of cells MDCK.

Methods

The study was carried out in the culture of the cells MDCK. In the experiments there were used seasonal viruses' strains of influenza A/Minsk/108/09 (H3N2), A/Minsk/124/08 (H1N1), A/Minsk/119/09 and a strain of the pandemic virus of influenza A/Minsk/94/09(H1N1)-p released from the patient whose contamination by the pandemic virus of influenza was confirmed by the PCR.

Results

Cytotoxicity of the preparation was estimated visually by the state of the cell monolayer. The maximum tolerant concentration (MTC) was considered to be ½ of the preparation dose that made no cytotoxic effect after 72 hours of incubation.

Antivirus effect of the preparation was estimated by means of titration of influenza viruses in 96 lunularis panels with monolayer culture of the cells MDCK in the presence of the preparation and without it. In the study there were used multiple of 10 cultivation of viruses (1:10, 1:100 and so on) and concentration of the preparation (100, 50, 25, 12, и 6 mcg/ml). **Conclusions**

On the basis of the conducted study it was stated that inosine pranobex displayed high and moderate antivirus activity in relation to virus strains of influenza A/Minsk/108/09 (H3N2), A/ Minsk/124/08 (H1N1) and strains of the pandemic virus A/Minsk/94/09(H1N1)-p. Antivirus activity of the preparation in the relation to virus strains of influenza B/Minsk/119/09 was characterized as moderate.

Clinical Trial Registration (Please input N/A if not registered)

n/a

EPOSTER DISCUSSION SESSION 12: PUBLIC HEALTH: VIRAL INFECTIONS - STATION D

ESP17-0058

A BENEFIT-RISK ANALYSIS OF ROTAVIRUS VACCINATION IN FRANCE

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Background

Two vaccines, Rotarix and RotaTeq, which have been available for protection against rotavirus gastroenteritis (RVGE) for over a decade, have contributed to a large decrease in the incidence of pediatric diarrhea in countries where the vaccine has been widely used, but they have also led to a small increase in the risk of intussusception.

Methods

We compare the number of prevented hospitalizations for RVGE in infants under age 5 to the number of vaccine-induced hospitalized intussusceptions in France. Data came from the national census, from a regional intussusception registry and from electronic hospital databases.

Results

Currently 9.5% of the 3,900,000 children under age 5 are vaccinated, and we also consider a 92% coverage scenario. Under the current coverage, vaccination was estimated to prevent annually a median number of 1074 [2.5th and 97.5th percentiles: 810 ; 1378] hospitalizations and 1.4 [1.2 ; 1.6] deaths from RVGE and to cause 5.0 [3.2 ; 7.7] hospitalizations for and 0.0051 [0.0011 ; 0.015] deaths from intussusception. The benefit-risk ratio is therefore 214 [128 ; 362] for hospitalizations and 273 [89 ; 1228] for deaths. Under the 92% coverage currently achieved for compulsory vaccinations, rotavirus vaccination with Rotarix would avoid 10459 [7702 ; 13498] hospitalizations for RVGE and induce 47.0 [25.1 ; 81.4] hospitalizations for intussusception, thereby preventing 13.7 [11.1 ; 15.2] deaths and inducing 0.048 [0.010 ; 0.15] deaths.

Conclusions

The benefit-risk ratio is similar in France and in other European countries. This result provides useful information to French health policy-makers in a country where skepticism about vaccine safety is very prevalent.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 17: INVASIVE VIRAL INFECTIONS - STATION A

ESP17-0078

SEVERE ENTEROVIRUS INFECTIONS IN THE NEONATAL PERIOD: COMPARISON WITH OLDER CHILDREN

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Background

Human enteroviruses (EV) have been recognized as important viral causes of severe infections in children, especially in the first month of life. Our aim was to describe the epidemiology and clinical characteristics of severe neonatal EV infections, and to compare them with those affecting older children.

Methods

Prospective study performed in a tertiary care hospital in Spain in 2016. EV infections were investigated in clinical samples from children admitted with severe systemic infection of presumed viral origin, once bacterial infections had been ruled out. Viral detection was performed by RT-PCR and further genotyping.

Results

Thirty-five(87.5%) out of 40 patients included were EV-positive, 20 of whom were newborns <30 days (15±8 days) of age and 15 were >1 month (median 415 days). Fifty percent fo newborns were males and 75% had fever (38.3±0.4°C). Final diagnoses were clinical sepsis(30%), fever without a source(35%), meningitis(20%) and myocarditis(10%). Seven children(35%) needed intensive care unit(ICU) admission, 4 mechanical ventilation, and 2 had sequelae. All detected EV types belonged to EV species-B.

In children >30 days, however, EV-A71 was prevalent(35.7%, p<0.036). The older infants suffered more frequently encephalitis(15%) and meningoencephalitis(30%), p<0.036. Myocarditis, hepatic failure and sequelae affected only newborns, who received antibiotics in 100% of cases vs 69% of older children(p=0.012). Although rates of ICU admission were similar, length of stay was higher in newborns (11.8±11.7 days vs 2±1.7 days, p=0.03). In addition duration of fever until admission was also shorter in the newborns when compared to the older children (5±3h and 21±16h, respectively; p=0.019). Blood analyses only rise differences in platelet count (257000±107000 in <30 days; 374000±84000 in >30 days; p=0.008).

Conclusions

Severe EV infections affect mainly newborns. EV types, clinical characteristics and outcomes vary according to age.

EPOSTER DISCUSSION SESSION 07: HIV/AIDS - STATION G

ESP17-0095

HBV VACCINE IMMUNITY AT 4, 6 AND 10 YEARS IN PERINATALLY HIV INFECTED INDIVIDUALS

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Background

Perinatally HIV infected individuals have compromised immune responses to vaccinations. Yet, it remains unclear the rate at which these individuals lose critical components of vaccine specific immunity over time. We evaluated specific cellular and serological immune responses to HBV vaccination in a group of perinatally HIV infected individuals receiving effective cART.

Methods

We included HIV+ individuals on cART who had a history of completed HBV vaccination. We measured B and T cell memory responses to HBV by ELISPOT and plasma IgG to HBV surface antigen (anti-HBs) by ELISA. Categorical and continuous variables were compared by Fisher and Wilcoxon Rank Sum Tests.

Results

10 HIV+ individuals were included. Median CD4% and plasma HIV RNA log₁₀ copies/ml at 4, 6 and 10 years were (28; 3.2), (27.9;2.9) and (29.5;2.4). After 4 years from the last HBV vaccine dose HIV+ individuals compared with HIV- had strikingly higher numbers of IgG-HBV specific memory B cells, a comparable T cell INF- γ response to HBV and a significant lower concentration of plasma anti-HBs. The rate of loss from 6 to 10 years was markedly higher for B cell memory response, followed by T cell memory and plasma anti-HBs as is shown in figure. Geometric mean anti-HBs were significantly lower for HIV+ than HIV- during the 3 periods of evaluation. By year 10 post-vaccination, the memory B and T cell responses to HBV vaccination were 3 times lower for HIV+ than HIV-; 20% of HIV+ individuals had a titer \geq 10 mIU/ml compared with 100% of HIV-.

Conclusions

There is an important asymmetric difference in the persistence of HBV vaccine specific memory, where B cell memory is better maintained through 6 years after vaccination than T cell memory and plasma antibodies.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 13: PUBLIC HEALTH: BACTERIAL INFECTIONS AND CLINICAL EPIDEMIOLOGY - STATION E

ESP17-0099

INCIDENCE AND ETIOLOGY OF HOSPITALIZED CHILDHOOD COMMUNITY-ACQUIRED ALVEOLAR PNEUMONIA IN TAIWAN

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Background

The purpose of this study was to determine the pathogens and estimate the incidence of childhood community-acquired alveolar pneumonia (CAAP) in Taiwan

Methods

A prospective study was conducted at eight medical centers from November 2010 to September 2013. Children aged from 6 weeks to 18 years who met the World Health Organization's radiologic criteria for alveolar pneumonia were enrolled. To detect classical and atypical bacteria and viruses, blood and pleural fluids were cultured, and respiratory specimens were examined by multiple conventional and molecular methods

Results

At least one potential pathogen was identified in 705 (68.3%) of 1032 enrolled children, including bacteria in 420 (40.7%) cases, virus in 180 (17.4%) cases, and mixed viral-bacterial infection in 105 (10.2%) cases. *Streptococcus pneumoniae* (31.6%) was the most common bacterium, followed by *Mycoplasma pneumoniae* (22.6%). Adenovirus (5.9%) ranked as the most common virus, followed by influenza (4.9%) and RSV (4.9%). Between 2011 and 2012, the annual incidence rate of hospitalization for CAAP was 69.5 cases per 100,000 population with the highest among children aged 2 to 5 years (229.7/100,000).

Conclusions

Compared to those in 2011, the incidence rates of pneumonia in children aged ≤ 5 years, caused by pneumococcus or adenovirus or mixed virus and bacterium, and with complication significantly decreased by 30% to 83% in 2012. Pathogens causing CAAP are expected to change along with the increased usage of pneumococcal conjugate vaccine. Broader understanding of the potential etiology is pivotal to permit clinicians to manage and treat cases with CAAP.

EPOSTER DISCUSSION SESSION 07: HIV/AIDS - STATION G

ESP17-0103

IMMUNITY TO VACCINATION IN HIV-INFECTED CHILDREN

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Background

HIV-infected children are more susceptible to vaccine preventable diseases. The situation is dangerous for this high risk group especially in population with low vaccine coverage as seen now in Ukraine.

Methods

In this retrospective study of 142 perinatally HIV-infected children from Kiev City AIDS Center we analyzed the vaccine coverage and level of vaccine antibodies against diphtheria, tetanus, measles, mumps and hepatitis B.

Results

Immunization coverage of HIV-infected children was lower than in general population. Coverage was 63,6% for tetanus, diphtheria and pertussis, 64,7% for polio, 46,5% for two doses of MMR and 33,8% for hepatitis B. Many vaccinated children lacked serum antibodies to vaccine-preventable pathogens, including diphtheria (79,4%), hepatitis B (77,8%), tetanus (28,8%), mumps (60,6%) and measles (42,4%). The median time after immunization was 5,5 years. The level of antibodies to vaccine antigens in HIV-infected children was lower than that of uninfected children. The difference was statistically significant for all tested antigens with exception hepatitis B. The main predictors of immunity to vaccines were early beginning of ART (< 2 years) and starting vaccination on ART. There was no correlation between immunity to vaccines and CD4 T cells, VL of HIV RNA and serum immunoglobulins IgG, IgA and IgM.

Conclusions

All perinatally HIV-infected children should receive ART in the first year of life, before routine immunization. Children on ART had low levels of immunity to vaccines given before treatment. It is important to monitor the level of protective immunity in HIV-infected children and give additional doses of vaccine to maintain the adequate level of immunity to vaccine preventable diseases.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 12: PUBLIC HEALTH: VIRAL INFECTIONS - STATION D

ESP17-0104

TRANSMISSION OF HAND FOOT MOUTH DISEASE IN HOUSEHOLD CONTACTS IN HANGZHOU

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Background

To investigate the behavioral and household risk factors for hand foot mouth disease(HFMD) transmission.

Methods

Between April 2016 and July 2016, we enrolled children who had symptoms of HFMD infection from Hangzhou children's Hospital in Hangzhou. The patients and caregivers of each patient underwent clinical evaluations, virological studies and questionnaire-based interviews. Throat swab or stool were collected from each patient and the caregivers for viral isolation and molecular typing (real-time reverse transcription polymerase chain reaction).

Results

A total of 356 patients had laboratory-confirmed enteroviruses infection. The male/female ratio was 1.4:1 and 70.3% was 1-3years old. In these patients, HEV71 was detected in 31.5%(112/356), while Coxsackie virus group-A type-16(CVA16) and other enteroviruses were detected in 9.8%(35/356) and 58.7%(209/356). 221 family members had submitted stool samples. The overall enteroviruses transmission rate to household contacts was 57% (126/221 household contacts). Transmission rates were 62.8%, parents (71/113); 69.6%, grand-parents (32/46); and 37.1%, the other caregivers (23/62). Of 356 infected children, 251(70.5%) were living in urban areas and 105 (29.5%) were living in rural areas. The major patients were scattered children (63.49%,263/356) and children in daycare centers (27.78%,117/356). The main transmission pattern of HFMD were co-exposure (25.8%,92/356) and from children in daycare centers to scattered children (27.2%,97/356).

Conclusions

HFMD household transmission rates were high for children in Hangzhou. It's important to prevent of HFMD spreading among family members and children in daycare centers, that might help to reduce the outbreak of HFMD and public health management.

EPOSTER DISCUSSION SESSION 17: INVASIVE VIRAL INFECTIONS - STATION A

ESP17-0120

COMPARISON OF CLINICAL SYMPTOMS AND CEREBROSPINAL FLUID EXAMINATION IN CHILDREN WITH SEVERE HAND, FOOT AND MOUTH DISEASE INDUCED BY ENTEROVIRUS INFECTION

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Background

To investigate the epidemic characteristics of hand-foot-and-mouth disease (HFMD) in Hangzhou 2014 and to compare the clinical symptoms and cerebrospinal fluid examination results by different enterovirus. To seek the early key indicators which accurately predict severe HFMD cases.

Methods

498 cases severe HFMD children diagnosed by RT-PCR were divided into the severe group (426 cases) and the critically ill group (72 cases) according to clinical complications. Cerebrospinal fluids were collected from 333 severe HFMD children. The nucleated cells were counted and protein, glucose and chloride were detected. The clinical symptoms caused by different enterovirus were compared.

Results

381 cases (76.5%, 381/498) severe HFMD children were infected by EV71, other enterovirus infection in 117 cases (23.5%, 117/498). EV71 infection in children had the higher incidence of limb shaking and vomiting than in other enterovirus infection ($p < 0.05$). Other enterovirus infection in children with seizures was higher than EV71 infection ($p < 0.05$). There was no difference in the incidence of the startle ($p > 0.05$). In 333 cases of cerebrospinal fluid examination results, EV71 infection in cerebrospinal fluid nucleated cells counts increased in 231 cases (92.0%, 231/251), mainly neutrophils increased (149/231); Other enterovirus infections nucleated cells counts increased in 27 cases (32.9%, 27/82), mainly lymphocytes increased (2/27). EV71 infection in cerebrospinal fluid nucleated cells counts and protein quantification were significantly higher than other enterovirus infection ($p < 0.05$), but the cerebrospinal fluid glucose and chloride had no significant difference ($p > 0.05$).

Conclusions

Younger, EV71 infection, cerebrospinal fluid nucleated cell counts increased, especially neutrophils increased, cerebrospinal fluid protein content increased and the clinical symptoms appear limb shaking and vomiting, were important factors to predict the development of severe critical illness of HFMD.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 12: PUBLIC HEALTH: VIRAL INFECTIONS - STATION D

ESP17-0130

INFLUENZA VIRUS INFECTION FACTORS: 17 YEARS' ACTIVE SURVEILLANCE IN A PEDIATRIC HOSPITAL

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Background

Influenza is an important cause of acute lower respiratory tract infection (ALRI), hospitalization, and mortality in children. The aims of this study were to describe the clinical-epidemiologic pattern and infection factors associated with influenza, and to compare case features of influenza A and B.

Methods

prospective, cross-sectional study of patients admitted for ALRI 2000–2016, diagnosed with respiratory syncytial virus, adenovirus, influenza, or parainfluenza by fluorescent antibody (FA) or real-time polymerase chain reaction (RT-PCR) assay of nasopharyngeal aspirates.

Results

From a total of 14,836 patients included, 12,471 were tested for respiratory viruses and 44.7%(5290) had positive samples identifying Influenza in 7.5%(420; 91%[381] influenza A, 9%[39] influenza B). Influenza frequency followed a seasonal epidemic pattern (May-July, the lowest average temperature months). The median age of influenza cases was 12 months (IQR: 6-22 months); 55.5% of cases were male. The most frequent clinical presentation was consolidated pneumonia (56.7%). Of all influenza cases, roughly half had previous admissions for respiratory causes; 9% were readmissions; 60.5% had comorbidities; 26.6% (110/414) had complications; and 7.8%(32/409) had nosocomial infections. The average case fatality rate was 2.1%(9/414). The following were independent predictors for influenza infection: age \geq 6 months, odds ratio(OR): 1.92(95% CI: 1.48-2.48); $p < 0.001$; presence of chronic neurologic disease, OR:1.48 (95% CI: 1.02-2.14); $p = 0.03$; previous admissions for respiratory causes, OR:1.66 (95% CI: 1.33-2.06); $p < 0.001$; readmissions, OR:1.70 (95% CI: 1.17-2.47); $p = 0.004$; clinical pneumonia, OR:1.50 (95% CI: 1.22-1.86); $p < 0.001$; immunodeficiency, OR:1.83(95% CI:1.13-2.96); $p = 0.01$. No significant association was found when comparing cases of both influenza A and B infection.

Conclusions

Influenza infection showed an epidemic seasonal pattern (May-July), with higher risk in children aged \geq 6 months, or with pneumonia, previous admissions for respiratory causes, or certain comorbidities.

EPOSTER DISCUSSION SESSION 12: PUBLIC HEALTH: VIRAL INFECTIONS - STATION D

ESP17-0131

RESPIRATORY SYNCYTIAL VIRUS LETHALITY: 17 YEARS' ACTIVE SURVEILLANCE IN A PEDIATRIC HOSPITAL

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Background

Respiratory Syncytial Virus (RSV) is the main agent that causes Acute Lower Respiratory Tract Infection (ALRI) in children. Active epidemiological surveillance is an important tool to assess the impact of respiratory viruses in a pediatric population. The objective of this study was to describe lethality factors associated to RSV infection.

Methods

Prospective, Cross sectional study of patients admitted for ALRI, 2000-2016. Virological diagnosis of respiratory virus: RSV, adenovirus (AV), influenza (IF) and parainfluenza (PIV) was made by fluorescent antibody assay of nasopharyngeal aspirates or real time-PCR.

Results

from a total of 14,836 patients included, 44.7 % (5581) had positive samples; RSV was predominant (81.3%, 4542) all through the study period, followed by IF: 7.5%, PIV 6.7% and AV: 4.3%. RSV had a seasonal epidemic pattern (viral activity onset and offset: 19-35 epidemiological weeks) coinciding with the months of lowest average temperature.

The median of age of RSV cases was 7 months (IQR: 3-12); 56.6% were males; the most frequent clinical feature: bronchiolitis 61%; Comorbidity was found in 41.3%; 4.7% were malnourished, 13.9% born preterm and 1.9% immunosuppressed; 22.9% had complications, 6.4% nosocomial infections. Lethality: 1.8% (81/4491).

Regarding fatal cases: median age was 5 months (IQR: 2-11), 50.6% < 6 months, 27.1% < 3 months; the most frequent clinical feature was pneumonia 51.8%; 65.4% (53/81) had comorbidities: recurrent respiratory disease (52.8%), congenital heart disease (34%), chronic neurological disease (24.5%); 20% were malnourished, 25% born preterm and 2.5% immunosuppressed; most frequent complications were: 86.8% respiratory distress, 48.6% nosocomial infections, 34.2% sepsis.

Moderate to severe malnourishment OR 2.87 (1.53-5.36) $p < 0.001$, congenital cardiopathy 3.94 (2.23-6.95) $p < 0.001$ and the presence of chronic neurological disease OR 3.62 (1.87-6.99) $p < 0.001$ were the independent predictors for VSR lethality.

Conclusions

RSV showed an epidemic pattern (May-July) and it affected mostly young children. RSV lethality was more associated with malnourishment, congenital cardiopathy and chronic neurological disease.

EPOSTER DISCUSSION SESSION 13: PUBLIC HEALTH: BACTERIAL INFECTIONS AND CLINICAL EPIDEMIOLOGY - STATION E

ESP17-0141

AN UPDATE OF GLOBAL BURDEN OF PERTUSSIS IN CHILDREN AGED BELOW 5 YEARS

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Background

New data on the protective effect of incomplete pertussis vaccination has become available since publication of Crowcroft's pertussis disease burden model that used 1999 data (1). One dose of pertussis vaccine is estimated to protect against 50% of severe disease, and two doses at least 80%. This study revised the Crowcroft model and used 2014 country-level data to provide estimates regional and global pertussis cases and deaths for children aged below 5 years.

Methods

United Nations population estimates and WHO and UNICEF data of national pertussis immunisation coverage were used. Estimates were made for vaccine effectiveness against pertussis cases and deaths for 1, 2 and 3 doses, probability of infection in low and high coverage countries, and case fatality ratios in low and high mortality countries for children aged below 1 year and 1 to 4 years. An updated classification method was used to assign countries to low or high mortality groups.

Results

The updated model estimated 24.1 million pertussis cases and 160,700 deaths in children aged below 5 years in 2014. In the sensitivity analyses, the estimated numbers of pertussis cases ranged from 7 to 40 million and the estimated numbers of deaths from 38,000 to 670,000.

Conclusions

Compared with the 1999 pertussis burden estimates, the numbers of cases and deaths have fallen greatly reflecting improvements in vaccination coverage, inclusion of incomplete vaccination protection and improved classification of country mortality groups. Wide uncertainty estimates with the model sensitivity analysis emphasised the importance of improving surveillance to enhance country-level decision making for pertussis control.

Reference

(1) Crowcroft NS, Stein C, Duclos P, Birmingham M. How best to estimate the global burden of pertussis? *Lancet Infect Dis* 2003 Jul;3(7):413-8.

EPOSTER DISCUSSION SESSION 19: CONGENITAL VIRAL AND BACTERIAL INFECTIONS - STATION C

ESP17-0143

A GREEK STUDY OF CYTOMEGALOVIRUS CONGENITAL INFECTION. SCREENING NEONATES FOR CCMV INFECTION BY DETECTING CMV-DNA IN GUTHRIE CARDS. PREVALENCE AND OUTCOME.

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Background

Congenital Cytomegalovirus Infection (cCMV) represents the most common congenital infection with a variable incidence between 0.2% and 2.5% of all live births, with most newborns being asymptomatic at birth. Although sequelae (mainly SNHL) are more common after primary CMV infection, it has been well documented that there is a considerable risk among infants born to seropositive pregnant women with recurrent infection. We prospectively examined asymptomatic neonates for cCMV infection by detecting CMV-DNA in Guthrie cards.

Methods

All asymptomatic neonates, born in two major maternity hospitals in Athens, Greece between 2008-2010, were enrolled. We developed a modified DNA extraction method for the quantification of CMV-DNA by real-time PCR technique in Guthrie cards. Demographic and maternal CMV serologic data were collected. Overall, 2149 newborns were enrolled. Median maternal age was 32 years, 78% of mothers were of Greek origin, 73% CMV seropositive during prenatal screening, while only one woman seroconverted during her third trimester. Median birth age and weight were 38⁺² weeks and 3.270 gr respectively.

Results

Prevalence of CMV-DNA in Guthrie card was 0.47%. cCMV babies were examined and prospectively followed for five years. All babies were asymptomatic at birth with normal auditory brainstem response and cranial US. Most (09/10) were born to women with documented CMV-seropositivity during prenatal screening. The seronegative mother had not been re-evaluated during pregnancy. None received antiviral treatment. At five years of age, two had significant bilateral SHL (one had cochlear implant and the other used hearing aid in both ears). All five had normal neurologic examination and psychomotor development.

Conclusions

Similarly to other European countries, most neonates with cCMV infection are born to mothers with preconceptional immunity. Although asymptomatic at birth, almost 20% had sensorineural hearing loss

EPOSTER DISCUSSION SESSION 09: HOST-PATHOGEN INTERACTION - STATION A

ESP17-0144

EXPRESSION OF L-SELECTIN ON SURFACE OF LEUCOCYTES AS BIOMARKER IN SEVERE INVASIVE PNEUMOCOCCAL DISEASE

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Background

Severe invasive pneumococcal disease (SIPD) has high morbidity and mortality, conditioned by *pneumococcus* and by host factors such as Toll-like receptors (TLR) and its Toll-IL1R (TIR) signaling pathway. Development of SIPD may be conditioned by functional variations of TIR pathway.

The functional study of this pathway has been based on the analysis of cytokine production or the determination of loss of expression of L-selectin (CD62L) on surface of granulocytes following *in vitro* stimulation of TLRs.

Determination of CD62L *in vivo* could be useful in the evaluation of TIR pathway in SIPD patients.

Methods

Prospective study of 60 patients with IPD and systemic inflammatory response. Exclusion criteria: known immunodeficiency. Independent variables: 1) genotypic and allelic frequencies of SNPs rs1059701, rs1059702, rs1059703 (IRAK1); rs1624395, rs1370128 (IRAKM); rs1141168, rs4251513, rs1461567 (IRAK4); rs7744, rs6853 (MyD88). 2) CD62L expression level [percentage of overall expression and mean fluorescence intensity (MFI)] on surface of neutrophils, lymphocytes and monocytes in acute phase of infection and in basal phase (after infection). Other variables: demographic, medical history and evolutionary data of SIPD.

Results

Complete data were obtained in 21 patients. Among the 3 cell groups, significant differences in MFI values in monocytes between acute and basal phase were observed [mean difference 98.68 (95% CI 8.01-188.12), p = 0.0343]. In monocytes, significant differences in the percentages of overall expression of CD62L in the rs4251513-CG genotype (IRAK4) between acute and basal phase were observed [mean difference 13.36% (95% CI 0.25-36.67) p = 0.0391].

Conclusions

Determination of CD62L *in vivo* is useful: our results show that determination of CD62L in monocytes during and after SIPD provides information about the functionality of TIR pathway in SIPD patients. More studies are needed to confirm these findings.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 21: KAWASAKI DISEASE AND NON-INFECTIOUS CONDITIONS & INTERVENTIONS - STATION E

ESP17-0148

MULTICENTER NATIONAL STUDY OF KAWASAKI DISEASE IN SPAIN

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Background

Kawasaki disease (KD) is a multisystem vasculitis associated with coronary artery abnormalities (CAA). Prevention of coronary aneurysms is the primary target in KD treatment. Our aim was to describe clinical characteristics and risk factors of KD in Spain.

Methods

Retrospective study performed in 53 hospitals in Spain from 2011-2016. Inclusion criteria were children < 14 years with diagnosis of complete, incomplete or atypical KD (American Heart Association).

Results

A total of 625 children were included; 394 male(63%), 464 European(76%), 544(80%) > 12 months of age, 70(10%) 6-12 months and 45(6.6%) < 6 months. 441(70.6%) were complete, 171(27%) incomplete and 13(2%) atypical KD. Only 2 patients did not have fever. The mean total duration of fever was 8.4 +3.6 days. The most frequent symptoms were oral changes(90%), conjunctival injection(85%), rash(84%), changes in the extremities(71%), and lymphadenopathy(64%). Mean ESR in acute phase was 73+34mm/hr, leukocytes in blood 19000 + 24000/mm³ (85+15% neutrophils). Cardiac alterations in the echocardiogram(ECHO) were present in 198/625 (32%) cases; 144 were coronary alterations (23% of cases); of these 60 (9.6%) were aneurysms (28 were persistent longer than 6-8 weeks). A total of 594(95%) were treated with intravenous gamma globulin(IVIG),

and 539(86%) also with nonsteroidal anti-inflammatory drugs(NSAIDs); acetyl salicylic or ibuprofen. Corticosteroids were administrated to 91 patients (14.6%); 38(6%) as methylprednisolone boluses. Nine patients (1.4%) received infliximab. Thirty patients (5%) were admitted to PICU. No patients died. Treatment delay was correlated with the presence of aneurysms ($r=0.645$, $p=0.006$). ECHO alterations and coronary disease were more frequent in children <12 months ($p=0.0001$), and patients treated with steroids ($p=0.0001$).

Conclusions

Severe KD with cardiac alterations was associated with age < 12 months, delay in treatment and corticosteroid administration.

EPOSTER DISCUSSION SESSION 20: OTHER CONGENITAL AND PERINATAL INFECTIONS - STATION D

ESP17-0149

CHAGAS' DISEASE BIOMARKERS OF THERAPEUTIC RESPONSE IN INFANTS AND CHILDREN TREATED WITH BENZNIDAZOLE, A PROTEOMIC APPROACH

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Background

The main limitations in evaluating treatment response for Chagas disease (CD) stem from the need for long-term follow-up to observe seroconversion of conventional *T. cruzi* serological tests. In this context, new markers of cure are needed. Moreover, the lack of post-treatment tests of cure limits the development of new drugs and prevents appropriate patient counselling. Using a proteomic platform, we previously identified different host biological biomarkers for *T. cruzi* in adults (Ndao et al, 2010).

Methods

The present study included 30 infants and children between 1 month and 10 years of age, born in Argentina, with mothers of either Argentinian, Bolivian or Paraguay origin. CD children were mainly infected by vertical transmission. Serum samples were collected at diagnosis, end of 60 days benznidazole treatment and once seroconversion was observed using conventional serological tests. Twenty non-infected children of the same age range were used as control. These samples were then analyzed using a proteomic-based approach (mass spectrometry) and immunoblotting with specific neopeptides antibodies against ApoA1 and FBN fragments, for the presence or absence of those fragments as host biomarkers for CD.

Results

Taking advantage of the much faster seroconversion in children as compared to adult patients and comparing the serum proteoforms at the different time points, we were able to correlate seroconversion -the only actual marker of cure- with the absence of both biomarkers. In some cases, especially children younger than 1-year-old, these biomarkers seroconverted at the end of treatment, before conventional serological tests.

Conclusions

These new data further confirm the usefulness of fragments of ApoA1 and FBN as valid biomarkers to predict cure in clinical settings as well as treatment efficacy in clinical trials of new drugs and drug regimen.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 21: KAWASAKI DISEASE AND NON-INFECTIOUS CONDITIONS & INTERVENTIONS - STATION E

ESP17-0152

EFFICACY OF THREE SCORING SYSTEMS IN PREDICTING DEVELOPMENT OF CORONARY ARTERY ABNORMALITIES IN CHILDREN WITH KAWASAKI DISEASE IN SPANISH POPULATION.

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Background

Clinical scores to predict intravenous immunoglobulin (IVIG) resistance perform suboptimally outside Japanese population. We evaluated the efficacies of 3 existing scoring systems for predicting IVIG resistance and their performance in detecting the development of coronary artery abnormalities (CAA) in hospitalised children with Kawasaki Disease (KD) in Spanish population.

Methods

We retrospectively analysed 625 children with KD admitted to the participating hospitals in our network KAWA-RACE, between May 2011 and June 2016. Age, sex, clinical manifestations, and haematological indicators on admission were recorded. We tested 3 existing scoring systems: EGAMI, KOBAYASHI and SANO.

Results

There were 144(23%) patients with CAA (106 males(73%); median age, 21; IQR 9-39 months), of these 60(9.6%) were coronary aneurisms (CA). A total of 99 cases (14%) needed at least a second dosis of IVIG. Sensitivity,

specificity, positive predictive value (PPV) and negative predictive value (NPV) of the 3 scoring systems are



shown in (table1).

Conclusions

None of the evaluated scoring systems for assessing the risk for IVIG resistance displayed the combination of sensitivity and specificity necessary for predicting overall CAA or CA alone. Our analyses showed that the 3 scoring systems have limited utility in predicting CAA or CA regardless of IVIG resistance among patients with KD in Spanish population.

EPOSTER DISCUSSION SESSION 19: CONGENITAL VIRAL AND BACTERIAL INFECTIONS - STATION C

ESP17-0156

CONGENITAL SYPHILIS: CLINICAL AND EPIDEMIOLOGICAL DATA IN ARGENTINA.

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Background

Congenital syphilis is preventable with prompt diagnosis and treatment of infected pregnant women. However, congenital cases have increased worldwide in recent years. To describe clinical and serological characteristics of a cohort of pediatric patients with congenital syphilis diagnosed and treated in our center.

Methods

Descriptive, retrospective cohort study of children with congenital syphilis. Diagnostic criteria: mother with syphilis, child with compatible reactive serology. Demographic, serological and clinical variables were analyzed.

Results

We identified 49 pediatric cases of congenital syphilis out of 78 syphilis diagnoses between 1990-2015.

Only 48% mothers had a controlled pregnancy, and only 2 mothers were treated.

Most pediatric patients (75%) were born asymptomatic with adequate weight, 90%

Median age at diagnosis was 2 months (IQ25-75 1-6); Clinical signs: Bone lesions were observed in 59% of patients, hepatosplenomegaly: 40%, palmoplantar rash: 35%, fever: 18%, nephrotic syndrome: 6%, nephritic syndrome: 6% and anemia: 6%. Lumbar puncture was performed on 32 patients: in 7 the procedure was traumatic and all the remaining 25 had normal cytochemistry. CSF VDRL/RPR was negative in 22/25 (88%) samples, positive in 2/25 (8%) (not done in 1 case).

Treatment: penicillin G sodium IV, 50,000 U/kg/ dose for 10 days with scheme according to age. Jarisch-Herxheimer reaction was observed in 12 children

All patients had a good clinical course, except for one patient who died from nephritic syndrome complications. A decrease in VDRL/RPR values was observed. **Conclusions**

We observed a significant number of pediatric congenital syphilis cases linked to inadequate follow-up of pregnant women. CSF analysis did not modify patient therapy or follow-up. Penicillin was effective, but one child died due to syphilis complications, a fully preventable outcome.

EPOSTER DISCUSSION SESSION 20: OTHER CONGENITAL AND PERINATAL INFECTIONS - STATION D

ESP17-0157

CONGENITAL TOXOPLASMOSIS: CLINICAL AND EPIDEMIOLOGICAL PROFILE OF A PEDIATRIC COHORT FROM ARGENTINA.

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Background

Toxoplasmosis is a parasitic zoonosis highly prevalent in Argentina. Acute infection during pregnancy carries a high risk for serious complications.

Methods

A retrospective cohort of congenital toxoplasmosis patients assisted in our Center between 1990-2015. Variables studied: demography, clinical involvement and serology. Serology: specific IgG and IgM by ELFA (Minivida, Biomerieux, France); Diagnostic criteria: Infants with positive specific IgG at 7 months of age and born to a mother with a diagnosis of acute toxoplasmosis during pregnancy. Treatment: pyrimethamine 1 mg/kg/d, sulfadiazine 50-100 mg/kg/d and folinic acid. Objective: To describe a cohort of children with congenital toxoplasmosis.

Results

A total of 185 children were included, 120 with early diagnosis and 65 with a late diagnosis (older than 1 year old). Only 48% of mothers had had toxoplasmosis serology screening during pregnancy. Infant (N=120) mean age was 2.7 months (IQ₂₅₋₇₅ 0.9-7); Clinical evaluation: 17.5% were asymptomatic, 74% had chorioretinitis, 49% had CNS involvement, 9% hepatosplenomegaly and 8% jaundice. Serology: Mean IgG: 1824 IU/ml (IC 95% 1461-2186); reactive IgM 78/111 (70%). Treatment was indicated for 113 infants (95%). Adverse events were observed in 44/113 (39%), mostly anemia, neutropenia and leucopenia. Mean follow up was 45 months (IC 95% 34-55), 6 infants had ocular reactivation and 8 infants died. Children (N=65) mean age 82.9 months (IQ₂₅₋₇₅ 28.2-127.4); 6 (9%) were asymptomatic; 59 (90%) had eye compromise; 18 (30%) had active chorioretinitis and received treatment. Mean IgG serology : 1010 IU/ml (IC 95% 421-1598) IgM reactive in 3/40 (7.5%). Mean follow up: 34 month (IC 95% 24-44), ocular reactivation 17/59 (28.8%).

Conclusions

Our results show a high clinical impact of congenital toxoplasmosis. We observed more eye reactivations in children with late diagnosis and inadequate toxoplasmosis screening during pregnancy.

EPOSTER DISCUSSION SESSION 23: ADVANCES IN DIAGNOSIS OF INFECTION - STATION G

ESP17-0158

CD64, CD18, CD11A AND CD11B EXPRESSION IN CHILDREN WITH SEVERE BORDETELLA PERTUSSIS INFECTION

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Title of Case(s)

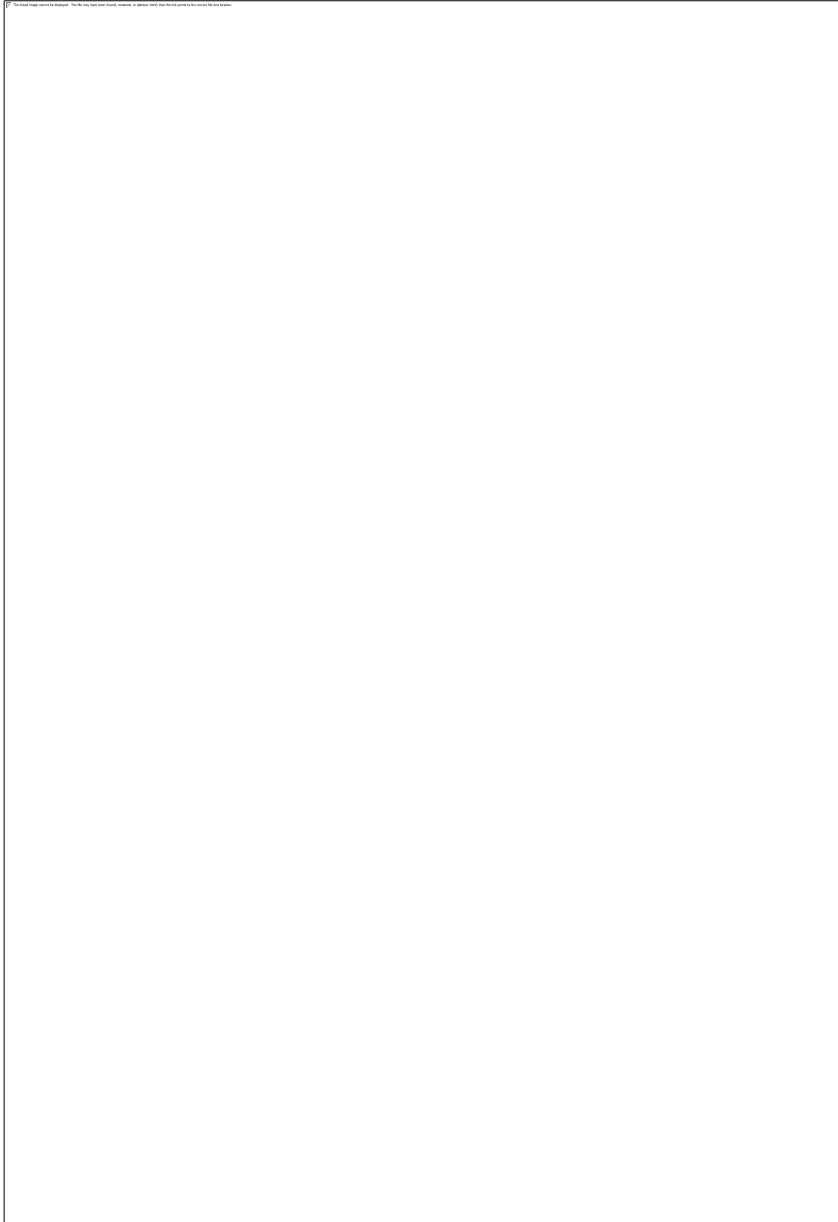
Children with severe *Bordetella pertussis* infection: a different immunophenotypic pattern for a different bacteria?

Background

Bordetella pertussis is an intracellular bacterium for which blood cell counts and common inflammatory biomarkers do not inform properly about a particular host defense pattern. We evaluated the expression of CD64, CD18, CD11a and CD11b in granulocytes of four children with severe *Bordetella pertussis* infection admitted in pediatric critical care unit by flow cytometry (FCM). Epidemiological data, clinical evolution, C reactive protein, procalcitonin, total leukocytes count, total lymphocytes count, total granulocytes count and maximal respiratory support were also collected.

Case Presentation Summary

The percentage of CD64⁺ granulocytes were 25-65% with low mean fluorescence intensity (MFI) in 3/4 children. CD18, CD11a and CD11b expression were similar in percentage and MFI. One child died despite intensive therapy, and showed higher percentage of CD64⁺ granulocytes (98,2%) with five to six time higher MFI.



Learning Points/Discussion

CD64 expression in granulocytes appears to be low in case of *Bordetella pertussis* infection; this intracellular bacterium probably does not cause upregulation of CD64 expression.

CD64 positivity could be related with a bacterial coinfection or worse prognosis. Also CD11b and CD11a expression, and its complex with CD18, could be different as a signal of immunological impairment.

These findings should be confirmed in new studies and clinical observations.

**EPOSTER DISCUSSION SESSION 22: NON-INVASIVE GASTROINTESTINAL AND MUCOSAL INFECTIONS
- STATION F**

ESP17-0169

**EVALUATION OF CLINICAL EFFECT OF BACILLUS CLAUSII IN THE MANAGEMNT OF ACUTE WATRERY
DIARRHEA IN A TE RTIARY LEVEL HOSPITAL OF BANGLADESH.**

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Background

To observe the clinical effect of Bacillus Clausii in the management of acute watery diarrhea in a tertiary level hospital of Bangladesh.

Methods

It was a Randomized control trial, done in Community Based Medical College Hospital, Mymensingh, Bangladesh, pediatric diarrheal ward (ward no 12), over a period of three months October 2016 to December 2016.

Randomly 100 admitted patient were selected, age 6 months to 60 months . Patients had acute watery diarrhea with some dehydration but no blood in stool but some had nausea, vomiting & serum electrolyte imbalance. Out of 100 patients 50 were selected as case & 50 were as control. Control group were treated with ORS only according to IMCI guideline & other 50 patients were treated with ORS plus Probiotic, bacillus clausii oral suspension 2 billion/ 5 ml (Enterogermina produced by Sanofi aventes). two times daily for 4-5 days.

Results

Control group treated with ORS only, took 4-5 days , to decrease frequency of stool & to change the consistency of stool, meaning from liquid watery to semi solid or solid. where as patients who were given ORS plus Bacillus clausii oral suspension two times daily showed same improvement with in 2 -3 days, indicating a positive clinical effect of Bacillus clausii.

Conclusions

From the above RCT we can say that Probiotic Bacillus clausii in a dose of 2 billion unit two times daily has a positive significant clinical effect in the management of acute watery diarrhea on pediatric group of patients.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 20: OTHER CONGENITAL AND PERINATAL INFECTIONS - STATION D

ESP17-0200

METAGENOMIC INSIGHTS INTO NECROTISING ENTEROCOLITIS: INSULTS AND TOLERANCE

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Background

Necrotising enterocolitis (NEC) is a life-threatening inflammatory disease of the bowel, predominantly affecting premature infants. Prior research has identified associations between NEC and faecal microbiota communities with an overabundance of Enterobacteriaceae or *Clostridium perfringens* prior to NEC diagnosis.

Methods

We used shotgun metagenomic sequencing and qPCR to fully characterise the microbiota of faecal samples collected from infants prior to developing NEC and from matched controls, allowing species level identifications, analysis of the genetic content of the communities and the calculation of quantitative proxies for immunostimulants theorised to be involved in the NEC pathway. The same analysis pipeline was performed on an external metagenomic dataset for validation of any findings.

Results

Using these measurements of the faecal bacterial communities, we found that samples from NEC infants prior to diagnosis could be split into two groups that clustered separately from control samples. The first group displayed poor stimulation of immunotolerance, with low amounts of tolerance-stimulating CpG DNA compared to the total number of bacteria. The second group featured excessive inflammatory stimulation with high abundances of bacteria expressing LPS. Samples closest to diagnosis from NEC infants in the validation set also fell into these categories, separate from earlier pre-NEC samples and control samples. With these signals established, the results could also be reproduced using a combination of qPCR and a microbial community established by 16S *rRNA* gene sequencing.

Conclusions

Our findings corroborate current theory behind the possible immunogenic pathways that result in NEC and demonstrate that associated risk factors can be determined prior to onset. These results have been validated in an external dataset, and we welcome further testing of these findings where other research groups have access to the required data.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 18: COMMUNITY ACQUIRED LIFE-THREATENING BACTERIAL INFECTIONS - STATION B

ESP17-0210

HEALTH RELATED QUALITY OF LIFE AND OUTCOMES FOLLOWING CHILDHOOD VIRAL AND BACTERIAL MENINGITIS –FINDINGS FROM THE UK CHILDHOOD MENINGITIS AND ENCEPHALITIS PROSPECTIVE COHORT STUDY (UK-CHIMES)

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Background

Outcomes following childhood bacterial meningitis are well-established, however outcomes following viral meningitis are poorly defined. The aims of this study were to assess outcomes following bacterial and viral meningitis for children <16 years, and quality of life following meningitis for children <2 years.

Methods

Outcomes were analysed for 2177 children <16 years with suspected or confirmed meningitis, recruited to a prospective cohort study in 31 UK hospitals from December 2012-June 2016. Outcomes were assessed at hospital discharge and 3 months post-discharge. For 850/1751 children <2 years, parents completed the 47-item Infant-Toddler Quality of Life (ITQOL) questionnaire at discharge, 6, 12 and 18 months following discharge. Responses were transformed to scales from 0(worst health) to 100(best health).

Results

Of 128 children with bacterial meningitis, at discharge the most common sequelae were reduced mobility 14.0%(13/93), hearing impairment 12.7%(9/71) and seizures 8.7%(10/115); and at 3 months were reduced mobility 35.4%(11/31) and hearing impairment 35.2%(12/34). Of 259 children with confirmed viral meningitis (enterovirus 218/259, parechovirus 21/259) at discharge sequelae included headaches 3.9%(6/155) and seizures 1.7%(4/239); and at 3 months included headaches 11%(5/46), hearing impairment 8.3%(6/72), reduced mobility 6.8%(4/59) and seizures 4.1%(3/73). At 3 months post-discharge, 74.6%(53/71) with bacterial meningitis and 86.7%(150/173) with viral meningitis were reported as being back to normal. There were no significant differences in ITQOL questionnaire scores for participants aged <2 years with bacterial(n=56), viral(n=144), and aseptic(n=66) meningitis, or a non-meningitis illness (n=584); and overall parent-emotional impact and child-discomfort scores improved with time.

Conclusions

Short-term sequelae were more common following bacterial than viral meningitis. For young children there were no differences in quality of life scores suggesting parent's perception of health is similar following bacterial and viral meningitis, or an acute non-meningitis illness.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 14: BACTERIAL EVALUATION OF COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION F

ESP17-0214

THOMSEN-FRIEDEREICH ANTIGEN ACTIVATION AS A PREDICTOR FOR CLINICAL OUTCOME OF PEDIATRIC PATIENTS WITH INVASIVE PNEUMOCOCCAL DISEASE

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Background

Streptococcus pneumoniae can cause invasive pneumococcal disease (IPD), including empyema, sepsis and meningitis. T-antigen (TA) activation is known to be a predictor of IPD-related hemolytic uremic syndrome (HUS). There have been limited studies for correlation between TA activation and overall disease severity of IPD in children.

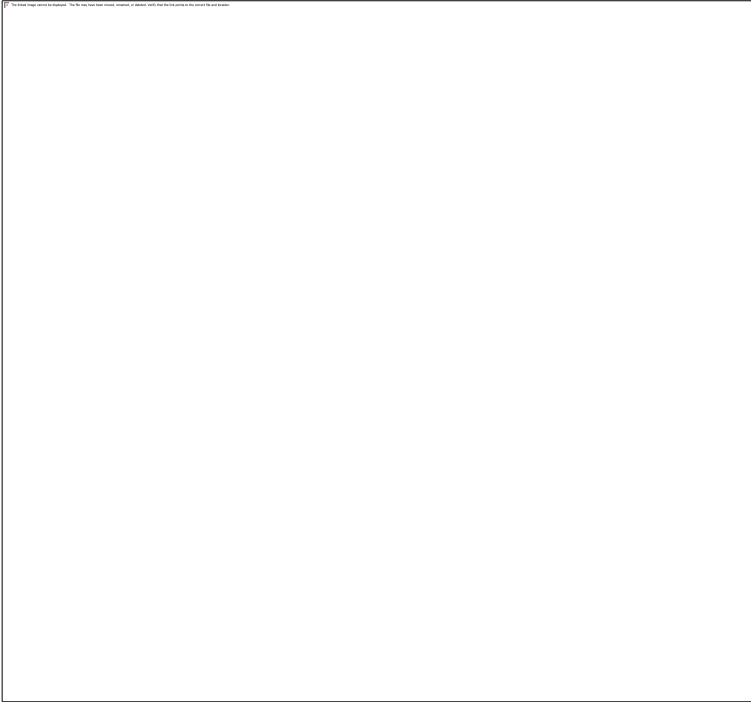
Methods

We retrospectively reviewed the medical records from 38 pediatric patients with microbiologically-confirmed of IPD between 2010 and 2015 at a medical center. IPD is defined as isolation of *S. pneumoniae* from sterile body sites. All cases underwent TA activation test by the fluorescence-labeled peanut lectin agglutination method. The positive TA activation was defined as at least 10% of mean fluorescence intensity (MFI) detection by flow cytometry. The T-antigen level was defined by geometric mean fluorescence intensity (GeoMean). Medical information collected included demographic data, laboratory findings, co-morbidity, and outcome.

Results

Among the 38 patients, there were 25 with TA activation, with 13 patients without. All of them had necrotizing pneumonia with empyema formation. Compared to TA-negative group, patients with TA activation had statistically higher rate of prolonged anemia, thrombocytopenia, and acute kidney injury. TA-positive group also had a longer ICU stay and overall hospitalization days. Twenty-one pneumococcal isolates were recovered and serotyping was done in 11 isolates; 10 were serotype 19A and 1 serotype 3. The trend of T-antigen level during disease course in

these IPD patients is illustrated below.



Conclusions

T-antigen determination not only helps to the diagnosis of IPD-related HUS, but is a predictor for disease severity and co-morbidity of IPD.

EPOSTER DISCUSSION SESSION 05: VACCINE IMMUNOLOGY - STATION E

ESP17-0217

INVESTIGATING SERUM MICRORNAS AS VACCINE BIOMARKERS

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Background

MicroRNAs are a short species of RNA and recent studies suggest they may be useful biomarkers of vaccination or infection. We investigated whether serum microRNA expression was altered by vaccination in children participating in a trial assessing immunogenicity and reactogenicity of two pandemic H1N1 influenza vaccines (ASO3B adjuvanted split virion versus whole virion non-adjuvanted vaccine).

Methods

Serum microRNA expression profiles were determined in a cohort of 22 children at baseline and 21 days post H1N1 vaccination using a microRNA microarray and linear regression analysis. Results were validated using real-time PCR (RT-PCR) in a subset of 14 children.

Results

The array data showed 3 microRNA were down regulated and 17 were up regulated in children after H1N1 vaccination compared with baseline (false discovery adjusted p-value <0.05).

13 differentially expressed microRNAs were chosen for RT-PCR validation in a subset of 14 children. Only miR-30b-3p and miR-142-3p could be accurately detected by RT-PCR. MiR-29c was chosen as an endogenous control based on its ubiquitous and stable expression in pre and post vaccination serum according to the array data, whilst also being detected by PCR. RT-PCR confirmed downregulation of miR-30b-3p (fold change 0.81, 95% CI 0.69-0.93) and miR-142-3p (fold change 0.77, 95% CI 0.65-0.89). There was no statistically significant difference in fold change between vaccine types.

Conclusions

Study findings are being confirmed in a validation cohort. This study provides proof of principle that microRNA expression is altered by vaccination opening the door to their potential use as vaccine biomarkers. This could create new surrogates of protection by revealing microRNA signatures in blood that are associated with an effective and enduring host response.

Clinical Trial Registration (Please input N/A if not registered)

NCT00980850

EPOSTER DISCUSSION SESSION 17: INVASIVE VIRAL INFECTIONS - STATION A

ESP17-0226

COMPARISON OF CLINICAL AND LABORATORY CHARACTERISTICS DURING TWO MAJOR PEDIATRIC MENINGITIS OUTBREAKS OF NON-POLIO ENTEROVIRUSES IN GERMANY IN 2008 AND 2013

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Background

Non-polio enteroviruses (NPEV) are the major cause of viral meningitis worldwide. Large scale data on clinical and laboratory characteristics in between different outbreaks within the same region are lacking.

Methods

A retrospective cohort study analysing two major outbreaks of NPEV meningitis in 2008 and 2013 in Germany was conducted in cooperation with the National Reference Centre for Poliomyelitis and Enteroviruses (NRC PE), at the Robert Koch Institute, Germany and five German children's hospitals. 196 patients with confirmed meningitis caused by NPEV were included in the study.

Results

In 2008 in contrast to 2013 children with NPEV meningitis had significantly higher fever and showed more behavioural changes and less back pain. To better define typical findings in EV30 meningitis, patients were further split into the following three groups: EV30 positive patients, patients with other typed NPEV infection and patients with not-typed NPEV infection. Children with EV30 meningitis showed a significantly enhanced rate of headache and meningism and a reduced rate of diarrhoea and septicaemia when compared to patients with other or not typed NPEV meningitis. Disease course of EV30 patients was highly acute with shorter duration of acute illness leading to early admission to the hospital, but an overall also shorter length of hospital stay. EV30 positive patients were significantly older and showed a higher neutrophil count in the peripheral blood than patients with other or not typed typed NPEV meningitis.

Conclusions

EV30 meningitis in children shows a characteristic pattern of clinical features. Continuous surveillance and typing of NPEV strains causing CNS disease is warranted.

EPOSTER DISCUSSION SESSION 01: TUBERCULOSIS - STATION A

ESP17-0228

MANAGEMENT AND OUTCOME OF CENTRAL NERVOUS SYSTEM TUBERCULOSIS IN CHILDREN – 18 YEARS SURVEY

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Background

Central nervous system (CNS) Tuberculosis (TB) accounts for about 1% of all cases of TB and is associated with high morbidity and mortality.

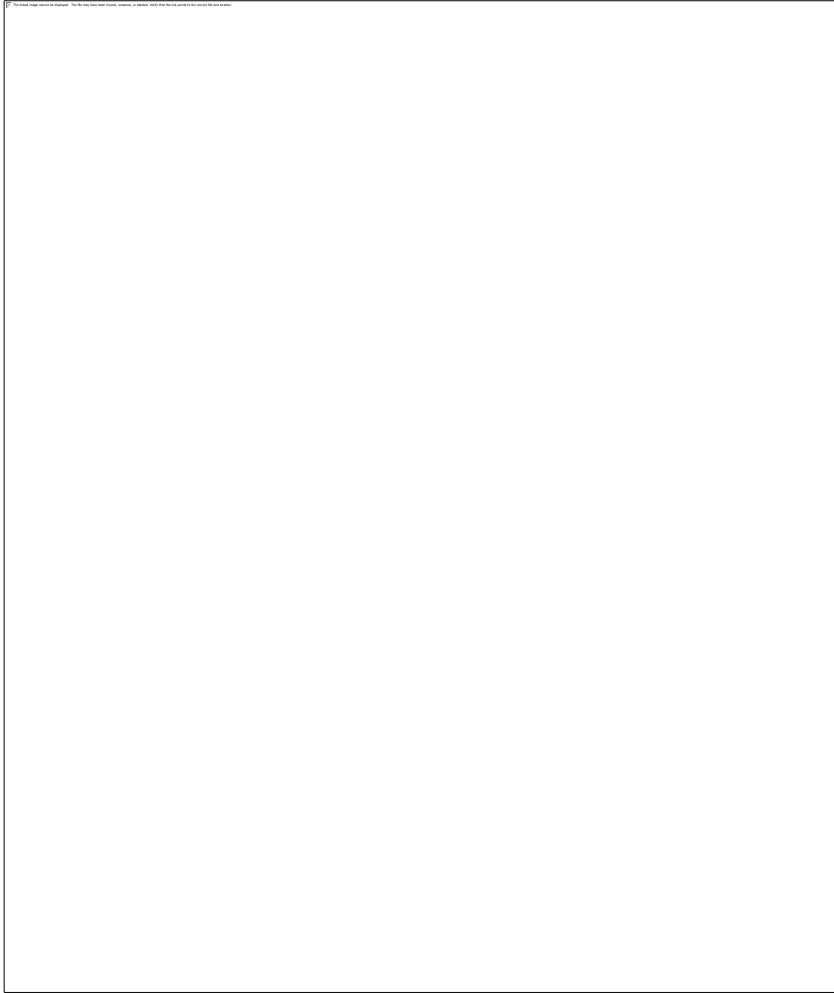
Objective: To study the characteristics, management and outcome of CNS TB at a paediatric tertiary referral centre and to determine factors that affect the outcome.

Methods

Children presenting to Great Ormond Street Hospital, UK with CNS TB from January 1997-December 2014 were included in this study. Data on demographic characteristics, clinical presentation, investigations, management, response to treatment and outcome were collected in retrospect.

Results

Forty seven children with CNS TB were identified. The mean age at presentation was 6.3 years (range 2 months - 15 years); 55% were younger than 5 years. The mean duration of symptoms was 10 weeks (range 2 days – 2 years) with fever (49%), vomiting (49%), headache (47%), seizures (32%) and cranial nerve palsy (21%) as most common clinical presentations. Cranial CT and/or MRI were performed in all patients (hydrocephalus 53%, basilar enhancement 40%, tuberculoma 34% and abscesses 6%). All patients were treated with anti-tuberculous therapy (ATT); 70% received ATT for 12 months. Concurrent steroids were given in 96% and 49% of children required neurosurgical intervention. Other characteristics identified are illustrated in Table 1. Overall mortality rate was 6% and 55% of children sustained permanent neurological deficit.



Conclusions

This study shows that children with CNS TB presenting in advanced stage (stage 2/3) of the disease and with longer duration of symptoms have poorer outcomes (severe neurological sequelae and death). Early diagnosis and prompt initiation of treatment, including steroids, are essential to improve outcome.

**EPOSTER DISCUSSION SESSION 22: NON-INVASIVE GASTROINTESTINAL AND MUCOSAL INFECTIONS
- STATION F**

ESP17-0232

BEYOND DYSENTERY: A SYSTEMATIC REVIEW AND META-ANALYSIS OF SHIGELLA IDENTIFICATION AND MANAGEMENT IN AN ERA OF SHIFTING SPECIES PREVALENCE

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Background

Shigella infections are a leading cause of diarrheal death among children under age five living in low and middle income countries. Current WHO guidelines recommend antibiotics (ciprofloxacin) only for the treatment of the dysentery syndrome. Reliance on dysentery for *Shigella* identification and management may miss an opportunity to reduce *Shigella*-associated morbidity and mortality.

Methods

We conducted three systematic reviews, and meta-analyses where appropriate, of studies in resource limited settings that reported: 1) associations between *Shigella* infection or dysentery and death, 2) the ability of dysentery to identify cases of *Shigella* diarrhea, and 3) antibiotics trial data targeting pediatric dysentery or *Shigella* infection.

Results

Shigella infection was associated with mortality (pooled odds ratio [pOR]: 2.8, 95% confidence interval [CI]: 1.6 to 4.8), but dysentery was not (pOR: 1.3, 95%CI: 0.7 to 2.4). Between 1977 and 2015, dysentery identified 11% to 86% of confirmed *Shigella* infections, with sensitivity decreasing over time ($p < 0.01$). All 16 included antibiotic trials were among children with dysentery, none were placebo controlled, and most evaluated antibiotics no longer recommended for diarrhea. Ciprofloxacin has only been compared to gatifloxacin and pivmecillinam and demonstrated microbiological but not clinical superiority.

Conclusions

Current WHO diarrhea guidance may miss opportunities to reduce *Shigella*-associated mortality. The clinical relevance and potential treatment of non-dysenteric *Shigella* among children living in low-resource settings should be re-evaluated.

The Bill and Melinda Gates Foundation (OPP1132140) and the Center for AIDS Research (AI027757) funded this research.

Systematic Review Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 16: OTHER COMMUNITY ACQUIRED INVASIVE BACTERIAL INFECTIONS - STATION H

ESP17-0235

THE NEGATIVE PREDICTIVE VALUE OF YOUNG NEUTROPHILS ABSOLUTE NUMBER FOR BACTERAEMIA IN CHILDREN

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Background

To assess the role of young neutrophils in peripheral blood smears for the detection of bacteraemia in children.

Methods

This was a cross-sectional study conducted at the Paediatric Emergency Room of the Federal University of Bahia Hospital, in Salvador, Brazil, between April 2011 and April 2012. The log-book of the Bacteriology Laboratory was daily reviewed during the study period and all patients aged ≤ 18 years who had blood cultures collected were identified. All patients had White Blood Cell Count performed along with blood culture. Demographic and clinical data were collected from medical charts and cases from the community were included.

Results

A total of 570 patients were included. The median age was 2 years (IQR: 9.4 months-5 years) and 52.6% were males. Blood culture was positive in 9 (1.6%) cases, out of which *Streptococcus pneumoniae* (n=3), *Haemophilus* (n=2), *Neisseria meningitidis*, *Streptococcus viridans*, *Streptococcus agalactiae*, and *Acinetobacter baumannii* (n=1, each) were isolated. The total WBC did not differ when children with positive or negative blood culture were compared (12,100 [IQR: 6,950-15,250] vs. 11,000 [IQR: 7,900-14,900]; P=0.9). However, presence of young neutrophils was significantly more frequent among patients with bacteraemia in comparison with patients without bacteraemia (100% vs. 40%, P<0.001). The absolute number of young neutrophils was significantly higher among children with bacteraemia (median [IQR]: 325 [275-1,106] vs. 0 [0-259]; P<0.001). The area under the ROC curve of the number of young neutrophils in regard to bacteraemia was 0.82 (95% Confidence Interval: 0.76-0.88, P=0.001). The number 242 of young neutrophils showed: sensitivity 100%, specificity 73.5%, negative predictive value 100% and positive predictive value 6.5%.

Conclusions

Under 242 young neutrophils can safely rule out bacteraemia among children with community-acquired infections.

EPOSTER DISCUSSION SESSION 10: VACCINATION PROGRAMMES INCLUDING PNEUMOCOCCAL IMPACT - STATION B

ESP17-0236

TOTAL VACCINE-PREVENTABLE DISEASE INCIDENCE (VPDI) BY THE TEN-VALENT PNEUMOCOCCAL CONJUGATE VACCINE (PCV10) IN THE FINNISH NATIONAL VACCINATION PROGRAMME (NVP) IN CHILDREN

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⁴National Institute for Health and Welfare, Department of Health Security, Tampere, Finland

Background

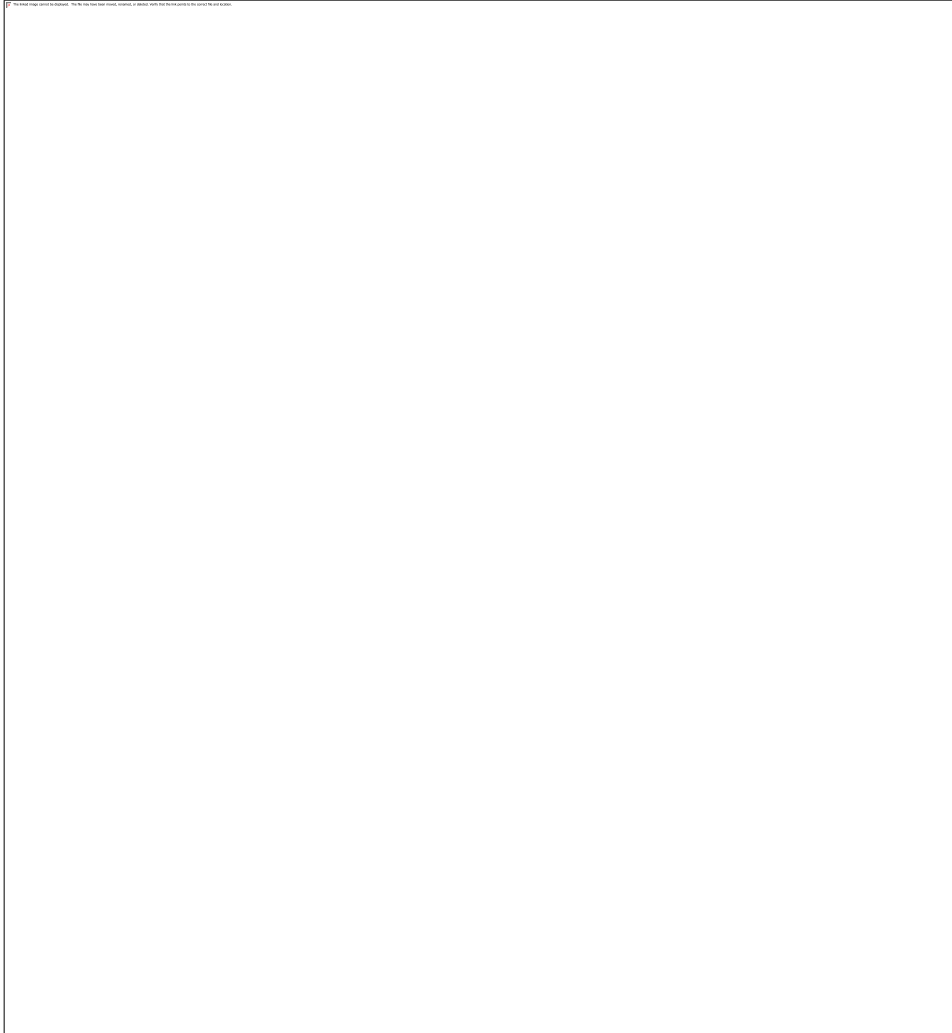
Pneumococcus causes a wide range of clinical syndromes, including invasive pneumococcal disease (IPD; meningitis, sepsis, bacteremic pneumonia), non-bacteremic pneumonia and mucosal disease such as otitis media. We estimated the total vaccine-preventable disease incidence (VPDI) in children 4 years after the introduction of PCV10 into the NVP in September 2010 using a 2+1 schedule.

Methods

The target cohort eligible for NVP (children born 06/2010-09/2014) was compared with a season and age-matched (age 3-54 months) reference cohort (born 06/2004-09/2008) before NVP introduction. Period 01/2009-08/2010 was excluded because of the nation-wide PCV10 trial (FinIP). Vaccine uptake prior to NVP introduction was low, and during NVP was estimated to be 92% in 2012. Data on outcomes were obtained from national health care registers. Culture-confirmed IPD from National Infectious Diseases Register, ICD-10-coded non-laboratory-confirmed IPD and hospital-diagnosed pneumonia from national hospital discharge register, tympanostomy tube placements (TTP) from national hospital discharge register, and antimicrobial purchases and TTP in private offices from the Social Insurance Institution of Finland. Total VPDI was estimated as difference in disease incidences in the target and reference cohorts. Cost of each outcome was estimated using previously collected data for PCV cost-effectiveness analysis.

Results

Incidences of outcomes before and after PCV10 and the relative and absolute reductions are shown in Table.



Conclusions

In the European high-income-country setting, over 98% of the disease episode reductions and 84% of all cost reductions in vaccine-eligible children were seen for otitis media-related outcomes. For severe diseases, the absolute rate reductions are smaller, and the bulk of invasive disease burden were undetected with routine culture-based IPD definitions.

EPOSTER DISCUSSION SESSION 18: COMMUNITY ACQUIRED LIFE-THREATENING BACTERIAL INFECTIONS - STATION B

ESP17-0243

WHOLE EXOME SEQUENCING FOR THE IDENTIFICATION OF PRIMARY IMMUNODEFICIENCIES IN A NATIONAL COHORT OF CHILDREN WITH BACTERIAL SEPSIS

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Background

Many primary immunodeficiencies (PIDs) are associated with an increased susceptibility to bacterial infection. However, the presence of underlying PIDs among pediatric sepsis cases has not been systematically evaluated. We hypothesized that community-acquired sepsis may represent the first manifestation of an underlying PID and performed whole exome sequencing (WES) of samples collected from a national cohort of children with bacterial sepsis.

Methods

Eligible children were previously healthy children admitted to the ten largest children's hospitals in Switzerland between 01.09.2011 and 31.12.2015 with community-acquired sepsis caused by *S. aureus*, *S. pneumoniae*, *S. pyogenes*, *H. influenzae*, or *E. coli*. Analysis of WES data was restricted to rare variants (<1% and <0.1% MAF for homozygous/hemizygous and heterozygous variants, respectively) in 182 PID genes for which an association with increased susceptibility to bacterial infection has been described in the literature.

Results

A total of 23 rare homozygous/hemizygous variants were found in 23/154 patients (15%). There was a larger number of very rare monoallelic variants in genes for which heterozygous mutations have previously been associated with immunodeficiency and susceptibility to bacterial infection. No major differences between infections caused by the different pathogens or sepsis severity and the likelihood of detecting mutations in PID genes were seen.

Conclusions

WES allowed to detect potentially pathogenic variants in previously reported PID genes. While functional confirmation of these variants is pending, the findings suggest that PIDs might be more common than previously thought among apparently healthy children experiencing a first sepsis episode. WES represents a promising approach to diagnose PID in children with sepsis.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 11: VACCINES: VIRAL IMPACT AND NON-SPECIFIC EFFECTS - STATION C

ESP17-0248

HEALTHY VACCINEE BIAS (PARTLY) EXPLAINS THE LOWER RISK OF INFECTION AFTER MMR VACCINATION: EVIDENCE FROM THE NETHERLANDS

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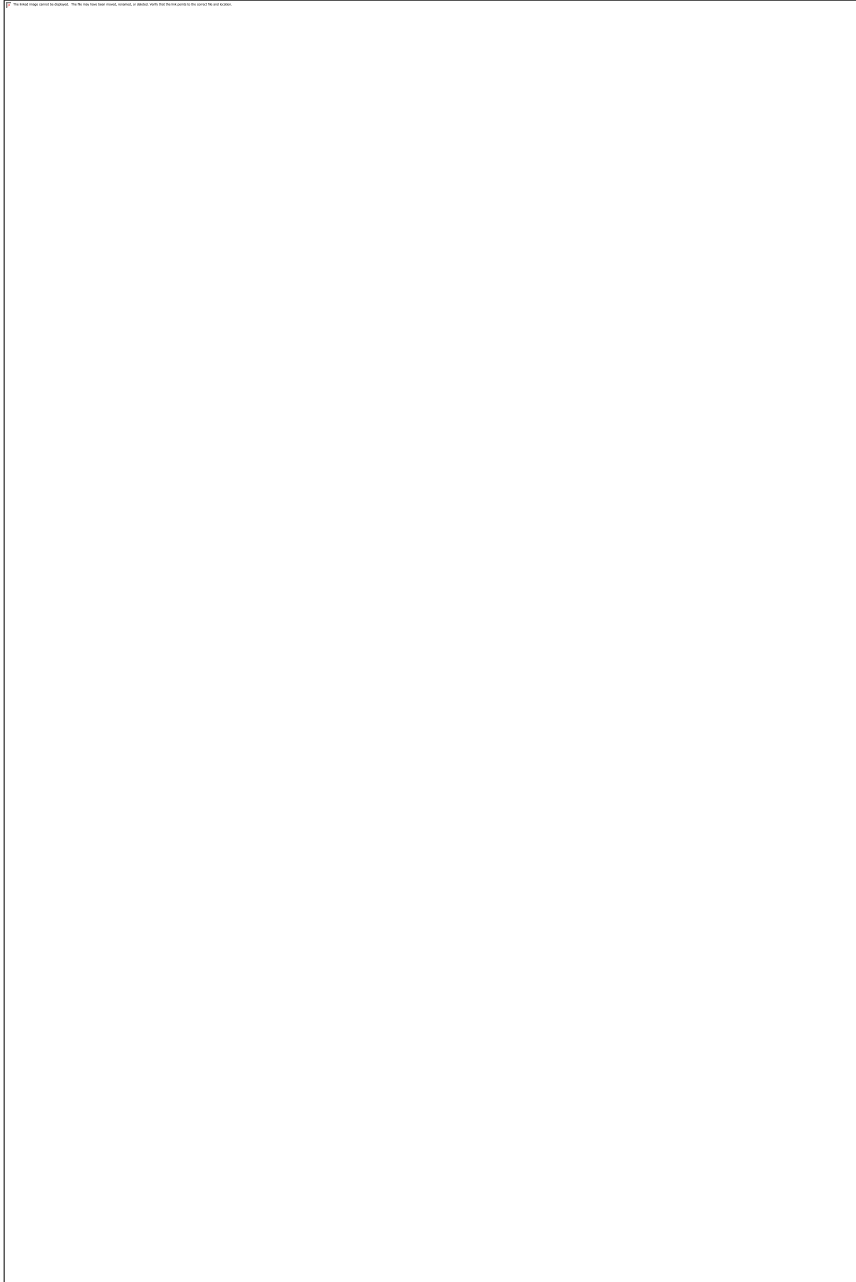
Background

Live-attenuated vaccines may have positive non-specific effects. We compared risks of hospitalization for infections between children aged ≤ 2 years who received live measles-mumps rubella vaccine (MMR) and those who received an inactivated vaccine against diphtheria, tetanus, pertussis, polio, and *Haemophilus influenzae* type b (DTaP-IPV-Hib) as most recent vaccination. DTaP-IPV-Hib vaccination is recommended at ages 2, 3, 4 and 11 months and MMR vaccination at age 14 months.

Methods

We studied a population-based nationwide cohort of 1,096,594 children born between 2005-2011 who received the first four DTaP-IPV-Hib vaccines. Data from the national vaccine register were linked to hospital admission data. Cox regression was performed with most recent vaccination as time-dependent variable, adjusted for sex, chronic diseases, hospitalization for any reason between age 8-9 months, birth weight, gestational age, maternal age and parity, parental country of birth, and postal code. Analyses were repeated with DTaP-IPV-Hib-4 vs. DTaP-IPV-Hib-3 as most recent vaccination.

Results



After the median age of receiving the next vaccine, admission rates among those who deviated from the recommended schedule suddenly increased compared to the overall admissions rates (Figure 1). Having had MMR as most recent vaccination was associated with a hazard ratio (HR) of 0.62 (95% CI: 0.57 to 0.67) for hospitalization for infection, compared with DTaP-IPV-Hib as last vaccination. DTaP-IPV-Hib-4 as most recent vaccination was associated with a HR of 0.69 (95% CI: 0.63 to 0.76) for hospitalization for infection, compared with DTaP-IPV-Hib-3 as last vaccination.

Conclusions

Our findings suggest that healthy vaccinee bias at least partly explains the observed lower risk of infection after MMR vaccination, and that this lower risk is attributable to receiving an additional vaccine, and not specifically to MMR.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 11: VACCINES: VIRAL IMPACT AND NON-SPECIFIC EFFECTS - STATION C

ESP17-0249

INACTIVATED QUADRIVALENT INFLUENZA VACCINE (IIV4) REDUCES INFLUENZA-ASSOCIATED HEALTHCARE, ANTIBIOTIC USE, AND PARENT-CHILD ABSENTEEISM DURING A RANDOMIZED CONTROLLED TRIAL IN HEALTHY CHILDREN AGED 6-35 MONTHS

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Background

A substantial burden of healthcare utilization and impact on daily activities is associated with childhood influenza disease. However routine inactivated quadrivalent influenza vaccine (IIV4) use is not recommended for healthy young children in many countries because of as yet unproven efficacy.

Methods

We evaluated IIV4's efficacy in a phase III, observer-blind, multinational trial (NCT01439360) conducted in 5 independent cohorts of healthy children 6-35 months (n=12,018) randomized 1:1 to IIV4 (15 µg hemagglutinin /strain) or control during 5 influenza seasons (2011-2014). Surveillance for influenza-like episodes (ILE) was conducted from 14 days post-vaccination until the end of the influenza season and influenza was confirmed by reverse transcription polymerase chain reaction detection of viral RNA in nasal swabs. Antigenic characterization of virus isolates as vaccine-matching was performed using reference sera. Reports of healthcare use and missed day care or parental work during ILEs were collected from parents.

Results

The overall incidence of RT-PCR confirmed influenza in the whole studied cohorts was 5.9% and 11.5% in the IIV4 and control groups respectively (total vaccinated cohort). Most antigenically characterized patient isolates (63.6%) were vaccine mismatched. Compared to control, IIV4 resulted in risk reductions of 47% [95% confidence interval (CI): 39%-54%] in general medical visits, 79% [95%CI 53%-91%] in emergency room visits, 50% [95%CI 40%-58%] in antibiotic use, 54% [95%CI 25%-72%] in parental work absence, and 55% [37%-68%] in missed day care associated with influenza.

Conclusions

Use of IIV4 in healthy young children reduced healthcare utilization, antibiotic use, and parental and child absenteeism despite predominant vaccine-mismatch. The social economic benefit of this intervention should be assessed and if favourable, a routine use recommendation in this age group should be considered.

Clinical Trial Registration (Please input N/A if not registered)

GlaxoSmithKline Biologicals SA funded this study (NCT01439360).

EPOSTER DISCUSSION SESSION 10: VACCINATION PROGRAMMES INCLUDING PNEUMOCOCCAL IMPACT - STATION B

ESP17-0267

ADVERSE EVENTS FOLLOWING Q FEVER VACCINATION IN YOUNG AUSTRALIAN ADULTS

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Background

Q fever is a global disease and has caused epidemics in European countries, such as the Netherlands. Australia is the only country to have a licensed Q fever vaccine for humans (QVax®). The currently recommended lower age limit for administering QVax® is 15 years. There is very little data on adverse event following immunisation (AEFI) for those aged 15-20 years, particularly females. Such safety data are important to inform any recommendation to lower the age of vaccination to include children under 15 years old.

Methods

Australian veterinary students are routinely administered QVax® in the first year of their degree. From 2013-2016, veterinary students were recruited at vaccination to complete an online post-vaccination AEFI survey (via survey Monkey). Data were analysed for frequency of local and systemic AEFIs. Chi-squared analysis was used to compare proportions.

Results

A total of 499 students participated, of which 375 (75%) were aged 17-20 years, and 424 (85%) were female. Injection site reactions (ISR) characterized by pain, erythema or swelling occurred in 489 students (98%). Significantly more females (32%) reported severe ISR as compared to males (14%) ($p < 0.001$). Fever occurred with similar frequency (18% females, 14% males [NS, $p = 0.34$]). There was no significant difference in local or systemic AEFIs when stratified by age (17-20 years vs ≥ 21 years).

Conclusions

This is the largest study to examine the safety profile of QVax® in young predominantly female adults. Q fever vaccination resulted in frequent ISR's but few serious AEFIs. Females reported significantly greater ISR than males. AEFIs did not differ between younger and older vaccinated cohorts, suggesting a comparable safety profile in teenagers and adolescents. A clinical trial examining the safety of QVax® in children under 15 years is currently underway.

EPOSTER DISCUSSION SESSION 01: TUBERCULOSIS - STATION A

ESP17-0269

MYCOBACTERIAL LYMPHADENITIS, A COMPARATIVE STUDY BETWEEN MYCOBACTERIUM TUBERCULOSIS (PEDIATRIC TUBERCULOSIS SPANISH NETWORK, PTBRED) AND MYCOBACTERIUM AVIUM INTRACELLULARE (ENSEMBLE STUDY)

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Background

Cervical lymphadenitis is the most common manifestation of non-tuberculous mycobacterial infection in immunocompetent children, *Mycobacterium avium intracellulare* (MAI) being the commonest causative species. Tuberculous (TB) lymphadenitis is the most frequent presentation of extra-pulmonary disease. We aimed to compare the epidemiological and clinical characteristics of children with microbiologically-confirmed lymphadenitis caused by MAI or TB in a low TB burden setting.

Methods

We performed a cross-sectional study within the Spanish Network for the Study of Paediatric TB (pTBred) and the European Nontuberculous Mycobacterial Lymphadenitis in childrEn (ENSEMBLE) study. pTBred patients with culture or PCR-confirmed TB lymphadenitis (prospective cohort, 2013-2016) and Spanish patients from the ENSEMBLE study (retrospective/prospective cohort) with culture or PCR-confirmed MAI lymphadenitis were included. Demographic, clinical and diagnostic data were collected with Redcap® software and compared between groups.

Results

Overall, 55 MAI and 27 TB cases with lymphadenitis were included. TB patients were older (mean age: 8.5 vs 3.3 years; $p < 0.0001$), more commonly of foreign origin (25.9% vs 3.6%; $p = 0.005$), BCG-vaccinated (14.8% vs 0%; $p < 0.05$) and immunocompromised (18.5% vs 3.6%; $p < 0.05$). Submandibular lymphadenitis was more commonly caused by MAI (56.4% vs 18.5%; $p = 0.002$), while TB predominantly affected cervical lymph nodes (66.7% vs 34.5%; $p < 0.01$). Positive tuberculin skin test (TST) results ($> 5\text{mm}$) were more common in TB cases (92.3% vs 58.5%, $p = 0.002$), who also had larger TST induration diameters (mean 16.1mm vs 7.4mm; $p < 0.001$). Interferon-

gamma release assay (IGRA) results were positive in 12/13 and 2/19 of patients with TB and MAI lymphadenitis, respectively ($p < 0.0001$).

Conclusions

We observed significant differences in the epidemiological and clinical characteristics of MAI and TB lymphadenitis cases. Furthermore, our data suggest that the combined use of TSTs and IGRAs can provide useful supportive information for distinguishing between those two diseases.

EPOSTER DISCUSSION SESSION 21: KAWASAKI DISEASE AND NON-INFECTIOUS CONDITIONS & INTERVENTIONS - STATION E

ESP17-0272

EFFECT OF FOOD ON THE ORAL BIOAVAILABILITY OF NIFURTIMOX (NFX) THE DRUG TO TREAT PEDIATRIC CHAGAS DISEASE

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Background

NFX is one of only two treatments for patients with Chagas' Disease (CD); a 30 mg tablet suitable for age appropriate dosing of pediatric CD patients has been developed recently. NFX is a poorly soluble and highly permeable drug for which food can have a considerable effect on its uptake from the GI-tract.

Methods

We conducted a Phase I study comparing the pharmacokinetics after administration of four 30 mg tablets with and without concomitant ingestion of a high calorie, high fat meal according to a single center, open labeled, randomized, cross over trial design in 36 male and female adult CD patients (26 – 45 years).

Non-compartmental pharmacokinetics, safety and tolerability were assessed. Primary variables to quantify the food effect were the area under the concentration -time curve from zero to infinity (AUC), AUC from time 0 to the last measured data point (AUC(0-tlast)), maximum observed drug concentration in plasma (C_{max}), and time to reach C_{max} (t_{max}). The magnitude of the food effect was quantified according to FDA guidelines by statistical analysis assuming log-normally distributed data. **Results**

The mean ratio [90% confidence interval] for the comparison of intake under fed vs. fasted conditions of 171[154-191]% for AUC, 172[154-192]% for AUC(0-tlast) and 168[150-187]% for C_{max} indicated a pronounced, clinically significant food effect. Bioavailability was substantially increased by approximately 71%(AUC) and median T_{max} slightly prolonged under fed conditions (3 vs 4h). Treatments were well tolerated.

Conclusions

In conclusion, NFX intake together with food substantially improves oral absorption of the drug. According to our findings NFX tablets should always be administered with food as mandated in the current product information for Lampit® in order to achieve maximum antiparasitic activity of the drug.

Clinical Trial Registration (Please input N/A if not registered)

ClinicalTrials.gov Identifier: NCT02606864

**EPOSTER DISCUSSION SESSION 22: NON-INVASIVE GASTROINTESTINAL AND MUCOSAL INFECTIONS
- STATION F**

ESP17-0274

NOROVIRUSES AS AETIOLOGICAL AGENTS OF ACUTE DIARRHOEA IN MOSCOW CHILDREN

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Background

Noroviruses are known to cause outbreaks of gastroenteritis all over the world. The objective of this study was to assess the incidence and role of noroviral infection in Moscow children.

Methods

205 children from 5 to 15 years old with acute gastroenteritis were enrolled in the retrospective study in outpatient clinic in Moscow during the year 2016-2017. Stool samples were tested for rotavirus, adenovirus, enterovirus, salmonella, campylobacter, astrovirus and norovirus by RT-PCR (Ampliset-OKI screen-FL by Interlab). All specimens were cultured with classical laboratory methods too. A standardized questionnaire was used to collect data including sex, age, CBC, erythrocyte sedimentation rate, CRP, epidemiological and clinical observations.

Results

The medium age of children was $4,49 \pm 3,57$ years. There were two peaks of morbidity: in January – 39 cases (24,5%) and August – 20 cases (12,6%). 159 stool samples were positive for various bacterial (13, 8%) and viral (74%) pathogens. Viral coinfections were found in 8, 8% of children, virus+ bacteria coinfections were detected in 3,1% of positive tests. The most common viral pathogens were norovirus (37,1%) and rotavirus (31,4%). The most common bacterial agents were campylobacter (8,2%) and salmonella (5%). Most cases of coinfections were related to rotavirus (57,9%). Noroviral and rotoviral infections both mainly affected children of first 3 years of life and had morbidity peaks in winter months. No significant difference was detected in clinical and laboratory findings between noro- and rotoviral infections while they both differed significantly from bacterial infections by a number of parameters.

Conclusions

New diagnostic test reveals prevalence of noroviruses in the burden of intestinal infections in Moscow children. Our study shows a significant role of noroviruses which may be compared to that of rotaviruses.

EPOSTER DISCUSSION SESSION 05: VACCINE IMMUNOLOGY - STATION E

ESP17-0277

IMMUNOGENICITY OF INACTIVATED QUADRIVALENT INFLUENZA VACCINE (IIV4) IN CHILDREN 6–35 MONTHS OF AGE ACROSS SEVERAL INFLUENZA SEASONS

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Background

Immune response to inactivated quadrivalent influenza vaccine (IIV4) could be useful in determining the benefit of the vaccine in young children. The immune response is commonly evaluated by hemagglutination inhibition (HI).

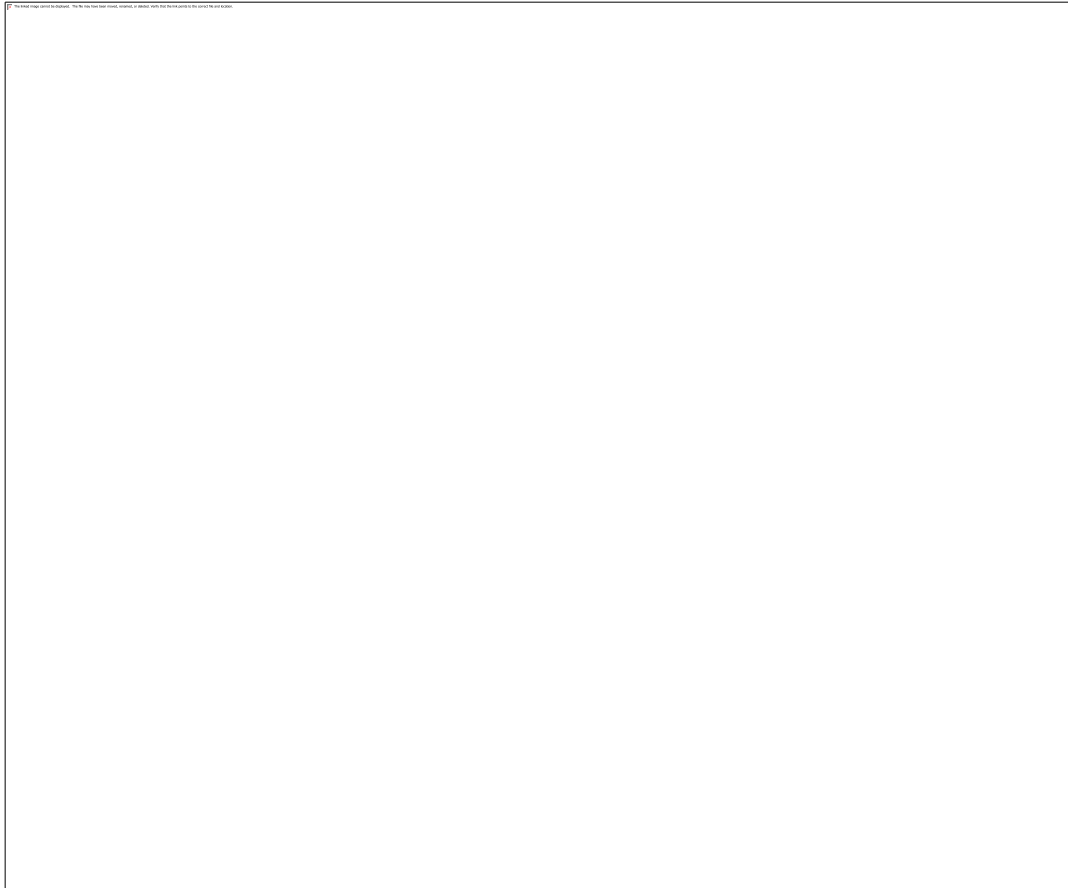
However, additional characterization such as measurement of neuraminidase inhibition (NI) and microneutralization (MN) antibodies are needed to better predict protection efficiency.

Methods

We evaluated IIV4's immunogenicity in a phase III, observer-blind, multinational efficacy trial (NCT01439360) conducted in 5 independent cohorts of healthy children 6-35 months old (N=12,018) randomized 1:1 to IIV4 (15 µg hemagglutinin/strain) or control during 5 influenza seasons (2011-2014). Antibody responses were evaluated in the per-protocol immunogenicity sub-cohort by HI and also in a subset of this cohort by NI and MN assays (% with a minimum 4-fold rise response from baseline) 28 days after last vaccination. Data were pooled across cohorts despite change in the vaccine strains. Analyses were done by cohort and by age.

Results

HI antibodies against the 4 vaccine strains at baseline were similar in IIV4 and control groups. HI antibody response increased in the vaccine group for all strains (table); results were generally similar within each cohort. HI responses were higher in children aged 18-35 months compared to children aged 6-17 months. Functional antibodies were detected against all vaccine A/subtypes and B/lineages by NI in 82.1% (95% confidence interval: 73.4%-88.8%), 60.4% (50.4%-69.7%), 67.0% (57.2%-75.8%) and 89.6% (82.2%-94.7%), and MN in 96.9% (91.2%-99.4%), 69.1% (58.9%-78.1%), 57.7% (47.3%-67.7%) and 21.9% (14.1%-31.5%) for A/H1N1, A/H3N2, B/Victoria and B/Yamagata, respectively.



Conclusions

Over 5 cohorts, IIV4 elicited a substantial immune response 28 days post-vaccination measured by 3 methods. The correlation of immune response to clinical outcome will be explored in a future analysis.

Clinical Trial Registration (Please input N/A if not registered)

GlaxoSmithKline Biologicals SA funded this study (NCT01439360).

EPOSTER DISCUSSION SESSION 20: OTHER CONGENITAL AND PERINATAL INFECTIONS - STATION D

ESP17-0282

VERTICAL TRANSMISSION OF PNEUMOCYSTIS JIROVECCII IN A RURAL COMMUNITY IN MOZAMBIQUE

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Background

Pneumocystis jirovecii (*P.jirovecii*) colonization in pregnant women and risk of maternal-to-child transmission (MTCT) have been rarely studied although an association between *Pneumocystis* colonization in pregnancy and fetal death or preterm deliveries has been suggested. We aimed to explore MTCT of *P. jirovecii* and its effect in newborns in a rural hospital in Mozambique.

Methods

A cross-sectional descriptive study was conducted on pregnant women attending Manhiça District Hospital at delivery. An oropharyngeal wash was collected in mothers and blood cord samples and nasopharyngeal aspirates were collected in their babies to detect *Pneumocystis* DNA. HIV rapid test was also performed to pregnant women.

Results

Among 118 pairs mothers-newborns recruited, colonization by *P.jirovecii* was detected in 15/118 (12.7%) mothers and 13/118 (11%) of newborns, being three pairs mother-newborn *P.jirovecii* positive. Gestational age at birth was similar in colonized and non-colonized women (39.2±1.4 vs 38.8 ±1.7 weeks, p=0.49). Among colonized children, 3/13 (23.1%) were low birth weight and 12/105 (12.4%) among uncolonized children (OR 2.28, p=0.27). HIV infection was similar in both groups of women (33.3% vs 31.0%, p=0.39) and 94.4% of seropositive women were taking antiretrovirals. Two colonized children were admitted in the first month of life with respiratory distress but samples to detect *P.jirovecii* were not taken.

Conclusions

Our results showed a higher prevalence of *P.jirovecii* colonization among mothers and their babies. Although impact in gestational age or birth weight was not found, MTCT may be a risk factor to develop pneumocystis pneumonia. Only 3 pairs mothers-newborn were positive at birth, suggesting vertical transmission may occur also in the first terms of pregnancy. HIV did not influence in *P.jirovecii* colonization, likely due to most of HIV-infected women were under antiretroviral treatment.

EPOSTER DISCUSSION SESSION 02: TROPICAL INFECTIONS - STATION B

ESP17-0306

MYOCARDITIS IN DENGUE INFECTION

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Background

Dengue is one of the most important viral diseases in Indonesia and globally. A small proportion of patients develop severe clinical manifestations, including hypovolaemic shock and vital organ impairment. Even though the evidence for myocarditis dengue is increasing, but not many are aware for this complication. A study to analyze the relationship between myocarditis in dengue severity is needed to be done. the aim of this study was to evaluate myocarditis prevalence in any severity of dengue infection

Methods

We carried out a prospective study patient less than 18 years old admitted to Dr Sardjito General Hospital, Yogyakarta with dengue infection, from July 2015 to May 2016. Dengue infection was diagnosed based on WHO Dengue Guideline 2011 that was positive either by dengue serology and or NS1 test. Myocarditis was defined based on analysis of serum CK, CKMB, Troponin I and electrocardiography. Statistical analysis was done using Fisher exact test.

Results

Fifty children patient with diagnosis of 15 dengue fever, 12 dengue haemorrhagic fever, and 23 dengue shock syndrome were analyzed. The proportion of myocarditis were identified with patient with dengue fever 8 (53%), dengue haemorrhagic fever 9 (75%), dengue shock syndrome 22 (96%). Myocarditis is more prevalent in dengue shock syndrome than dengue fever ($p=0,003$).

Conclusions

Myocarditis is common in dengue infection and this may contribute to the clinical severity in dengue shock syndrome.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 23: ADVANCES IN DIAGNOSIS OF INFECTION - STATION G

ESP17-0310

ALERE™ i RSV FOR RAPID DETECTION OF RESPIRATORY SYNCYTIAL VIRUS IN CHILDREN HOSPITALIZED WITH ACUTE RESPIRATORY TRACT INFECTION

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Background

Alere™ i RSV is a novel rapid test which applies a nicking-enzyme amplification reaction to detect respiratory syncytial virus in point-of-care settings. The assay provides test results within 13 min, with an early call out for positive results. Until now, no data has been published regarding the sensitivity and specificity of the novel Alere™ i RSV test assay. The objective of our study was to evaluate the performance of the Alere™ i RSV test assay for rapid detection of RSV in children hospitalized with acute respiratory tract infection.

Methods

We evaluated the Alere™ i RSV assay by using frozen nasopharyngeal swab samples that were obtained from children hospitalized with acute respiratory tract infection and collected in viral transport medium during winter season 2015/16. Alere™ i RSV assay test results were compared to Altona® RealStar RSV real-time reverse transcription PCR (RT-PCR).

Results

114 respiratory samples were enrolled in our study. The Alere™ i RSV correctly identified all 49 RSV positive samples. Out of 65 negative samples, 63 samples were true negative, whereas 1 sample was false positive in the Alere assay and 1 sample was invalid due to sample interference. The overall sensitivity and specificity of the Alere™ i RSV test assay was 100% (CI₉₅ 93% - 100%) and 97% (CI₉₅ 89% - 100%), respectively.

Conclusions

The Alere™ i RSV test assay performed very well in comparison to the RT-PCR assay. The assay is fast, simple to use and requires minimal hands-on time. Alere™ i RSV has the potential to facilitate the detection of RSV infection in the point-of-care setting.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 09: HOST-PATHOGEN INTERACTION - STATION A

ESP17-0322

PNEUMOCOCCAL IMMUNE RESPONSES IN INFANTS WHOSE MOTHERS RECEIVED TDAP VACCINATION DURING PREGNANCY

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Background

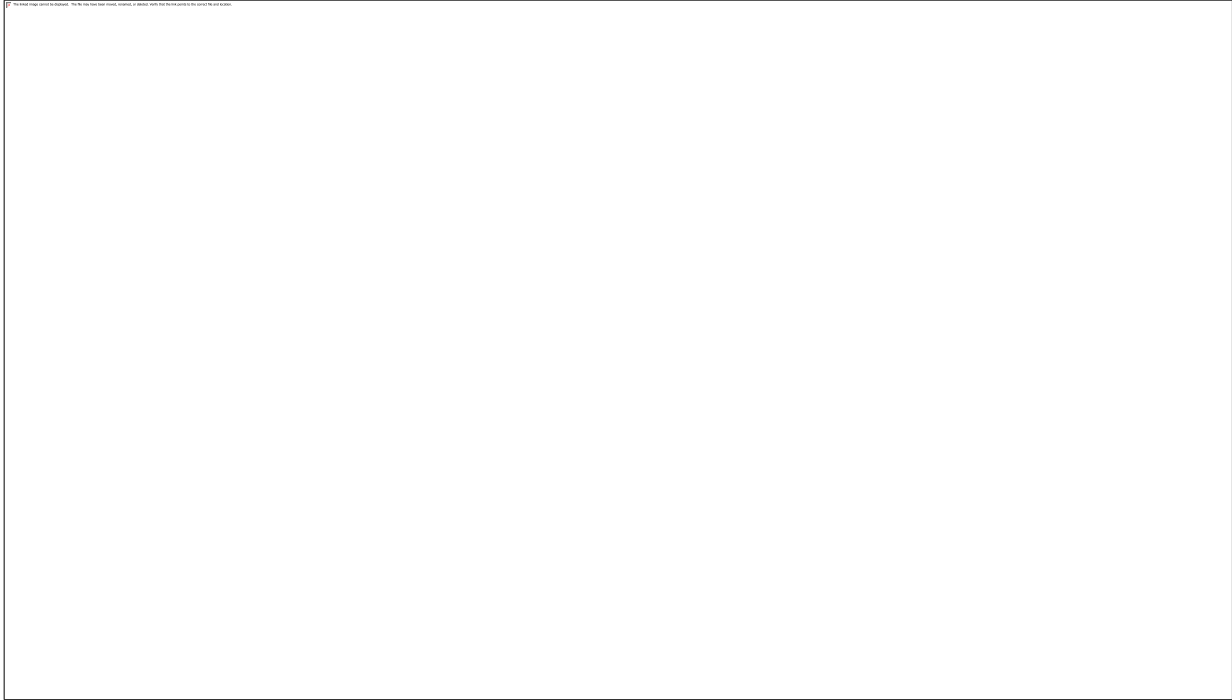
Maternal immunization with a tetanus, diphtheria and acellular pertussis (Tdap) vaccine may blunt the infant pneumococcal immune responses after a primary series of vaccine.

Methods

As part of a prospective controlled cohort study on Tdap (Boostrix®, GSK Biologicals) vaccination in pregnancy (Clinicaltrials.gov:NCT01698346), infants born to vaccinated mothers and a control group (no maternal Tdap vaccination for at least 10 years) were immunized at 8 and 16 weeks and 12 months of age with a 13-valent pneumococcal conjugate vaccine (Prevenar13®, Pfizer). Sera were tested for pneumococcal antibody concentrations against vaccine included serotypes following primary and booster immunization.

Results

Seroprotection rates were high after 2 doses of Prevenar13® in both study groups and increased after a booster dose for serotypes 3, 5, 6B, 9V and 23F. Comparable seroprotection rates are found in both study groups for all serotypes after booster vaccination. Geometric Mean Concentration (GMC) of antibodies for serotype 1, 3, 4, 5, 6A, 7F, 9V, 14 and 19A were significantly lower after 2 doses of Prevenar13® in the offspring of vaccinated mothers. This blunting effect disappeared after a booster dose at the age of 12 months, except for serotype 1 and 4 (Figure).



Conclusions

The blunting effect of maternal Tdap vaccination on pneumococcal immune responses in infants, as was described in the UK before, is confirmed in the present study. However, the clinical effect on protection from pneumococcal disease will likely be low in the Belgian setting, since seroprotection rates are high and circulation of vaccine-included serotypes is almost non-existent. In view of recommendations for maternal Tdap vaccination to protect infants from disease, the effect on infant pneumococcal immune responses regarding both seroprotection rate and clinical effectiveness is of potential risk.

Clinical Trial Registration (Please input N/A if not registered)

Clinicaltrials.gov:NCT01698346

EPOSTER DISCUSSION SESSION 11: VACCINES: VIRAL IMPACT AND NON-SPECIFIC EFFECTS - STATION C

ESP17-0324

LONG-TERM IMPACT OF REPEATED IMMUNIZATION WITH INACTIVATED INFLUENZA VACCINE ON RESPIRATORY ILLNESS IN HIGH-RISK CHILDREN

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³National Institute for Public Health and the Environment RIVM, Infectious Diseases Epidemiology, Bilthoven, The Netherlands

Background

Annual influenza immunization in medical risk groups is recommended in many countries. Evidence is accumulating that repeated inactivated influenza vaccine (IIV) immunization in children may impair long-term immunity and affects susceptibility to respiratory illness (RI). We assessed whether the effect of IIV immunization was altered in immunized children with IIV history compared to those without by studying RI episodes among children with chronic medical conditions such as asthma, diabetes mellitus and cardiac diseases.

Methods

Patient records of immunized children, meeting the criteria for annual IIV immunization according to the Dutch guideline for annual IIV vaccination, were extracted from primary care databases over 2004-2015. We collected information on IIV immunization status, RI episodes and potential confounders. Generalized estimating equations were used to model the association between IIV history and occurrence of at least one RI episode during the influenza season with "current year immunized, but without IIV history" as reference group.

Results

4,405 IIV immunized children with 12,182 child-years of follow-up were included. RI episodes during the influenza season occurred most frequently in children immunized in the current year, but without IIV history (incidence proportion 6.9%). Adjusted estimates showed lower odds for occurrence of RI episodes in current year immunized children with IIV history compared to those without IIV history (OR:0.60;95%CI:0.47-0.78 for "current year immunized and one IIV in previous two years"; OR:0.73;95%CI:0.58-0.92 for "current year immunized and two or more IIVs in previous three years, including prior year").

Conclusions

Repeated IIV immunization has no negative impact on long-term vaccine effectiveness and may even enhance protection when studying primary care diagnosed RI episodes among IIV immunized children with chronic medical conditions.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 10: VACCINATION PROGRAMMES INCLUDING PNEUMOCOCCAL IMPACT - STATION B

ESP17-0326

COMPARISON BETWEEN INTERMITTENT AND CONTINUOUS 24 HOUR TEMPERATURE MONITORING AFTER 4CMENB IMMUNISATION IN INFANTS

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Background

Fever is one of the most common side effects after vaccination. In clinical trials, fever is usually measured intermittently with a thermometer but this may miss fever episodes and underestimate the pattern of fever. The objective of this study was to compare the rates of fever in infants who received 4CMenB and those who did not, using an intermittent or a continuous temperature monitoring method

Methods

Sub-analysis of a randomised controlled trial. Fever episodes, defined as temperature $\geq 38^{\circ}\text{C}$, were analysed at 4 and 12 months of age, after the infants received their routine immunisations with or without 4CMenB vaccine. Two concomitant methods were used: 1) a wireless 24 hour continuous trans-cutaneous temperature monitoring system (iButton®) applied directly to the infant's abdomen; 2) axillary temperatures using a digital thermometer at 4,8 and 24hrs after vaccination.

Results

From the 187 infants enrolled, iButton® records were available in 177 infants at 4 months and 174 at 12 months of age. At 4 months of age the rates of fever were higher in the 4CMenB + routine immunisation groups regardless of the technique used (continuous: 56.4%; intermittent: 12.8%), when compared with the group that only received routine immunisations (continuous: 25.8%; intermittent: 6.5%). At 12 months of age a higher number of fever episodes were identified with the continuous method in both groups (continuous: 56.4%; intermittent: 10.6% in 4CMenB + routine immunisation; continuous: 25.8%; intermittent: 7.5% in routine immunisation alone)

Conclusions

The use of continuous measurement methods in clinical trials could define more accurately the presence and pattern of fever episodes after immunisation than standard methods can. This method could also allow in the future the definition of temperature trends in this population.

Clinical Trial Registration (Please input N/A if not registered)

NCT02080559

EPOSTER DISCUSSION SESSION 17: INVASIVE VIRAL INFECTIONS - STATION A

ESP17-0331

EPIDEMIOLOGICAL SURVEILLANCE OF HAND, FOOT AND MOUTH DISEASE IN SHANGHAI, CHINA, 2010-2016

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³Children's Hospital of Fudan University, Department of Infectious Diseases, Shanghai, China

Background

The continuous surveillance of epidemiological characteristics and etiology of hand, foot and mouth diseases (HFMD) is important for the definition of therapeutic and prophylactic intervention strategies in China. This study aimed to monitor the epidemiological characteristics of HFMD and prevalent serotypes of enteroviruses causing the outbreaks of HFMD in Shanghai during 2010~2016.

Methods

The citywide surveillance data were used to analyze the epidemiologic characteristics of the HFMD outbreaks in Shanghai.

Results

From 2010 to 2016, a total of 337,041 HFMD cases were notified and 1,716 (0.51%) were severe. The attack rates of HFMD in Shanghai were 1.62~2.82/1000 in the entire population and 37.23~66.54/1000 in children < 5 years old. In terms of proportion of HFMD and severe cases in the specific population, male, migrant population and children <5 years accounted for 59.33%~61.48% and 62.26%~73.77%, 45.34%~62.40% and 72.01%~85.71%, and 79.16%~86.08% and 82.86%~94.89%, respectively. HFMD peaked from April and July. The detection rates of EV71 and Coxsachievirus A16 (CA16) were 73.08%~100% and 0%~2.90% in severe HFMD cases, 19.64%~48.74% and 2.02%~23.69% in uncomplicated inpatients, and 13.83%~40.08% and 8.36%~33.39% in mild community cases, respectively. The CA6 and CA10 in mild community cases in 2015~2016 accounted for 40.51%~45.11% and 1.64~2.50%, respectively.

Conclusions

The annual HFMD outbreak occurred in Shanghai during 2010~2016. Children <5 years old, migrant children and male were the major susceptible population. EV71 and CA16 were the predominant pathogens of HFMD during 2010~2014 and CA6 was predominantly prevalent in 2015~2016. EV71 remained the major pathogen responsible for severe HFMD.

EPOSTER DISCUSSION SESSION 14: BACTERIAL EVALUATION OF COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION F

ESP17-0332

CORRELATION OF NASOPHARYNGEAL ORGANISMS WITH CLINICAL, RADIOLOGICAL, AND LABORATORY FEATURES IN A COHORT OF CHILDREN WITH SEVERE COMMUNITY ACQUIRED PNEUMONIA.

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Background

Childhood community acquired pneumonia is a problem of great individual and public health significance in developing countries. This study was designed to explore the relationship between nasopharyngeal organisms and clinical, radiological, and immunological features; in a cohort of children with severe community acquired pneumonia.

Methods

A cohort of consecutive children (1-144 months) with severe pneumonia (WHO IMCI definition) was enrolled. Clinical features, chest radiograph findings, basic laboratory investigations, and a panel of cytokines was recorded. Nasopharyngeal aspirate (NPA) specimens were obtained at enrollment to identify bacteria (by MALDI-TOF) and viruses (by PCR).

Results

The cohort comprised 222 children. MALDI-TOF identified bacteria from NPA in 85 (38%) and Viral PCR identified virus(es) in 80 (36%) children. 25 children (11%) had both bacteria and viruses. No organisms were found in 82 (37%) children.

Figure 1 presents demographic characteristics, clinical features and laboratory investigations in children with only bacteria, only virus(es), mixed pattern (bacteria and virus), and no organisms. Most clinical symptoms had shorter duration in children with viruses (median duration one day less). Wheezing was more frequent among children with viruses (as expected). However, most clinical examination findings did not show strong correlation with the pattern on NPA organisms. Chest radiography, and hematologic investigations were also not discriminatory. Among a panel of 6 cytokines, only IL6 showed a clear pattern being lowest in those with no organisms, and an increasing trend with viruses, followed by bacteria, followed by mixed colonization.



Conclusions

Most of the clinical, radiological and immunological characteristics do not distinguish the pattern of nasopharyngeal colonization in children with severe pneumonia. Therefore efforts to identify the organisms are required for individualizing treatment decisions, rather than administering antibacterial agents empirically.

Clinical Trial Registration (Please input N/A if not registered)

Not applicable

EPOSTER DISCUSSION SESSION 02: TROPICAL INFECTIONS - STATION B

ESP17-0333

CHARACTERISTICS OF DENGUE INFECTION IN SAUDI CHILDREN: SINGLE CENTER RETROSPECTIVE STUDY IN A TERTIARY HOSPITAL IN JEDDAH, WESTERN SAUDI ARABIA

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Background

Dengue fever (DF) continues to be a major health problem in Saudi Arabia especially Jeddah. No previous studies applied 2009 WHO DF classification scheme to Saudi population. This retrospective study was conducted to determine characters of DF in Saudi children.

Methods

This study included children with confirmed diagnosis of DF admitted to IMC from January, 1, 2015 to December, 31, 2016. Demographic, clinical, laboratory data were collected. DF was confirmed by dengue virus serology and NS1 antigen detection. Comparisons were done according to 2009 WHO DF classification between groups with DF without warning signs (DFG), DF with warning signs (DWSG) and severe dengue (SDG).

Results

During study period, 109 cases had confirmed DF with 32, 51, 26 cases in DFG, DWSG and SDG respectively. Median and age range of cases in DFG, DWSG, and SDG were 3.9 (1-16.9), 11.4 (5.9-17) and 7.95 (5-16.7) years respectively. Males were more commonly affected than females in all groups. Summer season especially June was associated with 33% of total cases. In DWSG, 75% of cases had hemoconcentration with rapid decrease in platelets, 37.5% of cases had abdominal pain and persistent vomiting and 25% of cases had lethargy. In SDG, 75% of cases had severe bleeding and 25% of cases had shock. Deterioration to severe dengue occurred in 33.3% of DWSG by 3rd day of illness when they were admitted to PICU and received treatment till recovery. Secondary DF was more significantly recorded in 23.1% of SDG versus 3.1% of DFG ($p=0.02$). Neutropenia was more significantly recorded in SDG than in DFG ($p < 0.001$). Elevated hepatic transaminases weren't significantly different between groups while LDH was significantly higher in DWSG and SDG compared to DFG ($p < 0.001$).

Conclusions

DWSG comprised the largest sector of DF in Saudi children. Hospitalization and monitoring of clinical and laboratory profile of patients, enable effective identification of children at risk of progression to SD who benefit from early prompt interventions to save their lives.

EPOSTER DISCUSSION SESSION 08: INFECTION CONTROL AND AMBULATORY USE OF ANTIMICROBIALS - STATION H

ESP17-0334

METHICILLIN RESISTENT STAPHYLOCOCCUS AUREUS OUTBREAK IN A TERTIARY NICU IN ICELAND: THE LARGEST REPORTED OUTBREAK WORLD-WIDE OF SPA-TYPE T253

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Background

Methicillin resistant *Staphylococcus aureus*(MRSA) is a well recognised pathogen in NICUs globally with world-wide increasing prevalence. Pre- and dysmature neonates are especially prone to colonisation and infection. Better understanding of the epidemiology and patterns of transmission are essential for effective preventive measures. A retrospective study of MRSA colonisation prevalence during a 3 month period was performed.

Methods

During a 3 month period 97 neonates were screened for colonisation. Risk factors for colonisation and infection were registered, the geographical location on the ward during admission noted and their previous antibiotic treatment described. Conventional antimicrobial sensitivity was performed as well as *spa-type* analysis on all positive strains.

Results

Nine children and seven parents were colonised with MRSA and no infections were registered. All staff members were negative. Eight children and six parents carried *spa-type* t253 and one child and it's parent *spa-type* t4845. Neither *spa-type* has ever been reported before in Iceland and both are very rare in Europe. In addition, 13/192 environmental samples from the NICU were positive. Despite all colonised infants being treated with topical and/or systemic therapy, three were still positive at sampling at the end of the study period.

Conclusions

Two distinct MRSA *spa-types* were detected during this NICU outbreak and both are novel to Icelandic hospitals. This MRSA outbreak is probably the largest ever reported of *spa-type* t253. It is likely that the MRSA strains were introduced by a parent and spread through the ward through environmental contamination of other parents and/or staff. In order to describe the outbreak in more detail and determine the origin of the outbreak, whole genome sequencing of the strains is needed and may unravel mechanisms explaining treatment resistant strains and effective spread in NICUs.

EPOSTER DISCUSSION SESSION 23: ADVANCES IN DIAGNOSIS OF INFECTION - STATION G

ESP17-0339

EVALUATING A NOVEL HOST-IMMUNE BASED ASSAY FOR DISTINGUISHING BACTERIAL FROM VARIOUS VIRAL INFECTIONS IN FEBRILE CHILDREN

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Background

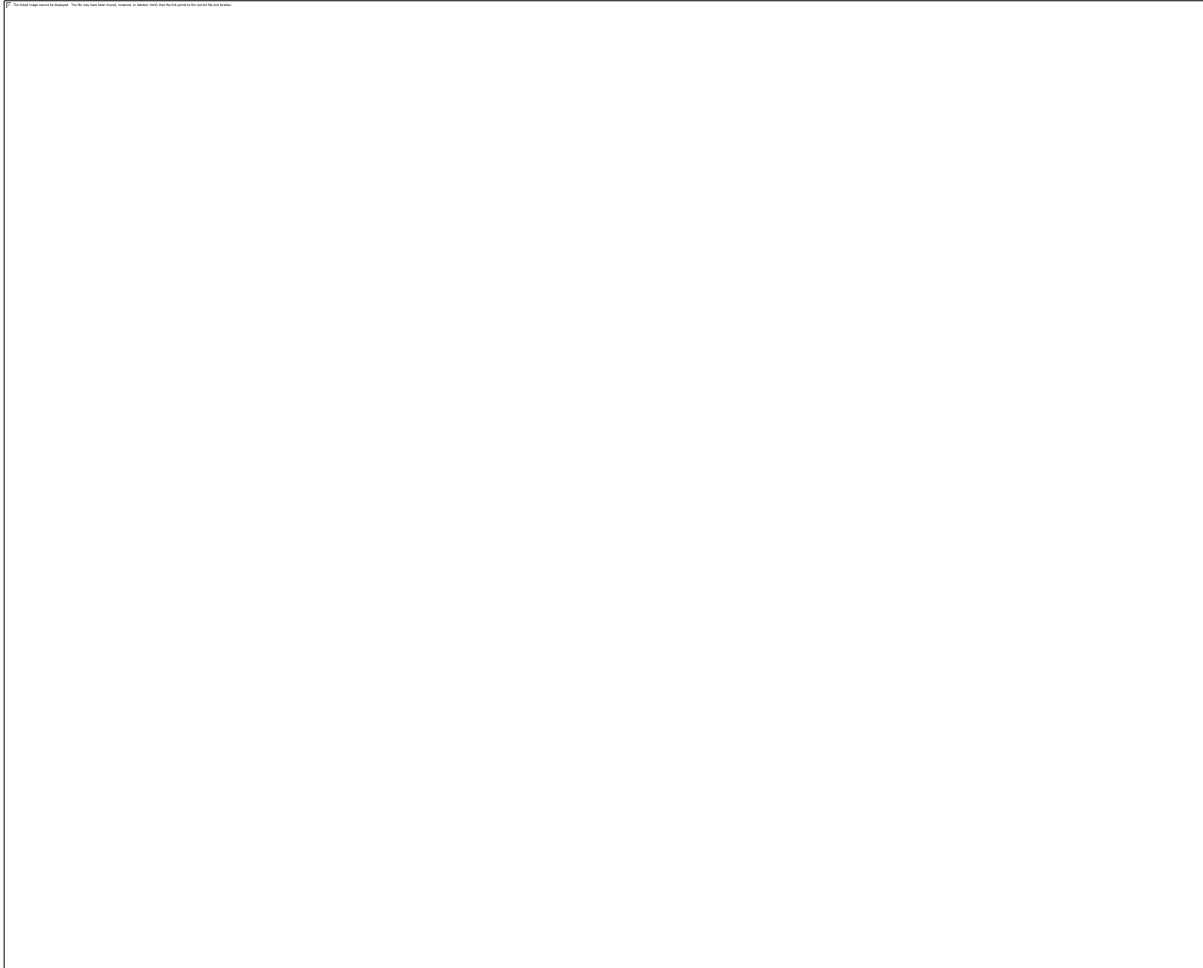
A major challenge in effective management of febrile children is the clinical difficulty of distinguishing bacterial from viral infections. This uncertainty drives antibiotic misuse, hampering patient care and contributing to emergence of antibiotic resistance. ImmunoXpert™ is a novel assay that distinguishes bacterial from viral infections based on the serum levels of three host-proteins (TRAIL, IP-10, and CRP; Eden et al. 2016). Here we evaluated the assay's ability to assign correct infection classification (viral or bacterial) in children infected with ten different types of viral strains as well as in bacterially infected children.

Methods

We studied 233 febrile children aged 3 months to 18 years presenting at the emergency department. Infection etiology (78 bacterial, 155 viral) was determined by clinical adjudication of three physicians and microbiological confirmation of pathogenic viral strains using multiplex-PCR applied to nasal swabs (Seeplex-RV15). Based on the manufacturer's pre-determined cut-offs, ImmunoXpert™ generated one of three results: viral (score 0-35), equivocal (score 35- 65) or bacterial (score 65-100).

Results

ImmunoXpert™ correctly classified 90% of bacterial cases and 91% of viral cases, when compared to the expert panel diagnoses (13% of patients had an equivocal result; Figure 1). For coronavirus, bocavirus, human metapneumovirus, and enterovirus, the assay classified all patients correctly. In the case of adenovirus, which is known to trigger a bacterial-like inflammatory host response, the assay correctly classified 83% of the patients. In comparison, CRP (cut-off: 40 mg/l) correctly classified only 42% of adenovirus infections.



Conclusions

The host-immune based assay represents a promising new tool for aiding clinicians in determining infection etiology in febrile children. Importantly, it may assist in distinguishing between adenovirus and bacterial infections, which can be associated with similar clinical presentation.

Clinical Trial Registration (Please input N/A if not registered)

NCT01917461

EPOSTER DISCUSSION SESSION 10: VACCINATION PROGRAMMES INCLUDING PNEUMOCOCCAL IMPACT - STATION B

ESP17-0341

PREDOMINANT NON-VACCINE SEROTYPES CAUSING INVASIVE PNEUMOCOCCAL DISEASE (IPD) IN CHILDREN LESS THAN 5 YEARS OLD IN THE POST-PCV13 ERA IN ISRAEL

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Background

The introduction of PCV7/PCV13 resulted in a reduction of ~90% of IPD caused by PCV13-serotype (VT13) in children worldwide. However, despite overall reduction in IPD, non-PCV13 serotypes (non-VT13) disease rates increased substantially.

We assessed post-PCV7/PCV13 introduction incidence dynamics of VT13, non-VT13 and overall IPD episodes in Israel, with special emphasis on the most common non-VT13.

Methods

A prospective, population-based, active surveillance. All IPD episodes in children <5 years old between July 2000 and June 2016 were included. Two sub-periods were defined: pre-PCV (2000 -2008) and PCV13 (2014-2016). Incidence rate ratios (IRRs) were calculated. ~60% and >90% of isolates were serotyped during pre- and post-PCV introduction, respectively; extrapolation of missing serotype testing was done.

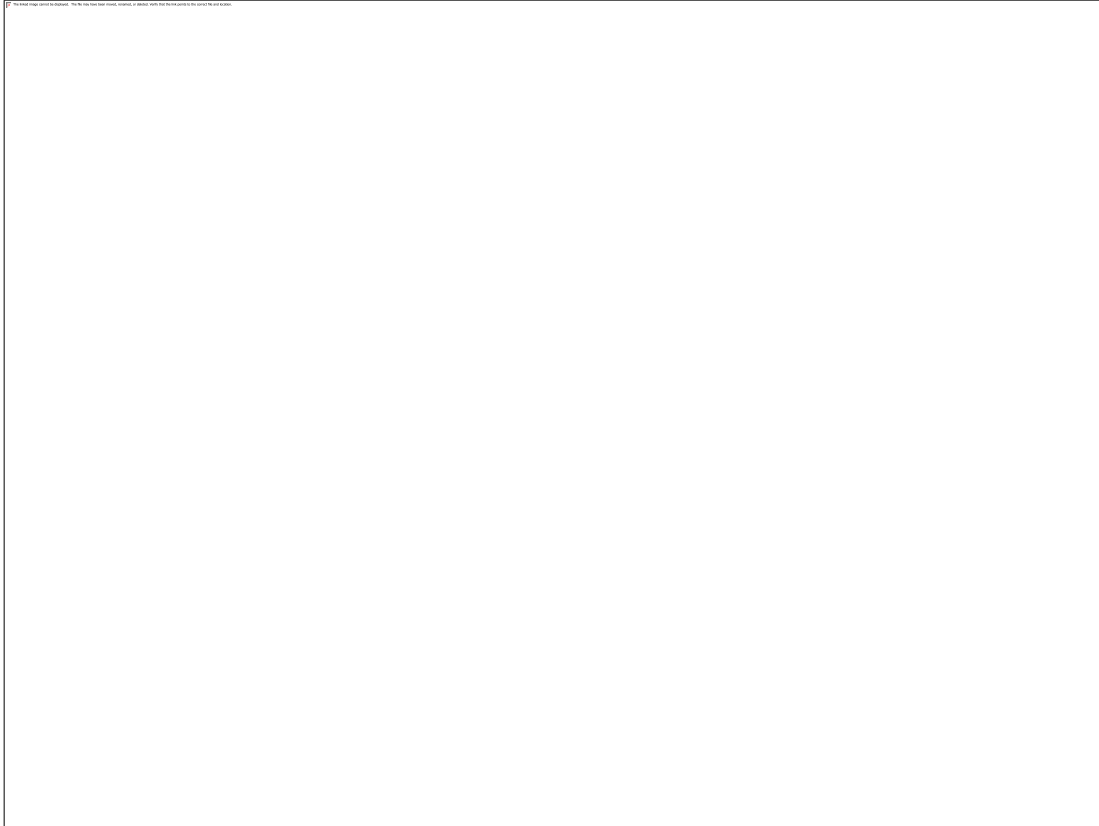
Results

Overall, 4,321 IPD episodes were identified: 3,282 (76%) VT13; 1,039 (24%) non-VT13.

While VT13 IPD rates (per 100,000) declined by 94%, resulting in 63% decline of overall IPD, non-VT13 rates increased significantly (IRR=2.53; 95% CI 2.14-2.99). Non-VT13 proportions of all IPD episodes increased from 11% in the pre-PCV period to 88% in the PCV13 period.

By far, the single most common non-VT13 serotype was 12F, constituting 31% of all non-VT13 in the PCV13 period, followed by 33F (11%), 15B/C (7%), 10B (5%) 7B, 10A and 22F (4% each).

The incidence of IPD caused by 10 serotypes (7B, 8, 10A, 10B, 12F, 15B/C, 12F, 24F, 27, 33F) increased from 1.6 to 10.7, while all other non-VT13 serotypes (grouped), did not increase (**Table**).



Conclusions

Following PCV7/PCV13 introduction, non-VT13 rates were substantially increased. The most common non-VT13 was serotype 12F. 10 non-VT13 serotypes were responsible for the great part of the overall non-VT13 increase. Continuous monitoring is needed for future vaccines strategies.

Clinical Trial Registration (Please input N/A if not registered)

N/A

**EPOSTER DISCUSSION SESSION 22: NON-INVASIVE GASTROINTESTINAL AND MUCOSAL INFECTIONS
- STATION F**

ESP17-0347

**THE EPIDEMIOLOGY OF NON-TYPHOID SALMONELLA ENTEROCOLITIS AND CAMPYLOBACTER
ENTEROCOLITIS IN PEDIATRIC GROUP IN NORTHERN TAIWAN**

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Background

This study elucidated the epidemiology of Salmonella and Campylobacter enterocolitis. Growth of Campylobacter required a microaerophilic condition with a temperature range between 37 to 42°C. Laboratories in rural area may not available for its growth. We developed a scoring system to predict the result of stool culture, to aid physician's judgment.

Methods

A retrospective study was conducted during July, 2012 to December, 2015. By chart reviewing, children under 18-year-old who were hospitalized due to acute gastroenteritis with a stool culture proved Salmonella or Campylobacter were enrolled. In the first 3-year period, multivariate logistic regression was used to compare clinical manifestations and laboratory data. A scoring system was developed to predict the result of stool culture and validated in next half year.

Results

772 children were enrolled. Salmonella had seasonality between May to October, while Campylobacter didn't (p value <0.001). The mean age was 82 and 27-month-old for Campylobacter and Salmonella, respectively. *Campylobacter jejuni* (60.3%) and *Salmonella* serogroup B (46.1%) were the most common pathogen in each group. 1 case complicated with Campylobacter bacteremia (0.6%) and 40 cases with Salmonella bacteremia (7.1%). Salmonella serogroup C2 had an increased risk of bacteremia (OR:4.5, 95%CI: 2.15-9.25), while serogroup B was protective (OR:0.47, 95%CI:0.22-0.98). Multivariate analysis showed gender, age, band form, CRP and Na were significant factors. A scoring system with ≥ 3 points indicated Campylobacter infection. The sensitivity and specificity were 75%, 72%. 48 cases were enrolled to validate the scoring system. The positive and negative predicative values were 80%, 93%.

Conclusions

Based on easily available clinical information, we developed a scoring system as a preliminary tool for the first-line physician to evaluate the possibility of Campylobacter infection, which can be helpful in places with scarce medical resource.

EPOSTER DISCUSSION SESSION 13: PUBLIC HEALTH: BACTERIAL INFECTIONS AND CLINICAL EPIDEMIOLOGY - STATION E

ESP17-0359

CARRIAGE OF BORDETELLA PERTUSSIS NOT DETECTED IN VACCINATED ASYMPTOMATIC PRE-SCHOOL CHILDREN DURING A RESURGENCE OF CLINICAL CASES

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Background

Bordetella pertussis(Bp) resurgences, including one in the UK in 2011-13, have recently occurred in several countries causing morbidity and mortality in young infants to whom transmission is thought to occur most commonly from their parents, carers or adolescent siblings. Work in animal models has suggested that acellular pertussis vaccines, although efficacious against symptomatic disease do not reliably prevent mucosal infection/transmission. Few data are available on Bp carriage among pre-school children during resurgences.

Methods

In two winter seasons 2011-12(I) and 2012-13(II), up to 5 nasopharyngeal swabs were taken from 161(I) and 151(II) children respectively in two separate clinical trials. All children were attending pre-school daycare centres(DCC) in Bristol, UK and were aged 10 months to 5 years. The samples were stored in STGG broth until analysis. Quantitative PCR for detection of Bp and *Bordetella parapertussis*(Bpp) was performed using published primers, targeting the genes IS481 and IS1001 respectively, with positive/negative controls in each run. Samples with cycle thresholds<35 were considered positive.

Results

All children were well and attending the DCC at the time of sampling. From a total of 1289 swabs(from 312 children) tested over the two winter seasons, none were positive for Bp or Bpp. The samples were considered of good quality (based on multiple positive results of qPCR for 6 other bacterial species and 12 respiratory viruses).

Conclusions

Despite an ongoing epidemic in the UK in the years when the study was performed with 9346 reported cases in 2012 in all age groups, no pre-school aged children were found to be asymptotically colonised with Bp or Bpp in this study. This suggests that pre-school aged children, immunised with acellular pertussis vaccine, were not a source of infection in infants during this period.

Clinical Trial Registration (Please input N/A if not registered)

NA

EPOSTER DISCUSSION SESSION 20: OTHER CONGENITAL AND PERINATAL INFECTIONS - STATION D

ESP17-0369

RISKS FACTORS FOR NOSOCOMIAL INFECTION IN VERY LOW BIRTH WEIGHT INFANTS

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Background

Nosocomial sepsis (NS) in very low birth weight (VLBW) infants is associated with significant morbidity and mortality.

Objective: To evaluate the rate of NS and risk factors associated in VLBW infants.

Methods

Retrospective observational file research. Study population were VLBW infants, hospitalized in the NICU during 2005-2016 (12 years). We evaluated the associated risk factors *odds ratio* adjusted for gestational age (GA) and birth weight (BW) were calculated. It was performed a logistic regression analysis for all variables that, in univariate analysis, a statistical difference was observed with a probability occurrence less than 0.1.

Results

559 VLBW infants were admitted, with a mean GA $29,3\pm 2,4W$ and a mean birth weight $1132\pm 266g$. There were 119 episodes of NS in 110 VLBW infants, and 63 episodes of sepsis associated with central vascular catheter (CVC). The density of the sepsis was 6,9/1000 days of hospitalization and the density of CVC associated sepsis was 24,4/1000 days of use. The infants with NS, had lower average of BW and GA ($948\pm 229g$ versus $1179\pm 255g$) and ($27.6 \pm 2,1$ versus 29.8 ± 2.3 weeks), $p < 0.001$. After adjusting the BW and GA we see an association between NS to the presence and duration of parenteral nutrition and CVC. After logistic regression, only the GA (ORa: 0.81; 95% 0.71 IC0 -0.93; $p = 0.003$) and the parenteral nutrition (ORa: 1.2; 95% IC1.2 -1.3; $p < 0.001$) remained as independent risk factors for NS.

Conclusions

For each extra week on GA the risk thereof declined in 19%, and for each day of NP to the risk increased by 20%.

EPOSTER DISCUSSION SESSION 09: HOST-PATHOGEN INTERACTION - STATION A

ESP17-0377

INTERACTION OF WILD TYPE SALMONELLA TYPHI AND ATTENUATED VACCINE STRAINS WITH HUMAN GUT EPITHELIAL CELLS

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Background

Typhoid and paratyphoid remain an important cause of disease and mortality in low- and middle- income countries, particularly among children. Unique insights into disease pathogenesis have recently been generated from a controlled human infection model. Amongst these were a previously unknown cytokine signal in peripheral blood measurable within hours after challenge at which time point participants were clinically asymptomatic. The aim of the present study was to establish an *in vitro* model of human gut cells, in order to further evaluate the early responses observed following oral challenge.

Methods

Epithelial colonic HCT 116 and SW 948 cell monolayers were stimulated with three different strains of *S. Typhi*, the wild type Quail strain, the licensed Ty21a vaccine and experimental typhoid vaccine M01ZH09. Supernatants collected post-infection were assessed by enzyme-linked immunosorbent assay (ELISA) and Luminex assay for the presence of the pro-inflammatory cytokines IL-8, sCD40L, EGF, GRO α and fractalkine.

Results

Wild type and attenuated vaccine strains of *S. Typhi* induced a significant production of IL-8, fractalkine and GRO α . M01ZH09 demonstrated a stronger capacity than Ty21a to stimulate the secretion of cytokines by gut epithelial cells. Cytokine secretion was also induced by heat-inactivated bacteria, but to a lesser extent than with live *S. Typhi*.

Conclusions

S. Typhi induced a human gut epithelial cell cytokine response *in vitro* that was similar to the response detected in the plasma of humans 12 h after oral challenge. M01ZH09 was found to induce higher levels of cytokines than did Ty21a, possibly attributed to differences in invasiveness of the two strains.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 24: INFECTIONS IN IMMUNOCOMPROMISED CHILDREN - STATION H

ESP17-0380

PNEUMONIA IN CHILDREN WITH JUVENILE IDIOPATHIC ARTHRITIS IN FINLAND 1999 - 2014: A NATIONWIDE RETROSPECTIVE REGISTER STUDY

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Background

The children with juvenile idiopathic arthritis (JIA) have increased risk of infections due to JIA itself and the immunosuppressive therapy. The aim of this study was to determine the incidence of pneumonia in children with JIA and to compare it with general population.

Methods

The National Hospital Discharge Register collects data of hospital discharge diagnoses in Finland. We collected the patients under 18 years of age with JIA and pneumonia through 1999 – 2014 from the register and analysed the patient records. The control group consisted of general population with the same age and calendar year with pneumonia diagnosis.

Results

We identified 223 pneumonias in JIA patients (56,161 patient years) and 53,058 pneumonias in the control group (17,546,609 person years). The incidence of pneumonia in children with JIA was 386 (range 131– 639) and in the control group 303 (range 236 – 437) per 100,000 person years. In the first half of the 16-year follow-up period there was no difference in the incidences between the groups. However, during the last 8 years the rate of pneumonia was significantly higher in the JIA group ($p < 0.0001$). The incidence of pneumonia in JIA patients increased significantly through follow-up ($p = 0.047$) (Figure).

From the patient records we identified a total of 150 radiograph confirmed episodes of pneumonia in 142 children with JIA. The antirheumatic medication of these patients was methotrexate in 90 (60 %), glucocorticosteroids in 23 (15 %) and biologic agents in 47 (31 %) cases.

Conclusions

The incidence of pneumonia among children with JIA increased significantly between 1999 and 2014. In the second half of the follow-up (2007 – 2014) they suffered from pneumonia significantly more often than general population.

EPOSTER DISCUSSION SESSION 07: HIV/AIDS - STATION G

ESP17-0400

HCV IMPACT ON HIV-1 PROTEASE EVOLUTION IN HCV/HIV COINFECTED PEDIATRIC PATIENTS

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Background

Co-infection by hepatitis C virus (HCV) is one common comorbid condition in HIV-infected. This study evaluates the impact of HIV/HCV coinfection in molecular evolution of HIV-1 subtype B protease (HIV-1BPR) in the MDRMid cohort of HIV-1 infected children and adolescents.

Methods

HIV-1B/HCV co-infected and HIV-1B mono-infected patients with similar gender, age, time of infection and time under antiretroviral treatment (ART) with available *pol* sequences were enrolled. Drug resistance mutations (DRM) prevalence and evolutionary parameters at HIV-1B-PR were compared among groups. Genetic diversity, number of synonymous (dS) and non-synonymous (dN) mutations per site and selective pressures (dN-dS) were analyzed at the population level and in each PR codon by FUBAR analysis.

Results

Similar prevalence of DRM to ART families in HIV-1B was observed in the 15 co-infected and 56 mono-infected patients. Mean genetic distances in HIV-1B-PR were similar (0.05 ± 0.02 vs. 0.045 ± 0.01), dN and dN-dS were significantly higher in co-infected patients (dN: 0.045 ± 0.01 vs. 0.024 ± 0.01 ; dN-dS: -0.029 ± 0.02 vs. -0.054 ± 0.045). By contrast, dS values were similar [C1] in both groups (dS: 0.074 ± 0.03 vs. 0.078 ± 0.04). Co-infected patients presented fewer number of codons under purifying selection (4.2% vs. 42.1%) and similar under diversifying selection. In co-infected subjects, DRM to PI at residues 50, 53, 82, 84 and 88 were under neutral evolution instead of under purifying as in mono-infected.

Conclusions

HCV presence leads to higher selective pressures and less number of HIV-BPR sites under purifying selection, including some residues associated to DRM to PI. Changes in selection pressures observed in our analyses suggest that HIV-1B would evolve differently under HCV co-infection and this might not be due to the host immune system or DRM to ART but a viral-viral direct interaction[D1]

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 14: BACTERIAL EVALUATION OF COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION F

ESP17-0407

RESPIRATORY SYNCYTIAL VIRUS BRONCHIOLITIS: HIGH INCIDENCE OF HOSPITALIZATION OF INFANTS BORN AT 33-36 VS. GREATER THAN 36 WEEKS GESTATIONAL AGE

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²*Ben-Gurion University of the Negev, Faculty of Health Sciences, Beer-Sheva, Israel*

Background

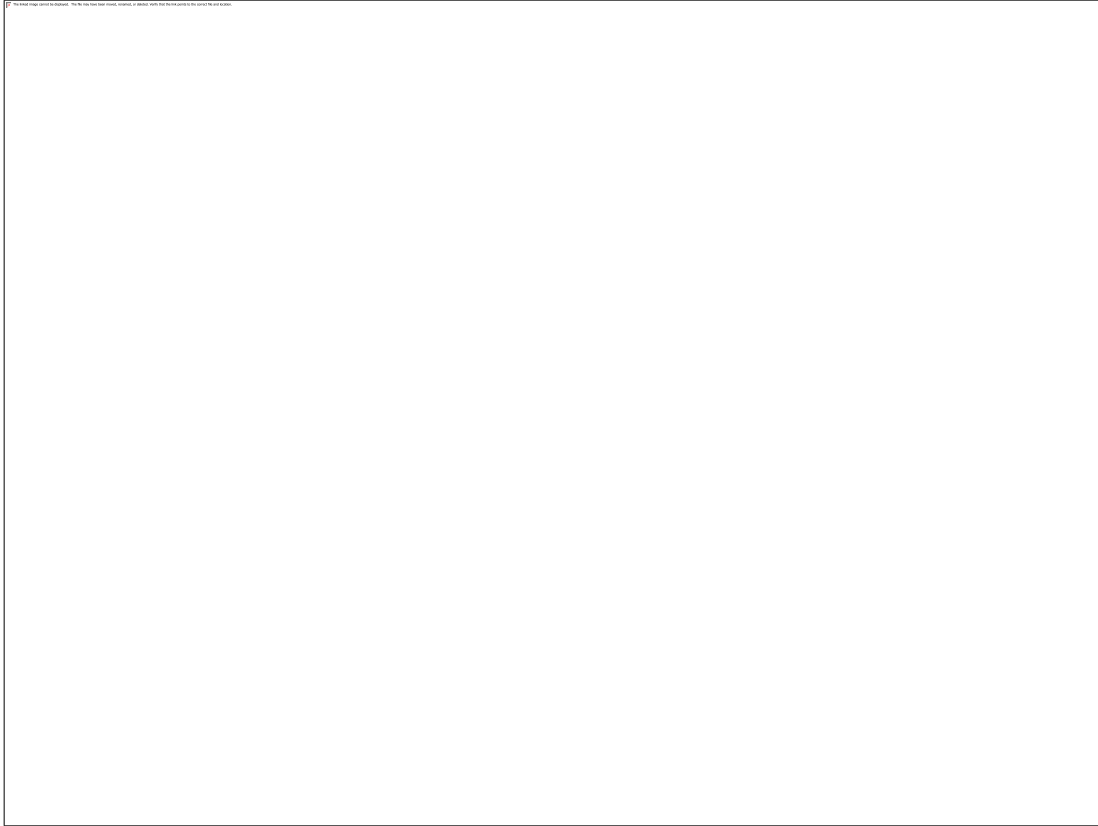
Respiratory syncytial virus (RSV) is a leading cause of hospitalization, with the highest risk in premature infants <12 months old. We attempted to determine hospitalization rates of late premature infants (33-36 weeks gestational age [WGA]) vs. term infants (>36 WGA) with RSV bronchiolitis (RSV-Bronch).

Methods

Soroka University Medical Center is the only hospital in southern Israel enabling population-based studies. All infants <12m of age hospitalized during 2004-2015 with bronchiolitis were included. RSV-Bronch rates were calculated by extrapolating the proportion of positive test (PCR or antigen detection) among tested infants. Population denominator for incidence rates was calculated from hospital records. Infants with congenital heart or lung diseases or trisomy 21 were excluded.

Results

525 hospitalization episodes in 33-36 WGA with bronchiolitis were recorded. RSV was tested in 327 (62.3%); 228/327 (69.7%) were positive. The respective numbers for >36 WGA were: 4,276, 2,587 (60.5%) and 1,923/2,587 (74.3%). The incidences (\pm SD) of RSV-Bronch hospitalization of infants 33-36 and >36 WGA, were 34.1 ± 11.9 and 20.2 ± 5.6 , respectively ($P=0.001$). During RSV seasons (November through March) the mean incidence rate ratio (IRR) between groups (95 CI) was 1.73 (1.55-1.93) (**Figure**). Duration of hospitalization (\pm SD) was 4.8 ± 7.0 and 3.9 ± 4.9 in 33-36 and >36 WGA, respectively ($P=0.003$).



Conclusions

During the first year of life, late preterm infants are at increased risk for hospitalization due to RSV bronchiolitis and are hospitalized for a longer duration compared to term infants. These findings are important when considering gestational age limits for RSV monoclonal antibody administration.

EPOSTER DISCUSSION SESSION 11: VACCINES: VIRAL IMPACT AND NON-SPECIFIC EFFECTS - STATION C

ESP17-0408

INACTIVATED QUADRIVALENT INFLUENZA VACCINE PREVENTS DISEASE DUE TO MATCHED AND MISMATCHED STRAINS: A RANDOMISED TRIAL IN CHILDREN AGED 6–35 MONTHS DURING 2011–2014

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Background

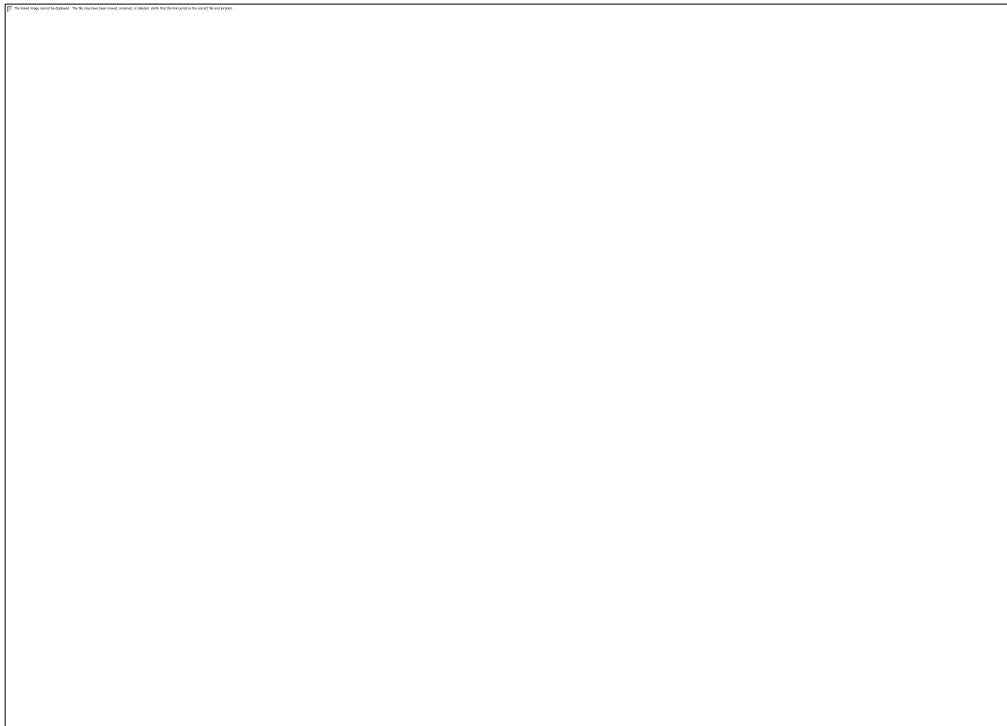
In young children, influenza is associated with substantial burden and vaccine efficacy data are limited. We investigated the efficacy of inactivated quadrivalent influenza vaccine (IIV4) in children 6–35 months.

Methods

This phase III, observer-blind trial was conducted in five independent cohorts during five influenza seasons (2011–2014) in temperate and subtropical countries. Healthy children were randomised 1:1 to IIV4 or control. Primary endpoints were moderate-to-severe influenza or influenza of any severity confirmed by reverse transcription polymerase chain reaction (RT-PCR) on nasal swabs. RT-PCR-positive specimens were cultured and characterised as antigenically matched/mismatched with vaccine strains. Efficacy was evaluated in the per-protocol cohort and total vaccinated cohort (TVC) (time-to-event analyses).

Results

RT-PCR-confirmed influenza of any severity occurred in 356 (5.9%) and 693 (11.5%) children in the IIV4 and control groups, respectively, with A/H3N2 and B/Yamagata predominant (50% and 30%; TVC). 63.6% of antigenically characterised isolates were vaccine-mismatched (15.2%, 97.4%, 85.7%, 33.4% for A/H1N1, A/H3N2, B/Victoria and B/Yamagata). The study met its primary confirmatory objectives by demonstrating efficacy against moderate-to-severe influenza and influenza of any severity (Table). Efficacy was seen against each vaccine A-subtype/B-lineage and was sustained throughout surveillance. There were no clinically relevant differences between IIV4 and control in safety.



Conclusions

Efficacy was demonstrated in children 6–35 months despite vaccine-mismatch in 97.4% of A/H3N2 and 85.7% of B/Victoria isolates. Efficacy was highest against moderate-to-severe disease which is associated with the greatest medical and socioeconomic burden.

Clinical Trial Registration (Please input N/A if not registered)

GlaxoSmithKline Biologicals SA funded this study (NCT01439360).

EPOSTER DISCUSSION SESSION 09: HOST-PATHOGEN INTERACTION - STATION A

ESP17-0409

DETECTION OF HOST RESPONSE TO VIRAL RESPIRATORY INFECTIONS BY MEASUREMENT OF MRNA FOR MXA PROTEIN IN NASAL SWAB SAMPLES

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Background

During viral infections myxovirus resistance protein A (MxA) transcription is induced by type I and III interferons. This innate immune response is mediated by pattern recognition receptors which are activated by viral structures. The purpose of this study was to examine the usefulness of nasal MxA mRNA measurement in the diagnosis of respiratory viral infections in children under the age of 2 years.

Methods

We collected 69 nasal swabs from asymptomatic children and 76 swabs from children with symptoms of a respiratory infection. MxA mRNA was quantified in the swab specimens and related to actin mRNA levels. Respiratory viruses were detected by PCR methods. In addition, blood MxA protein level was determined in all subjects. Vaccination histories were acquired from electronic registries.

Results

There was a relatively good correlation between blood MxA level and nasal MxA expression (Spearman $r = 0.479$; $p < 0.001$). Of the symptomatic subjects, 76% tested positive for respiratory viruses. Nasal MxA (median [interquartile range]) was higher in symptomatic virus positive children (3.40×10^{-3} [$1.43 \times 10^{-3} - 12.14 \times 10^{-3}$]) compared to asymptomatic virus negative children (1.04×10^{-3} [$0.23 \times 10^{-3} - 3.01 \times 10^{-3}$]; $p < 0.001$). In addition, live rotavirus vaccine was found to elevate Nasal MxA expression.

Conclusions

Nasal MxA expression is elevated in children with symptomatic viral respiratory infections. It could be a useful marker of host response to respiratory viruses, particularly since it can be measured from the same sample that is used for virus PCR. Attention should be paid to recent administration of a live rotavirus vaccine when interpreting nasal MxA findings.

EPOSTER DISCUSSION SESSION 11: VACCINES: VIRAL IMPACT AND NON-SPECIFIC EFFECTS - STATION C

ESP17-0410

DECREASED PREVALENCE OF CELIAC DISEASE IN ROTATEQ® VACCINATED CHILDREN COMPARED TO CHILDREN VACCINATED WITH PLACEBO IN A 11-14 YEAR FOLLOW-UP

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Background

Rotavirus has been suggested to trigger celiac disease in children. In active celiac disease, anti-transglutaminase IgA antibodies recognize rotavirus outer capsid protein VP7, and it has been suggested that rotavirus infection may trigger celiac disease by molecular mimicry in genetically susceptible children. Rotavirus vaccination might therefore, influence the prevalence of celiac disease.

Rotavirus Efficacy and Safety Trial (REST) was conducted between 2001 and 2003, and was followed by the Finnish Extension Study (FES) involving 21,000 Finnish children, divided into RotaTeq® vaccine group and placebo group in 1:1 ratio. This material provided a unique opportunity to retrospectively investigate the association of celiac disease and RotaTeq® vaccine. **Methods**

A questionnaire was sent to the parents of children enrolled into the FES study. Celiac disease diagnosis, age at diagnosis, and treatment was inquired.

Results

The questionnaire was sent to the parents of 19,133 FES participants and 5,764 (30%) returned the questionnaire. The age distribution of the children ranged from 10 years to 14 years, 2580 (45%) were placebo recipients and 3184 (55%) had received RotaTeq® vaccine. The prevalence of celiac disease was 1.11% (29 of 2580 children) in the placebo group whereas in the vaccine group it was 0.60% (19 of 3184 children). A statistically significant difference was found in the prevalence of celiac disease between RotaTeq® vaccinated and placebo vaccinated children ($p=0.027$, Chi-Square test). The mean age at diagnosis was 9.8 in the placebo group and 9.4 years in the vaccine group.

Conclusions

The prevalence of celiac disease was significantly lower in RotaTeq® vaccinated children than in children vaccinated with placebo vaccine.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 21: KAWASAKI DISEASE AND NON-INFECTIOUS CONDITIONS & INTERVENTIONS - STATION E

ESP17-0442

DOES THEORY APPLY TO CLINICAL PRACTICE? AN APPROACH TO CLASSICAL CRITERIA OF KAWASAKI DISEASE

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Title of Case(s)

Does theory apply to clinical practice? *An approach to classical criteria of Kawasaki disease.*

Background

Kawasaki disease (KD) is an uncommon cause of paediatric hospital admissions but significant due to its possible coronary sequelae. The current diagnosis of KD is based upon complete and incomplete criteria described by the American Heart Association in 1993 and 2004 respectively. In this case series we aimed to assess if complete and incomplete criteria are useful for the diagnosis of KD and how they relate to the appearance of coronary lesions in our population.

Case Presentation Summary

Retrospective study of all admitted patients with discharge diagnosis of KD from 2007 to 2016 in a paediatric tertiary care medical centre. Clinical and laboratory data were gathered as to identify patients with the complete or incomplete form of KD.

There were 108 patients diagnosed of KD, which presented a mean age of 34 months at diagnosis.

Echocardiogram was performed in all of our patients and 96% of them were treated with immunoglobulin. 60% were receiving or had received antibiotic treatment the previous days.

Coronary lesions were found in 27 of them (25%). Less than 20% of patients with cardiac complications presented the complete form of the disease fulfilling all clinical criteria, 50% of these patients only fulfilled the required incomplete criteria, whereas one third of them did not fulfil any of the complete or incomplete criteria for KD. More variables are described on table 1.

Learning Points/Discussion

An important number of patients with coronary lesions did not fulfil complete nor incomplete criteria for KD. Therefore treatment with immunoglobulin was often initiated in their absence. Current criteria may not be sufficient for the diagnosis of KD cases, leading to difficulties in clinical decision-making.

EPOSTER DISCUSSION SESSION 20: OTHER CONGENITAL AND PERINATAL INFECTIONS - STATION D

ESP17-0452

SKIN AND GUT COLONISATION WITH STAPHYLOCOCCUS HAEMOLYTICUS IN TERM AND PRETERM NEONATES

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Background

Among coagulase-negative staphylococci *Staphylococcus haemolyticus* is the second commonest cause of late-onset sepsis (LOS) in preterm neonates with clonal nosocomial strains often involved. We aimed to compare the prevalence and multilocus variable-number tandem-repeats analysis (MLVA) type distribution of *S.haemolyticus* colonising term and preterm neonates.

Methods

From January 2014 to December 2015 breast milk fed preterm neonates (gestational age, GA <37 w) hospitalized to neonatal intensive care unit (NICU) of Tartu University Hospital (n=30) or Tallinn Children's Hospital (n=19), and healthy, exclusively breast-fed, term neonates (GA >37 w; n=20) were studied. Stool samples and skin swabs were collected weekly in the first month of life and cultured onto mannitol salt agar. Five colonies typical to staphylococci were identified to the species level by MALDI-TOF MS. *S.haemolyticus* isolates were typed by MLVA.

Results

Preterm as compared to term neonates were more likely colonized with *S.haemolyticus* (45/49 vs 11/20; OR 9.2; 95%CI 2.4-35.5) with no difference between colonisation of gut and skin (55/69 vs 51/69; OR 1.4; CI 0.6-3.1). Overall, 621 isolates represented 41 MLVA-types, 32 present in preterm and 12 in term neonates (Figure). The median (IQR) number of distinct MLVA-types was higher in preterm compared to term neonates (3 (2-4) vs 2 (1-

2.5), respectively; $p=0.02$). Five MLVA-types colonizing 69% (34/49) of preterm neonates caused 7 episodes of

LOS in 6 neonates.

Conclusions

Higher rate of *S. haemolyticus* colonisation and clonal MLVA-type spread in hospitalised preterm neonates may be explained by NICU environment or in part by immaturity of gut mucosal receptor pattern. Control of in-hospital spread of virulent clones may reduce the burden of invasive infections.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 13: PUBLIC HEALTH: BACTERIAL INFECTIONS AND CLINICAL EPIDEMIOLOGY - STATION E

ESP17-0454

HIV AND MALARIA IN CHILDREN HOSPITALIZED WITH COMPLICATED SEVERE ACUTE MALNUTRITION IN THE WEST-CENTRAL REGION OF BURKINA FASO

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⁶Medicus Mundi Italy, Country Manager, Koudougou, Burkina Faso

Background

Since 2012 Medicus Mundi Italy and LVIA are tackling malnutrition in Burkina Faso. In the west-central region, the prevalence of malaria and HIV in under five-year-old children is 86% and 0.3% respectively. Stunting prevalence is 35% and wasting 15%, leading to 150'000 cases of severe acute malnutrition (SAM) per year.

Methods

The study involved all SAM under-five admitted to the ten hospitals in the region between October 2014 and January 2016. Complicated SAM was defined as weight for height below -3z scores, or a mid-upper arm circumference (MUAC) <115 mm plus bilateral pedal oedema associated with other diseases or failure of outpatient treatment. Rapid malaria screening was routinely performed at first contact in the community health centers (SD-Bioline) and – if positive – artemisin-based therapy was started immediately. On hospital admission, all patients were screened for HIV (Determine, SD-Bioline) and eventually confirmed in RT-PCR (Quiagen). We used Epi Info 7.1.3.0.

Results

Mean age of the 1'567 children hospitalized (48.3% female) was 16.6 months. Of them 1'207 (77%) were positive for *P.falciparum* and 74 (4.5%) for HIV. Overall 59 patients died (3.8%); nine of them were HIV infected (mortality rate 12.2%); they all deceased within the first 10 days of hospitalization. In multivariate analysis, the risk of death was highest in children with HIV (OR 4.4 CI95% 2.0-9.8 p<0,01). Pneumonia and MUAC <110 mm were also significantly associated with HIV infection.

Death rate among malaria infected (and treated) patients was 3.6%.

Conclusions

In our setting, HIV infection-rate is 15-times higher in children with complicated SAM than in the general population and is characterized by a very high mortality. Therefore early identification (and treatment) at the first contact with a community health center is pivotal.

EPOSTER DISCUSSION SESSION 17: INVASIVE VIRAL INFECTIONS - STATION A

ESP17-0467

THE EPIDEMIOLOGICAL ASPECTS AND CLINICAL COURSE OF TICK-BORNE ENCEPHALITIS IN ESTONIAN CHILDREN

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Background

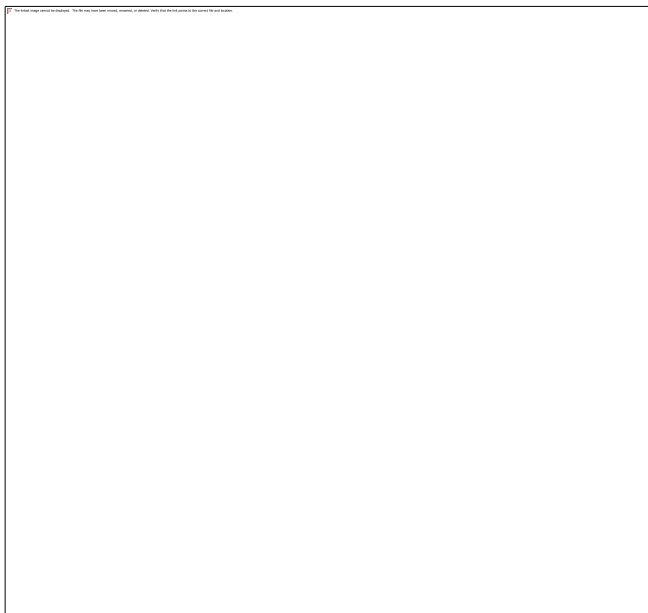
Tick-borne encephalitis (TBE) is an infection involving the central nervous system and is caused by the TBE virus of the Flavivirus family. Estonia has one of the highest reported rates of TBE in Europe with the incidence of 8.8 per 100 000 in 2015. According to the Estonian Health Board, 20% of TBE cases occur in paediatric population. The aim of this study was to describe the epidemiology and clinical course of paediatric TBE in Estonia.

Methods

The cases of paediatric patients with TBE admitted to 3 major paediatric hospitals during the years 2011-2015 were retrospectively analysed. Only patients who met the ECDC and WHO approved TBE diagnostic criteria were included.

Results

A total of 52 patients were included in the analysis. Demographics shown in table 1. All cases were diagnosed from May until November. 45% of children had a history of tick bite, whereas one child potentially got infected via goat milk ingestion. 88% of patients needed analgesics and 84% intravenous fluids. One patient required level 3 intensive care. The average length of stay was 6 (2-17) days. 34 patients (65%) were followed up, 4 reported behavioural problems, balance disorders, headache and fatigue, respectively. All children recovered without serious neurological deficit.



Conclusions

TBE in Estonian children generally has a moderate course and a favourable neurological outcome. Considering the lack of specific antiviral treatment, preventing TBE with vaccination is the most effective measure against the disease.

EPOSTER DISCUSSION SESSION 21: KAWASAKI DISEASE AND NON-INFECTIOUS CONDITIONS & INTERVENTIONS - STATION E

ESP17-0468

VACCINATION COVERAGE IN INFLAMMATORY BOWEL DISEASE CHILDREN: A PRELIMINARY DATA

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²Jagiellonian University Medical College, Department of Pediatrics- Gastroenterology and Nutrition, Cracow, Poland

Background

Inflammatory bowel disease (IBD) patients face increased risk of infections due to an underlying disease, malnutrition, surgery, and immunosuppressive therapy. Therefore, protecting against infections, mainly through vaccination, is of particular importance in this group. In Poland, contrary to most European countries, only part of recommended vaccines are funded from public budget. The aim of the study was to assess vaccination status of pediatric patients with IBD in Poland.

Methods

This prospective study was conducted in two University-affiliated hospitals for children in Poland located in Warsaw and Cracow. Immunization records of children with IBD were reviewed and immunization status with relevance to age was assessed

Results

The number of children enrolled to the study was 138 (76 males, mean age 13 years). None of children underwent full up-to-date routine childhood immunization schedule recommended in Poland, however all children completed whole course of vaccination against hepatitis B. As for reimbursed immunizations, in the first two years of life complete vaccination with combined vaccine against diphtheria, tetanus, whole-cell pertussis and with vaccine against polio received 93% and 95% of children, and at age of 6 years, 71% and 69% (45% attenuated polio vaccine and 24% inactivated polio vaccine), respectively. Among children at age of 10 years, 85% received two doses of vaccine against measles mumps and rubella. In case of unreimbursed vaccines, only 18% two doses of hepatitis A vaccine, 34% 7- or 13-valent pneumococcal conjugated vaccine, 14% meningococcal C vaccine. Only 5% of girls at were immunized against human papilloma virus in relevant age.

Conclusions

The study revealed poor vaccination status of children with IBD in Poland. Appropriate measure should be implemented increasing vaccination coverage among children with chronic disease.

EPOSTER DISCUSSION SESSION 13: PUBLIC HEALTH: BACTERIAL INFECTIONS AND CLINICAL EPIDEMIOLOGY - STATION E

ESP17-0478

ESTIMATING THE CLINICAL AND ECONOMIC IMPACT OF SWITCHING FROM THE 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINE (PCV13) TO A LOWER-VALENT (PCV10) VACCINE IN CANADA

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Background and Objective

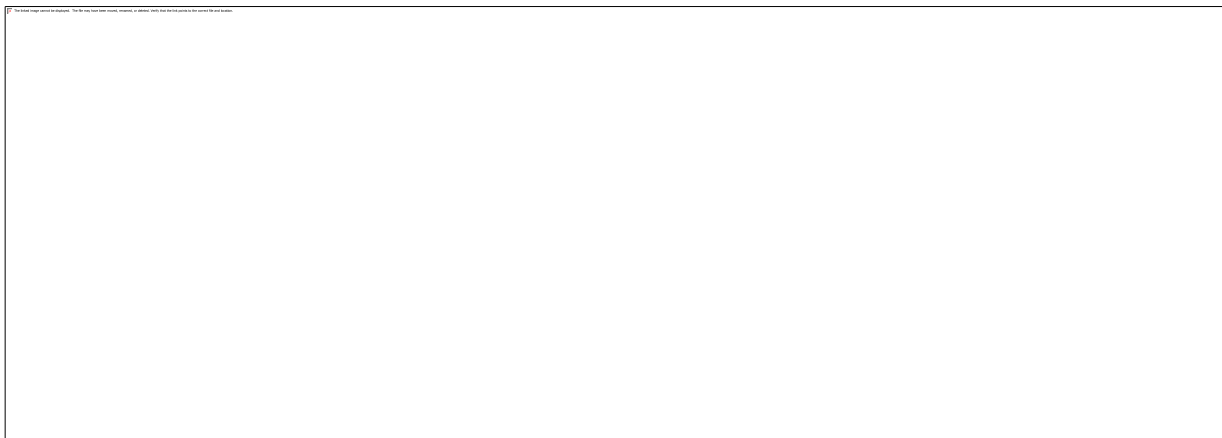
PCV13 is part of the routine infant immunization schedule in all Canadian provinces. Use of PCV13 has reduced pneumococcal disease incidence for the vaccine serotypes, particularly 19A, which rapidly emerged with PCV7 use. PCV10 contains the same serotypes as PCV13 with the exception of serotypes 3, 19A and 6A. This study evaluated the hypothetical health and economic implications of switching from PCV13 to PCV10 in Canada.

Methods

A decision-analytic model was developed to estimate public health and economic impacts of switching infant vaccination to PCV10 across all Canadian provinces versus maintaining PCV13. Disease incidence at time of potential switch was obtained from surveillance data (invasive pneumococcal disease; IPD), discharge abstract database (pneumonia; PNE) and published literature (acute otitis media; AOM). Historical data was used to estimate IPD trends under different vaccine pressures and then the model forecasted disease for infants (direct vaccination effects) and older age groups (indirect effects of infant vaccination). For each vaccination program, health outcomes and associated health-care costs were estimated. Costs (2015 Canadian dollars), utility weights, and risk of disease-specific complications were derived from published sources.

Learning Points Discussion

In the base case, assuming a 2-year lag before disease re-emergence occurs, continued use of PCV13 would result in significantly fewer cases of pneumococcal disease than PCV10 (See Table 1). Despite a higher vaccine cost, PCV13 was cost-saving compared to PCV10 in the base case and across a number of scenarios evaluated.



Continued use of PCV13 in Canada is predicted to provide greater public health benefit compared to switching to PCV10. It is important that policy makers consider potential implications of disease re-emergence of non-covered serotypes when considering modifications to vaccination strategies.

EPOSTER DISCUSSION SESSION 13: PUBLIC HEALTH: BACTERIAL INFECTIONS AND CLINICAL EPIDEMIOLOGY - STATION E

ESP17-0479

S. PNEUMONIAE SEROTYPE DISTRIBUTION AND ANTIMICROBIAL SUSCEPTIBILITY AMONG ISOLATES OBTAINED FROM PEDIATRIC PATIENTS IN CHINA

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Background

Streptococcus pneumoniae frequently causes invasive and mucosal infections in children. In China, *S. pneumoniae* is responsible for 13%-53% of lower respiratory tract infections and 7%-9% of bacterial meningitis in children. Here we describe the serotype distribution and antimicrobial susceptibility of pediatric *S. pneumoniae* isolates collected in China from 2011–2013.

Methods

S. pneumoniae isolates were collected from hospitalized children (HC) aged ≤18 years in 10 cities throughout China as part of a larger retrospective study in adults and children. Age, gender, admission diagnosis and source of specimen were collected. Isolates were serotyped and antimicrobial susceptibility to commonly used antibiotics was tested by agar dilution.

Results

A total of 236 *S. pneumoniae* isolates were collected; 161 isolates (68.2%) from HC aged ≤24 months, 52 isolates (22.0%) from HC aged 3-5, and 23 isolates (9.7%) from HC aged 6-18. Isolates from HC ≤24 months old were cultured from sputum (n=144), throat (n=10), blood (n=4) and other sites (n=3). The most common serotypes in HC aged ≤24 months were: 19F (28.0%), 19A (16.8%), 15 (9.3%), 6A (5.0%), 6B (4.3%), 3 (3.7%), 23F/9/14/8 (3.7%). Isolates from HC aged ≤24 months displayed resistance against erythromycin (96% of strains), tetracycline (94% of strains), cotrimoxazole (78% of strains), penicillin (65% of strains), amoxicillin (45% of strains) and ceftriaxone (42% of strains).

Conclusions

S. pneumoniae serotypes 19F and 19A were the most prevalent serotypes recovered from HC ≤24 months old in China. In addition, isolates of *S. pneumoniae* were highly resistant to macrolides and β-lactams.

Clinical Trial Registration (Please input N/A if not registered)

NA

EPOSTER DISCUSSION SESSION 23: ADVANCES IN DIAGNOSIS OF INFECTION - STATION G

ESP17-0484

ASSESSMENT OF THE MULTIPLEX PCR BASED ASSAY UNYVERO IMPLANT AND TISSUE INFECTION APPLICATION FOR DETECTION OF PATHOGENS AND ANTIBIOTIC RESISTANCE GENES IN CHILDREN

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Background

Skin and soft tissue infections (SSTI) are major health care issues not confined to pediatrics. The emergence of multidrug-resistant bacteria over the last decades has heavily influenced not only hospitalization rates, but also morbidity and mortality in children. There is a growing need for fast and feasible diagnostic tools for the recognition of culprit microorganisms and possible drug resistances.

Methods

Biologic specimens of diverse sources from neonates and children were analyzed simultaneously by both culture and Unyvero™ implant and tissue infection (ITI). Results were compared and performances were assessed by calculating sensitivity, specificity, positive predictive value and negative predictive value for each detected pathogen.

Results

We analyzed specimens from 29 patients with a median age of 8.1 years (range .03 – 15.2). Of these, 10 were intraabdominal swabs, 8 were swabs from skin wounds, 5 were swabs from abscesses, 3 were swabs from burn wounds, and one each originated from a bite wound, synovial fluid and thoracic catheter. Overall, Unyvero™ yielded a sensitivity of 76.3% and a specificity of 96.5%. Best accuracies were observed for non-fermenting bacteria, for which sensitivity of Unyvero™ was 100% and specificity 98.2%, while rates were substantially lower for Gram-positive bacteria (68.8% and 95.2%, respectively). Unyvero™ yielded a high sensitivity for quinolone resistance genes (six findings) that did not correlate with antibiogram findings. Moreover, the only multidrug-resistant isolate (*Acinetobacter baumannii*) was detected by Unyvero™ as a carrier of *oxa-24*.

Conclusions

Unyvero™ ITI offers fast, orienting results that might provide additional information relevant for clinical decision-making. Sensitivity of the PCR for Gram-positive bacteria, which play a major role in SSTI, must be improved substantially before routine use can be considered.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 05: VACCINE IMMUNOLOGY - STATION E

ESP17-0493

VARICELLA ZOSTER VIRUS(VZV)-SPECIFIC T MEMORY CELLS INDUCED BY TWO DIFFERENT VACCINATION SCHEDULES

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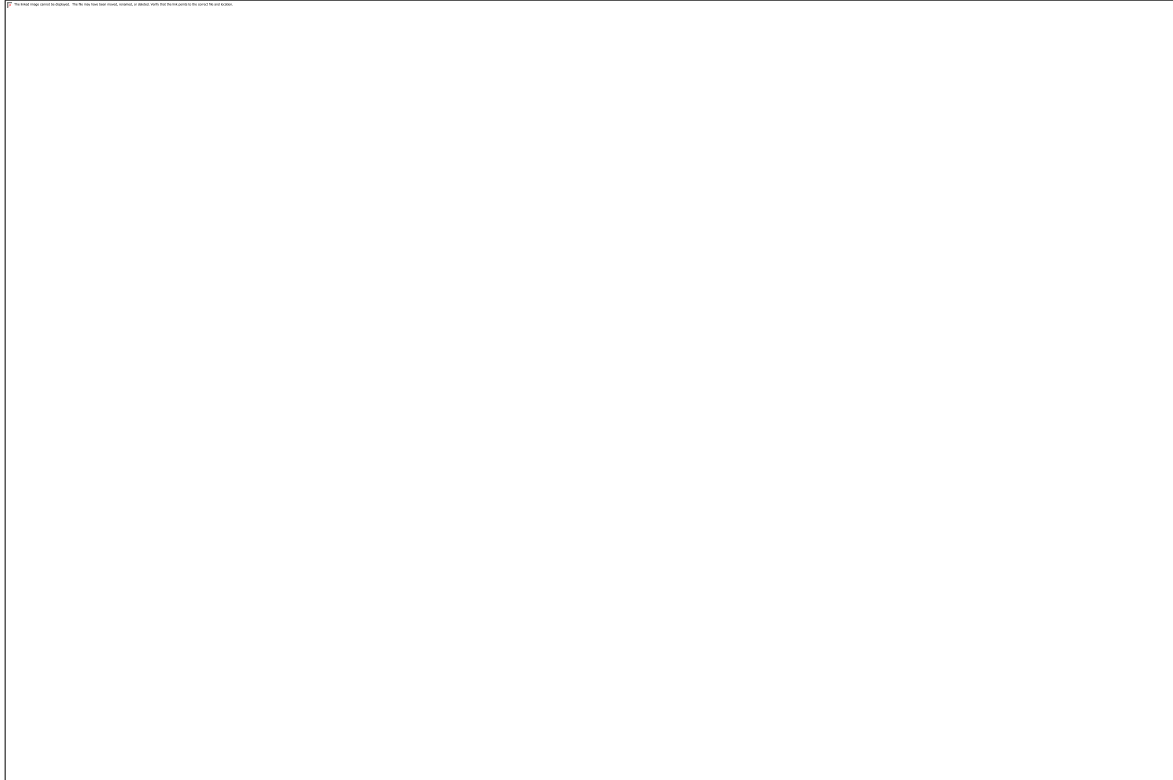
Background

Varicella vaccination schedules currently in use consist of 2vaccine doses administered either within 3years or 3months(long and short schedule) and have proven efficacy against childhood Varicella. The long schedule aims to prevent disease shift to older children, while the short schedule aims to quickly eliminate viral circulation. However, long-term effectiveness of VZV-vaccination is correlated with the induction of cell-mediated immunity and the establishment of VZV-specific immunological memory, which is thought to prevent viral reactivation and Herpes Zoster. Here we investigate which schedule induces stronger VZV-specific memory T-cell responses and could therefore offer more long-lasting immunity.

Methods

40 children who had been vaccinated with 1dose of the live-attenuated VZV vaccine at 15months received a 2nddose 3months(Group A:18months old,n=20) or 3years later(Group B:4,5years old,n=20). Blood samples were collected before(Day0) and at one month(Day28) after 2nddose. VZV-specific effector [Tef:CCR7⁻CD45RO⁺]T-cells, short-lived T-cells activated shortly after infection/vaccination; central memory [Tcm:CCR7⁺CD45RO⁺]T-cells, memory cells residing in secondary lymphoid organs; and effector memory[Tem:CCR7⁻CD45RO⁺]T-cells, residing in infected tissues, were enumerated by Flow Cytometry(FACS). Results are shown as percentages of total VZV-specific CD4⁺orCD8⁺ T-cells.

Results



CD4⁺ Tef cells did not differ between groups at Day0(13.1%vs10.25%) and Day28(12.74%vs11.68%). CD8⁺ Tef cells were higher in GroupA at Day0(19.18%vs11.15%, $p<0.01$), but did not differ between groups at Day28(21.15%vs17.97%). Tem did not differ between groups at Day0(CD4⁺:3.06%vs3.64%;CD8⁺:2.97%vs3.19%) and Day28(CD4⁺:3.1%vs3.67%;CD8⁺:2.40%vs2.90%). Tcm were lower in GroupA on Day0(CD4⁺:14.39%vs25.72%, $p=0.23$;CD8⁺:19.63%vs33.38%, $p=0.21$), but differences between groups were eliminated after VZV 2nddose(CD4⁺:20.83%vs22.88%;CD8⁺:24.24%vs28.29%).

Conclusions

The long VZV-vaccination schedule resulted in lower Tef and higher Tcm numbers pre-2nddose, but differences between the 2groups were eliminated post-2nddose. Therefore, the two 2-dose VZV vaccination schedules demonstrate equal capacity to elicit T-cell memory offering equal longevity of protection.

Acknowledgements: This work was funded by an ESPID Small Grant Award **Clinical Trial Registration (Please input N/A if not registered)**

N/A

EPOSTER DISCUSSION SESSION 15: OTHER COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION G

ESP17-0496

SERO-PREVALENCE OF ANTIBODIES TO PCV13 SEROTYPES IN PCV13 VACCINATED UK CHILDREN: EVIDENCE FOR ONGOING CIRCULATION OF SEROYPES 3 AND 19A

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Background

Cross-sectional carriage studies are used to evaluate the effect of pneumococcal conjugate vaccines. However, these studies do not provide insight into recent carriage episodes. By analysing serum collected at the same time as nasopharyngeal swabbing we aimed to evaluate the serological evidence for prior colonisation with PCV13 serotypes in PCV13 vaccinated UK children

Methods

A cross-sectional pneumococcal carriage and seroprevalence study of 988 PCV13 vaccinated UK children aged 13-48 months was conducted between February 2014-August 2015. Sera were analysed using a multiplex immunoassay for serotype-specific serum IgG levels from individuals with NP carriage of a PCV13 vaccine serotype (serotype 3, n=7; serotype 19A, n=8; and serotype 19F, n=1) and a random selection of NVT carriers (n=98), and non-carriers (n=107).

Serotype-specific antibody concentrations that were higher than expected were considered to represent indirect evidence of recent colonisation causing natural boosting of antibody (seroprevalence). Within each 6-month age group of children, those with antibody higher than the 75th percentile + 1.5 x the interquartile range for their age-group were classified as recent carriers by seroprevalence.

Results

Overall 481/988 (48x7%) children were found to be carrying pneumococcus. Notably NP carriage of serotypes 3 (9/988, 0.9%) and 19A (9/988, 0.9%) was low. However, in children who were carrying a non-vaccine-type, a higher seroprevalence of serotypes 3 (24/98, 24.5%) and 19A (14/98, 14.3%) was observed. Children with high antibody levels due to natural boosting were older than the average child sampled (mean age 2x9 vs 2x2 years, p<0.0001).

Conclusions

The high seroprevalence of serotypes 3 and 19A compared with NP carriage prevalence indicates that a larger portion of this population may have been colonised than is indicated by cross-sectional carriage evaluation.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 16: OTHER COMMUNITY ACQUIRED INVASIVE BACTERIAL INFECTIONS - STATION H

ESP17-0497

THE EFFICACY OF CEFMETAZOLE AGAINST URINARY TRACT INFECTION CAUSED BY EXTENDED-SPECTRUM BETA-LACTAMASE PRODUCING ENTEROBACTERIACEAE IN CHILDREN

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Background

Urinary tract infections (UTIs) caused by extended-spectrum β -lactamase (ESBL) producing Enterobacteriaceae are concerning problems in pediatrics. Although carbapenem is standard therapy for ESBL producing bacteria, Cefmetazole of cephamycin class is also stable against ESBLs. Only limited experience of Cefmetazole was reported in children. Our aim of study was to evaluate therapeutic effect of Cefmetazole in pediatric UTIs with ESBL producing Enterobacteriaceae.

Methods

Children with UTIs caused by ESBL producing organism was included between April 2010 and November 2016 at Tokyo metropolitan children's medical center. UTIs were defined as febrile patient with positive urine culture greater than 10^4 colony forming unit/mL and pyuria (≥ 5 white blood cells/HPF). ESBLs were tested by disk diffusion method. Medical records were reviewed for microorganisms in cases. Outcome was compared for clinical cure rate at 4 weeks and duration of therapy between treatment with Cefmetazole and other antibiotics.

Results

ESBL-producing organisms were detected in 195 children. Among them, 61 children were fulfilled with criteria of UTIs. Number of patients treated with Cefmetazole and other antibiotics was 37 and 24, respectively. Common causative organisms were *Escherichia coli* (56, 91.8%), *Klebsiella pneumoniae* (3, 4.9%) and *K. oxytoca* (1, 1.6%). There were no difference in clinical cure rate (86.4% vs 91.6%, $p=0.42$) and duration of therapy (9.1 days vs 9.1 days, $p=0.98$) between Cefmetazole group and other antibiotic group.

Conclusions

Cefmetazole was not inferior to other antibiotics for treatment of UTIs with ESBL producing Enterobacteriaceae in children. In the era of antimicrobial resistance, ESBLs producing organism is increasingly reported among Japanese children. Carbapenemase producing Enterobacteriaceae is still rare in Japan, but occasional outbreak was reported. Treating ESBL producing organism for UTI with Cefmetazole is a valuable option to spare carbapenem class.

EPOSTER DISCUSSION SESSION 09: HOST-PATHOGEN INTERACTION - STATION A

ESP17-0505

MOLECULAR COMPARISON OF BLOOD TO CSF PNEUMOCOCCAL ISOLATES FROM THREE CHILDREN WITH PAIRED SAMPLES.

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Background

The respiratory tract, blood, and cerebrospinal fluid (CSF) each present different physiological challenges for pneumococci to exist. Disease surveillance data indicate that some strains of pneumococci have different patterns of disease. For example, serotype 1 causes many bacteraemia cases and proportionally few meningitis cases in comparison with other strains. These divergent clinical presentations may be due to strain-specific differences in the genome or gene expression which affect invasion or survival in each of these different physiological environments. We aimed to examine whether there were any genetic variations between isolates collected in blood with those from CSF from the same patient.

Methods

3 blood and CSF paired isolates (serotypes 8, 9V, and 23F) were identified from sterile-site cultures collected from Nepalese children presenting to Patan Hospital, Kathmandu, between 2005 and 2014. Extracted DNA was whole-genome-sequenced by the Wellcome Trust Sanger Institute's core sequencing team. Variations between *de novo* assemblies of blood and CSF isolate genomes were identified by de Bruijn graphs generated using Cortex_var v1.0.5.21. Variable sequences then underwent a BLAST search against the known coding regions of *Streptococcus pneumoniae* ATCC 700669.

Results

Variations were found between all 3 pairs of isolates in the Type I restriction modification system inverting variable region locus which is associated with phase variation, and the histidine triad proteins *phpA* and *phtD* which are expressed on the surface of pneumococci and are implicated in epithelial adhesion.

Conclusions

These data suggest that the phase and surface proteins of pneumococci vary when transitioning between the blood and CSF. The ability to vary the expression of these genes and related proteins may confer advantages for survival of the bacteria in the CSF environment. Further studies on larger paediatric data sets are needed.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 03: ANTIMICROBIAL RESISTANCE AND PHARMACOLOGY - STATION C

ESP17-0517

DISTRIBUTION OF STREPTOCOCCUS PNEUMONIAE SEROTYPES AMONG EUROPEAN COUNTRIES

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Background

S. pneumoniae remains a leading cause of disease in children and adults. Surveillance is necessary to monitor the burden of pneumococcal disease, especially in the setting of pneumococcal vaccination programs with the 10- and 13-valent pneumococcal conjugate vaccines (PCV10/PCV13). The serotypes and antibiotic susceptibilities of 3000 *S. pneumoniae* sterile site isolates collected from 26 European countries through the Tigecycline European Surveillance Trial, (TEST) 2004-2015, were evaluated.

Methods

Serotypes were determined by PCR; isolates non-typeable by PCR were serotyped by Quellung reactions. Minimum inhibitory concentrations (MIC) were determined by broth microdilution and interpreted using EUCAST guidelines.

Results

Table 1 describes the most common serotypes by time period in rank order for each age group. Overall, serotypes 19A, 15A, and 19F demonstrated the highest levels of erythromycin resistance (MICs ≥ 1 mg/L). The greatest number of penicillin-intermediate (PISP; MICs 0.12-2 mg/L) and penicillin-resistant (PRSP; MICs ≥ 0.12 mg/L, meningitis; MICs ≥ 4 mg/L, non-meningitis) isolates were observed among serotypes 19A, 15A, 19F, and 35B (PISP) and 19A, 14 and 19F (PRSP). Nine (0.7%) isolates of varying serotypes were levofloxacin-resistant (MICs ≥ 4 mg/L).



Conclusions

This analysis of an existing isolate database found serotypes 3 (11.7%), 19A (7.2%), 8 (5.8%), 11A (5.0%), 19F (4.5%), 22F (4.1%), and 15A (4.1%) to be the most common serotypes in Europe in 2013-2015 overall. These data add to the body of literature that demonstrates the shift in serotype distribution since the introduction of PCVs. Susceptibility of *S. pneumoniae* to antimicrobial agents commonly used as part of empiric therapy further documents the need for ongoing monitoring of this important pathogen.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 21: KAWASAKI DISEASE AND NON-INFECTIOUS CONDITIONS & INTERVENTIONS - STATION E

ESP17-0519

MEDI8897, AN EXTENDED HALF-LIFE RSV NEUTRALIZING MONOCLONAL ANTIBODY, ACHIEVES HIGH LEVELS OF SERUM NEUTRALIZING ANTIBODIES FOR FIVE MONTHS FOLLOWING A SINGLE INTRAMUSCULAR DOSE IN INFANTS

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Background

MEDI8897 is an anti-RSV monoclonal antibody with an extended half-life intended to protect all infants through an entire RSV transmission season with a single, fixed intramuscular (IM) dose. An analysis was conducted using infant serum pharmacokinetics (PK) and anti-RSV neutralizing titers (MN) to demonstrate long-term protective exposures from a single IM dose. Our objective was to develop relationship between MEDI8897 PK and MN log₂ titers and determine dose and duration of protection afforded by a single IM dose achieving the 6.8 µg/mL target concentration.

Methods

Infants were randomized to receive a single IM injection of MEDI8897 10 mg (n=8), 25 mg (n=31), 50 mg (n=32) or placebo (n=18) and were followed for 360 days. Blood was collected at multiple timepoints to determine MEDI8897 serum PK levels and cell-based MN values. The relationship between PK and MN was evaluated using a parametric correlation analysis.

Results

Baseline MN log₂ levels were similar across the placebo (5.46) and MEDI8897 dose groups (5.03). Following MEDI8897 dosing, PK and MN levels increased dose dependently, respectively. A significant linear relationship (R²=0.92) between log₁₀ PK and log₂ MN levels was observed and a log₂ target MN level of 10.1 (95% CI: 9.2, 11.0) was estimated for the target PK concentration of 6.8 µg/mL. On Day 151 in the 50 mg dose cohort, MN and PK levels were higher than the respective targets in 90% and 88% individuals, respectively.

Conclusions

MEDI8897 serum PK and MN were above the respective target levels for more than 5 months following a 50 mg IM dose in the majority of the subjects, providing support that a single dose of MEDI8897 should provide protection during the entire RSV season.

Clinical Trial Registration (Please input N/A if not registered)

ClinicalTrials.gov NCT02290340

**EPOSTER DISCUSSION SESSION 22: NON-INVASIVE GASTROINTESTINAL AND MUCOSAL INFECTIONS
- STATION F**

ESP17-0520

BURDEN OF ACUTE GASTROENTERITIS ON AN ICELANDIC TERTIARY PAEDIATRIC EMERGENCY DEPARTMENT: EPIDEMIOLOGY IN A NON-VACCINATED POPULATION SUGGESTING A ROLE FOR ROTAVIRUS VACCINE.

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Background

Acute gastroenteritis is very common in young children with viruses as the most common pathogens and children younger than 2 years are at the greatest risk of infection. Currently, no information is available on the epidemiology of gastroenteritis in Icelandic children and rotavirus vaccination is not offered to Icelandic infants.

Methods

A retrospective study which covers 6 years (2010-2015) and all attendances with acute gastroenteritis to the Emergency department(ED) at the Children's Hospital Iceland. Number and dates of attendances, duration of stay and virologic results from stool samples were among the parameters registered.

Results

In the 6 year period 2.674 children, of which 1372 (51%) were younger than 1 year and 2158 (81%) younger than 6 years), attended the ED. Only 280 samples were sent for virologic analysis of which 184 were positive (65,7%) and of those 95 (51.6%) were positive for rotavirus. 88 children needed admission (3.3%) but up to 20% needed fluid administration. Attendences were more common in winter/spring (February-May). In three of the study years, a clear rotavirus dominance was noted while the other years the prevalence was split between noroviruses and rotaviruses.

Conclusions

The epidemiology and burden of acute gastroenteritis in Icelandic children seems similar to neighbouring countries. Although in only 10% of all cases, samples were analysed for pathogens, the results may reflect similar rates of rotavirus cases at the ED as elsewhere. It may be that rotavirus infections cause more severe infections in young children, leading higher rates of admission and fluid resuscitation. Currently, a two year prospective study is ongoing in Iceland, aimed at answering these questions and whether the uptake of rotavirus vaccination would be cost-effective.

EPOSTER DISCUSSION SESSION 16: OTHER COMMUNITY ACQUIRED INVASIVE BACTERIAL INFECTIONS - STATION H

ESP17-0521

INVASIVE HAEMOPHILUS INFLUENZAE DISEASE IN PORTUGUESE CHILDREN - NATIONAL MULTICENTER STUDY 2010-2016

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Background

Haemophilus influenzae type b vaccination led to a significant decrease in invasive bacterial infections in children. We aimed to assess *Haemophilus influenzae* (Hi) invasive disease in Portuguese children, respecting clinical presentation, risk factors, epidemiology, serotypes and antibiotic susceptibility.

Methods

Prospective, multicenter study from January 2010 to December 2016. Hi strains were sent to National Institute Health with a clinical report. β -lactamase production was determined with nitrocefin, antibiotic resistance by microdilution assay (EUCAST breakpoints) and serotyping by polymerase-chain-reaction. SPSS for statistical analysis and Fisher's exact test ($p < 0.05$) were applied.

Results

Fifty-eight strains, from 22 hospitals, were isolated in blood (50), cerebral-spinal-fluid (6) and joint-fluid/others (2). The overall incidence was 0.35/100,000. We identified 36(62.1%) non-capsulated Hi (NCHi), 15(25.9%) Hib (9 vaccine failures), 3(5.2%) Hia, 2(3.4%) Hif and 2(3.4%) Hie. Children ages ranged from 1-day to 16-years (50% infants, 20.7% ≥ 5 years); 20.7% had previous pathology.

The clinical presentations were: pneumonia (19), sepsis (14; 9 with localized infection), meningitis (10), occult bacteremia (8), upper-respiratory infection (5), arthritis (4), bronchiolitis (3), periorbital cellulitis (1), epiglottitis (1), others (3). Hib presented with meningitis in 33.3% vs 11% for NCHi ($p < 0.05$). One child had sequelae (1.7%) and one died (1.7%). β -lactamase producers accounted for 10.3% of strains and 13.8% were non-susceptible to cefuroxime. There was no resistance to amoxicillin/clavulanate, cefotaxime, ciprofloxacin and rifampicin.

Conclusions

Incidence of invasive infections was higher in infants, but one-fifth occurred beyond 5-year-old. Not in line with other series, around 80% were previously healthy children. NCHi are responsible for most of the cases, mainly associated with respiratory disease. Hib remains in circulation in a highly immunized population and caused 2-cases/year. Amoxicillin/clavulanate and cefotaxime are good therapeutic options for presumed Hi invasive disease.

EPOSTER DISCUSSION SESSION 03: ANTIMICROBIAL RESISTANCE AND PHARMACOLOGY - STATION C

ESP17-0529

THERAPEUTIC DRUG MONITORING OF VANCOMYCIN IN PEDIATRIC PATIENTS WITH EXTRACORPOREAL MEMBRANE OXYGENATION SUPPORT (ECMO)

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Background

Pharmacokinetic (PK) studies in critically ill pediatric patients on extracorporeal membrane oxygenation support (ECMO) have shown disturbances in different drugs pharmacokinetics. The aim of the study was to determine PK parameters and optimal dosage of vancomycin for children on ECMO.

Methods

Descriptive, retrospective study in children on ECMO support between June 2009 and February 2016. Patients between 1 month and fifteen years of age requiring ECMO and who received antimicrobial treatment with vancomycin were included. Neonates were excluded. Demographic data, vancomycin doses and vancomycin plasma trough levels were recorded. Results are shown as median and interquartile range.

Results

Forty children were included. Twenty-nine patients received vancomycin and had trough concentrations. Patients were analyzed whether they had or not acute kidney injury (AKI) and renal replacement therapy (RRT). In patients without AKI (15) nor RRT, 53% reached therapeutic trough concentrations with initial dose and 93% after dose adjustment, with a median dose of 10 mg/kg (10-15.3) every 6 hours. Clearance (Cl) 1.67 (1 –1.67) mL/kg/min, Volume of distribution (Vd) 0.73 (0.7 –0.9) L/kg and Half Life (T_{1/2}) 6.2 (4.9 –8.06) hours. In patients with AKI(11), 27% had therapeutic trough concentrations with initial dose and 63% after adjustment, with a median dose of 15 mg/kg every 12 hours. Vd 1.16 (0.68-1.6) L/kg, Cl: 0.83 (0.38-1) mL/kg/min and a T_{1/2} of 23.6 (16.2-31) hours.

Conclusions

In patients without AKI nor RRT, Vd of vancomycin was similar and the Cl was lower compared with pediatric critical ill patients without ECMO. We propose to start treatment at 10 mg/kg every 6 hours in this group. In patients with AKI, lower doses were required. We recommend therapeutic drug monitoring of vancomycin for all pediatric patients on ECMO.

EPOSTER DISCUSSION SESSION 03: ANTIMICROBIAL RESISTANCE AND PHARMACOLOGY - STATION C

ESP17-0545

QUALITATIVE AND QUANTITATIVE ASSESSMENT OF SAFETY IN PAEDIATRIC ANTIBIOTIC RANDOMIZED CONTROLLED TRIALS: A SYSTEMATIC REVIEW

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Background

The extrapolation of safety data from adults is currently discussed to facilitate drug development in paediatrics. We aimed to determine the extent to which safety data on antibiotics (ABs) for children can be extrapolated from adult clinical trials (CTs) and if age-specific adverse events (AEs) could be identified for different AB classes.

Methods

A systematic review was conducted on Medline and Cochrane CENTRAL for CTs on ABs in children, published between 2000-2016. Studies reporting safety as a primary or secondary endpoint have been selected. The quality of the included studies was assessed through the CONSORT statement for safety.

Results

62 CTs, including 15,716 patients, were selected for the final analysis, with the majority of studies conducted on beta-lactams, macrolides, and aminoglycosides (accounting for 78% of the patients). An overall mean of 69.7% of CONSORT items was reported properly (range 33.3-100). The median proportion of overall AEs was 22.5%, and did not exceed 8% by single body system (see Table). The highest rate of AEs was reported in the gastrointestinal system (7.7%; IQR 0–20.5). Serious drug-related AEs and discontinuation due to AEs were very low (0.3% and 0.9%). No age-specific or unexpected toxicity was identified. However, only 3 studies specifically addressed neonates. Data could not be stratified by age-group due to lack of information reported.



Conclusions

Data reported for the most representative drug classes demonstrated that AEs in paediatric AB CTs were class-specific and predictable compared to adults. However, the lack of stratification by age-group might reduce the strength of conclusion, especially regarding the neonatal population. Within the limitation of the high heterogeneity in the included studies, the extrapolation of safety data from adults seems feasible, although specific age-group data are still necessary.

Systematic Review Registration (Please input N/A if not registered)

N/A

**EPOSTER DISCUSSION SESSION 22: NON-INVASIVE GASTROINTESTINAL AND MUCOSAL INFECTIONS
- STATION F**

ESP17-0554

VEROTOXIN POSITIVE DIARRHEA AT CHILDREN UNDER THE AGE OF 5 YEARS - A ONE YEAR PROSPECTIVE STUDY

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Background

E.coli is one of the most common causes of diarrhea, both endemic and epidemic. Verotoxin (VT) strains are the third common cause of diarrhea.

Aim of the study: to analyze the prevalence of verotoxin 1 and 2 (VT1 and VT2) in a pediatric population during a year with endemic hemolytic uremic syndrome. Secondary objectives: to evaluate the possible differences regarding demographic data and complication rate of verotoxin positive stools.

Methods

a prospective observational study including all admitted children with acute diarrhea, at the Children's Clinic Hospital, Brasov, Romania in one year (1st of January 2016 - 31st December 2016).

Results

from the total number of 9970 admitted children, 1550 cases were due to acute diarrhea, 722 probes were tested for verotoxins and 63 were positive for either VT1, VT2 or both. Prevalence was 0.04%. There were 65.11% boys, mean age at admittance 10 month, median weight 8.45 kg, mean temperature 37.9 °C.

Mean days of hospitalization were 5. From total 60.47% had mucous and bloody diarrhea, 34.88% had bloody diarrhea only. VT1 and VT2 positive stools were 79.07%, VT2 were 16.28%, and VT1 were 4.65%. Mean leucocytes number 4820x1000/μL, urea 29.65 mg/dl, creatinine 0.64 mg/dl, CRP 1.64 mg/dl.

There were correlation between the CRP and glucose level, CRP and neutrophils.

Conclusions

Verotoxin association of VT1 and VT2 diarrheic episode of *E.Coli* was most encountered although its prevalence was low during the study year. We found no significant differences regarding demographics or complication rates between verotoxin positive stools.

EPOSTER DISCUSSION SESSION 13: PUBLIC HEALTH: BACTERIAL INFECTIONS AND CLINICAL EPIDEMIOLOGY - STATION E

ESP17-0562

IPD INCIDENCE RATES AND SEROTYPE EVOLUTION FOLLOWING REINTRODUCTION OF PCV13 IN REGIONAL IMMUNIZATION PROGRAM AFTER SWITCHING TO PRIVATE FUNDING IN MADRID, SPAIN: HERACLES STUDY (2007-16)

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Background

The 13-valent pneumococcal conjugate vaccine (PCV13) replaced the 7-valent (PCV7) in the Madrid regional immunization program (RIP) in May 2010 but was excluded in May 2012 (except boosters for previous primary vaccinations) with the consequent drop in the uptake to 82% in 2013 and 67% in 2014. PCV13 was finally re-introduced into the RIP in March 2015 increasing the uptake to 73% and 95% in 2016. This study analyzed trends of incidence rates (IRs) of pediatric invasive pneumococcal disease (IPD).

Methods

A prospective, laboratory confirmed (culture and/or PCR) active surveillance of all hospitalized children younger than 15 years with IPD in Madrid was performed. All hospitals (27) of the Community participated, and all patients were controlled by external monitors, with written consent. All isolates (for serotyping) and culture-negative pleural/cerebrospinal fluids (for PCR detection) were sent to central laboratory.

Results

Table 1 shows per-period, number of cases and IR by age, by PCV13 and NVT. Significant reduction of 70% on total IPD due to significant decrease of 91% of PCV13 cases, in children less 15 years comparing 2015-16 vs. 2009-10.

The incidence of vaccine serotypes has declined in all age groups each year, except for children 2-5 years of age where a slight increase in PCV13 serotypes in the last 2 years of the study. (Age group with lower vaccine

coverage during the non-funded vaccination period).



Conclusions

6 years after the inclusion of PCV13 in the vaccine calendar, the net benefit against IPD in children younger than 15 years reached 70% due to a significant decrease of 91% in PCV13 serotypes. No significant changes in the incidence rate of IPD by non-vaccine serotypes were observed.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 06: SEVERE BACTERIAL INFECTIONS - STATION F

ESP17-0565

EPIDEMIOLOGY OF ENTEROCOCCUS SPP. INFECTIONS FROM THE NEONIN INFECTION SURVEILLANCE NETWORK

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Background

Enterococcus spp. cause significant morbidity in neonates, particularly critically-ill neonates hospitalised in the NICU. This study describes the epidemiology of neonatal enterococcal infections across a network of NICUs, with the aim of informing infection prevention strategies.

Methods

neonIN is a multi-national neonatal infection surveillance network which records prospectively-collected infection data from 60 units in the UK, Greece, Estonia and Australia. All infection cases reported to neonIN from 2004 to May 2016 were extracted. Infection was defined as a positive culture from a sterile site (e.g. blood, cerebrospinal fluid). Early and late-onset infection were defined as infection before or after 48 hours of life respectively. Statistical analyses (including multivariate regression) were performed using the Stata 14 statistical package.

Results

414 enterococcal infections were reported in 388 infants (total of 4,083 infection episodes in 3,602 infants). Enterococci were the 2nd most common cause of late-onset infection (385/3,481 isolates). *Table 1* presents enterococcal infection characteristics by country. On multivariate analysis, compared to other infections, enterococcal infections occurred at a greater median postnatal age (18.5 versus 13 days, $p < 0.001$), and were strongly associated with NEC (OR 1.50, 95%CI 1.08-2.10, $p = 0.017$). Antimicrobial susceptibilities were available for 288/416 (69%) enterococcal isolates. There was low resistance to vancomycin (3%) and teicoplanin (4%), but

high resistance to ampicillin (17%) and gentamicin (38%).



Conclusions

We demonstrated an association between neonatal enterococcal infection and NEC, suggesting that NEC prevention may also have a role in reducing these infections. Further, enterococci were frequently resistant to first line empirical antibiotics such as ampicillin and gentamicin – of relevance in considering empiric antimicrobial policies.

EPOSTER DISCUSSION SESSION 13: PUBLIC HEALTH: BACTERIAL INFECTIONS AND CLINICAL EPIDEMIOLOGY - STATION E

ESP17-0570

SEASON OF BIRTH AND THE RISK OF INFECTION AMONG LESS THAN FIVE YEAR-OLD CHILDREN - A STUDY OF HOSPITAL ADMISSIONS AND SMS-REPORTED SYMPTOMS AT HOME

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Background

Infections in early childhood are common and are associated with determinants such as parent's socioeconomic status, siblings, day-care attendance, breastfeeding, and vitamin D status. Season of birth as a determinant in the development of the immune system and as a possible risk factor for infections has recently gained interest. This study aims to examine the associations between season of birth and risk of hospitalisation due to infections and symptoms of infection registered at home.

Methods

A prospective cohort study of 2434 children with a mean follow-up of 3.5-years conducted as a part of the Odense Child Cohort. Data concerning hospital admissions were obtained from the Danish National Patient Registry. Via text messages (SMS) questionnaires, 1279 families prospectively reported symptoms of infection over a one-year period. The statistical analyses were carried out using a negative binomial regression model.

Results

During our study period, 639 children (26%) were admitted with a total of 971 admissions. The incidence rate of admissions due to infection was 12.1 per 100 person-years at risk. For the one-year study on symptoms, an average of 64 days with symptoms of infection were reported. No association was present between season of birth and hospitalisation due to infection (IRR=0.95, p-value 0.704, 95%CI 0.73;1.23) when comparing winter-born and summer-born children. The incidence rate ratio for symptoms of infections was however significantly lower among the winter-born children (IRR = 0.89, p-value 0.044, 95%CI 0.79;0.997). Furthermore increasing age and female gender were significantly associated with a lower incidence rate ratio.

Conclusions

Season of birth showed no association to hospital admissions due to infections. However, being born during the winter was significantly associated with a lower incidence rate ratio of days with symptoms of an infection.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 23: ADVANCES IN DIAGNOSIS OF INFECTION - STATION G

ESP17-0571

PERFORMANCE OF THE BIOMARK HD REAL-TIME PCR SYSTEM (FLUIDIGM) FOR THE DETECTION OF COMMON NASOPHARYNGEAL BACTERIAL PATHOGENS AND SEROTYPING STREPTOCOCCUS PNEUMONIAE

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Background

Traditional qPCR assays for pneumococcal detection and serotype characterization are limited in that a large sample volume is required to distribute across all reactions, it is expensive, labor intensive and time consuming. To address these issues we developed a novel nanofluidic real-time PCR assay to simultaneously detect multiple pneumococcal serotypes and other bacterial pathogens. Further, we compared findings from Fluidigm to traditional qPCR assays.

Methods

A quantitative nanofluidic real-time PCR assay was set up to detect 11 bacterial pathogens, 55 pneumococcal serotypes (15 individual serotypes and 40 serotypes in 14 groups) and 6 serotypes of *H. influenzae* (serotypes a-f) in archived nasopharyngeal swabs of pneumococcal conjugate vaccine vaccinated children at 9 and 16 months of age. Further all assays were optimized and evaluated according to the MIQE guidelines.

Results

All assays were effective in amplifying their respective targets with a high sensitivity, specificity and linearity in the Biomark HD system, with the efficiency of the assays ranging from 89% to 105%, correlation coefficients (r^2) \geq 0.98, and lower limit of detection being <10 - 100 copies per PCR. Furthermore, all assays had a high repeatability (<0.1), reproducibility (<0.1) and accuracy (\pm 0.1). There was excellent concordance between the qPCR methods for carriage prevalence and density of the majority of assays, with Fluidigm identifying an additional 21 (6.2%) serotypes. Further, discordant results were strongly associated with a low carriage density (<10² CFU/ml).

Conclusions

We successfully developed a reliable assay that could simultaneously detect common pneumococcal serotypes, *H. influenzae* serotypes and other common nasopharyngeal bacterial pathogens, which can help us gain a better insight into bacterial carriage and disease.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 06: SEVERE BACTERIAL INFECTIONS - STATION F

ESP17-0573

SCREENING FOR SEPSIS, THE NEW NICE GUIDELINES AND THE POTENTIAL IMPACT TO PAEDIATRICS

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Background

Sepsis is a leading cause of avoidable death . 62% of children with severe sepsis receive sub-optimal management. Early recognition of paediatric sepsis is difficult but can lead to reductions in morbidity and mortality. Combinations of physiological parameters are comparable to triage tools for sepsis screening. NICE published new sepsis guidelines in 2016. Practitioners face the challenging balance of overly sensitive screening and early recognition and treatment of all cases.

Methods

We conducted a prospective cohort study over two months (May- June 2016) to describe current practice and model the new sepsis guideline-based practice based on these parameters. 285 consecutive patients presenting to a tertiary centre emergency department with fever $\geq 38.5^{\circ}\text{C}$ were included. Sepsis was defined as SIRS criteria plus proven infection.

Results

174 male (61.1%), age 0 - 15.2 years (median 2.1 years), comorbidity in 45 (13.8%). 21 patients (7.4%) had full sepsis screens. 13/21 had serious infections including two sepsis, seven viral meningitis, three urinary tract infection, one respiratory tract infection. No sepsis occurred in 264 unscreened patients.

206 (72.3%) were eligible for sepsis screens according to NICE guidelines, a ten-fold increase. 27 received IV/IM antibiotics. All survived. Median length of stay 2 days (range 1-10) in 21 sepsis screened patients.

Conclusions

Modelling NICE sepsis guidelines to actual data, demonstrates a potential tenfold increase in investigation and treatment of sepsis, equivalent to an estimated increase of 6.1 beds/year.

Currently available diagnostics lack sensitivity and specificity to accurately identify children with bacterial sepsis which has led to the development of guidelines. NICE guidelines would benefit from validation and adjustment. We call for a national database to enable shared learning and evidence based algorithms aiding but not replacing clinical judgment.

EPOSTER DISCUSSION SESSION 07: HIV/AIDS - STATION G

ESP17-0574

DECREASED RETENTION OVER TIME IN HIV CARE SERVICES IN A PEDIATRIC POPULATION IN SOUTHERN MOZAMBIQUE

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Background

Mozambique is one of the countries most affected by the HIV/AIDS epidemic with over 12,000 new HIV infections among children in 2013. Scaling-up HIV care requires attention to effective retention along the care cascade. We sought to measure retention in anti-retroviral therapy (ART) and identify predictors of non-retention among HIV infected pediatric patients in southern Mozambique.

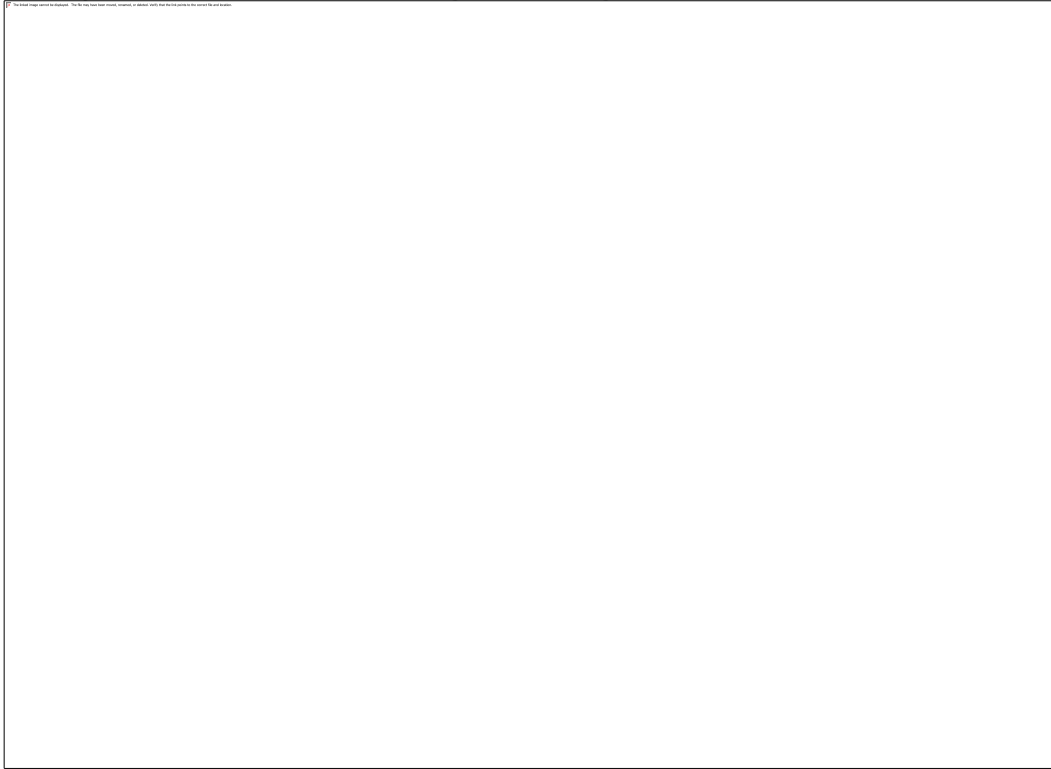
Methods

Prospective cohort of HIV infected children under 15yr. who initiated HIV care at the MDH from February 2013 to November 2015 and who had a minimum of 12 months follow-up. Vital status was ascertained through the health and demographic surveillance system in place at the Manhiça District. Kaplan–Meier estimates and competing risks proportional subhazards (SHR) models were used to calculate the probability of retention and identify predictors of non-retention.

Results

A total of 395 children initiated HIV care with a median age of 3.3yr(IQR:1.1-8.5), 49.2% were female and 12.1% were mother-orphaned. A total of 327 children initiated ART and 79.5%, 65.4% and 58.3% of them were retained after 1, 2 and 3 years of ART, respectively. Mortality was 19.7%, 18.4 and 14.2% among patients not retained after 1, 2 and 3 years of ART respectively. Independent risk factors for non-retention at 12 months included malnutrition (aSHR 2.2; 95% CI: 1.0-5.2), and advanced WHO stage (aSHR 4.2; 95% CI: 1.8-

9.6). Figure: Incidence of LTFU according to WHO stage.



Conclusions

While retention at 12 months was high, a significant decrease was seen over time. Children who were severely malnourished or with advanced disease stage, those who are more vulnerable to poor outcome, require improved retention strategies. Increased understanding of factors underlying treatment fatigue in the pediatric population will be crucial to improve long term ART retention.

EPOSTER DISCUSSION SESSION 17: INVASIVE VIRAL INFECTIONS - STATION A

ESP17-0579

THE IMPACT OF HIV-1 ON THE CLINICAL EPIDEMIOLOGY OF HUMAN RHINOVIRUS IN SOUTH AFRICAN AND ZAMBIAN CHILDREN: A CASE-CONTROL ANALYSIS IN THE PERCH STUDY

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Background

HIV-1 infection in children is an established risk factor for viral associated respiratory tract infection (RTI) morbidity and mortality probably due to impaired humoral and cell-mediated immunity. This has been described for RSV, HMPV and Influenza viruses; however, not much is known on the role of Human Rhinovirus (HRV) in the pathogenesis of RTI in HIV-1-infected children. We aimed to characterize the clinical epidemiology of HRV in children hospitalized with pneumonia and community controls in a setting with a high HIV-1 burden.

Methods

South African and Zambian children (1-59 months) hospitalized with WHO-defined severe and very severe pneumonia together with age-frequency matched community controls were enrolled and their nasopharyngeal/oropharyngeal swabs tested for HRV and 18 other respiratory viruses. The clinical epidemiology of HRV among HIV-1 infected and uninfected children were compared using multivariate logistic regression models expressed as adjusted odds ratios (aOR).

Results

HIV-1 infection was not an independent risk factor for HRV-associated hospitalization (aOR 1.49, 95% CI: 0.92-2.42, $P=0.104$); however, HIV-1 infection was associated with a 4.89-fold (42% vs. 10%, aOR 95% CI: 1.84-15.54, $P=0.001$) higher case fatality ratio among HRV-associated cases. HIV-1 infected HRV-associated cases were, however, more likely to have concurrent bacterial, *Pneumocystis jiroveci* (30% vs. 12%, aOR 3.23, 95% CI: 1.47-7.11, $P=0.003$) and pulmonary tuberculosis (14% vs. 4%, aOR 4.09, 95% CI: 1.75-9.59, $P=0.001$) co-infections compared to HIV-uninfected cases. Among the HRV-associated controls, HIV-infection was an independent risk factor for RTI (31% vs. 7%, aOR 95% CI: 1.05-2.40, $P=0.045$).

Conclusions

HRV was common among children regardless of HIV infection and hospitalization status. HIV infection was a risk factor for more severe disease as well as bacterial and fungal co-infection which could account for the higher case fatality ratio.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 13: PUBLIC HEALTH: BACTERIAL INFECTIONS AND CLINICAL EPIDEMIOLOGY - STATION E

ESP17-0591

VACCINE DECISION-MAKING BEGINS IN PREGNANCY: CORRELATION BETWEEN VACCINE CONCERNS, INTENTIONS AND MATERNAL VACCINATION WITH SUBSEQUENT CHILDHOOD VACCINE UPTAKE

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Background

Maternal and childhood vaccine decision-making begins prenatally. Amongst pregnant Australian women we aimed to ascertain vaccine information received, maternal immunisation uptake and attitudes and concerns regarding childhood vaccination. We also aimed to assess for any correlation between maternal a) vaccine intentions for childhood vaccination and (b) vaccine concerns in pregnancy, (c) socioeconomic status (SES) and (d) vaccination uptake of maternal influenza and pertussis vaccines and uptake of childhood vaccines.

Methods

Women attending public antenatal clinics were recruited in three Australian states. Surveys were completed on iPads. Follow-up phone surveys were completed three to six months post delivery and infant vaccination status obtained via the Australian Childhood Immunisation Register (ACIR).

Results

Between October 2015 and March 2016, 975 (82%) of 1184 mothers consented to participate in the study and 406 (42%) of 975 mothers agreed to follow up post delivery. First-time mothers had significantly more vaccine concerns in pregnancy and 73% had made a decision about childhood vaccination compared to 89% of mothers with one or more children (p-value 0.000). 66% of mothers reported receiving enough childhood vaccination information during pregnancy. 46% and 82% of mothers reported receiving pregnancy influenza and pertussis vaccines, respectively. Vaccine intentions, two vaccine attitude and two vaccine concern items were correlated with vaccine uptake post delivery. There was no association between reported maternal vaccine uptake or SES and childhood vaccine uptake.

Conclusions

First time mothers are more vaccine hesitant and undecided about childhood vaccination and only two thirds of all mothers believed they received enough information during pregnancy. Some vaccine attitudes and concerns are correlated with childhood vaccine uptake. New interventions should target vaccine hesitant mothers in pregnancy for early, targeted communication on childhood and maternal vaccines.

EPOSTER DISCUSSION SESSION 10: VACCINATION PROGRAMMES INCLUDING PNEUMOCOCCAL IMPACT - STATION B

ESP17-0599

COMPARISON OF STUDY DESIGNS IN ESTIMATING THE EFFECTIVENESS OF TEN-VALENT PNEUMOCOCCAL CONJUGATE VACCINE (PCV10) AGAINST INVASIVE PNEUMOCOCCAL DISEASE (IPD) BY USING SYNTHETIC DATA SETS

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Background

In 2010, PCV10 was introduced for infant vaccination in Finland using 2+1 schedule. Various study designs have been used to estimate vaccine effectiveness (VE) against IPD, but they may produce different VE estimates or show varying statistical precision.

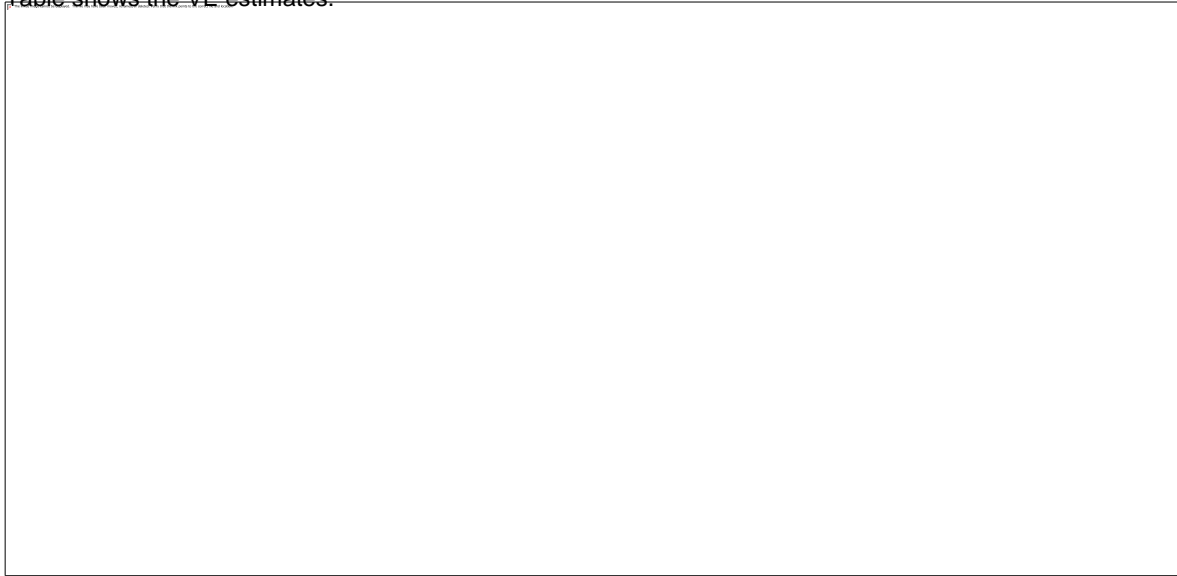
Methods

We assumed that after PCV10 introduction the incidence of vaccine-type (VT) carriage decreased in vaccinated and unvaccinated children at different rates and that VT carriage was completely replaced by non-VT carriage. Pre-vaccination data on carriage and IPD was used to determine age-specific VT and non-VT case-to-carrier ratios. For each month-by-month cell of age (6-60 months) and calendar time (2011-2015), the expected VT and non-VT-IPD numbers were calculated from carriage incidences and case-to-carrier ratios. Synthetic data were simulated into each (age)x(calendar time) cell as 2x2 tables by serotype group (VT/non-VT) and vaccination status, representing the average post-vaccination IPD trends in Finland. Vaccination coverage of was set at 95%.

In indirect cohort design, VE was estimated as 1-odds of vaccination in VT-IPD cases versus odds of vaccination in non-VT-IPD cases as controls. In nested case-control design, controls (1:4) were selected from the vaccine-eligible cohort and matched by age and calendar time. In full cohort design, incidence rates in vaccinated and unvaccinated were compared using follow-up time as denominator. VE estimates from these parallel designs were compared against the total VE based on the simulated vaccination period IPD incidence vs. the observed incidence in the pre-PCV10 period.

Results

Table shows the VE estimates.



Conclusions

Parallel study designs gave consistent estimates, yet full cohort design was most precise. However, these designs underestimate the total VE as they only estimate the direct VE and the unvaccinated children also benefit from indirect effects of vaccination.

EPOSTER DISCUSSION SESSION 01: TUBERCULOSIS - STATION A

ESP17-0604

BCG VACCINE PROTECTS AGAINST LATENT TB INFECTION AMONG CHILDREN IN CLOSE CONTACT WITH INFECTIOUS ADULT TB CASES

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Background

Predictive factors of latent tuberculosis infection (LTBI) among children exposed to TB remain irresolute. Thus, the investigation of contacts of infectious adult TB cases and treatment of those with LTBI is an important strategy in TB control. Aim of the study was to determine risk factors of LTBI among children in close contact with adult index cases in a low TB endemicity setting with the use of QuantiFERON-TB Gold In-Tube assay (QFT-IT test).

Methods

Our study is a cross-sectional study in children with known TB exposure. Overall, 300 asymptomatic children were enrolled. All children underwent QFT-IT testing. Demographic, epidemiological and socioeconomic data, prior BCG vaccination and history of contact with an adult index case were all recorded

Results

LTBI was diagnosed in 129 cases (43%). In the multivariate analysis, children with one or more than one infected sibling have 12.4 and 59.9 times respectively higher risk to have LTBI compared to those who do not have infected siblings (OR=12.42 and OR=59.87 respectively, $p < 0.001$ respectively). Moreover, children with prior BCG immunization have 56% less chances to have LTBI than non-vaccinated ones (OR=0.434, $p=0.035$).

Conclusions

We were able to determine risk factors of LTBI among children with known TB exposure. Infection of more than one sibling in the family and lack of BCG vaccination seem to be risk factors of LTBI in children having close contact with adult index cases.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 12: PUBLIC HEALTH: VIRAL INFECTIONS - STATION D

ESP17-0613

SUSCEPTIBILITY OF INFANTS TO MEASLES PRIOR TO VACCINATION, AND CHANGING TRENDS OVER TIME: TWO COHORT STUDIES FROM CHANDIGARH, INDIA.

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Background

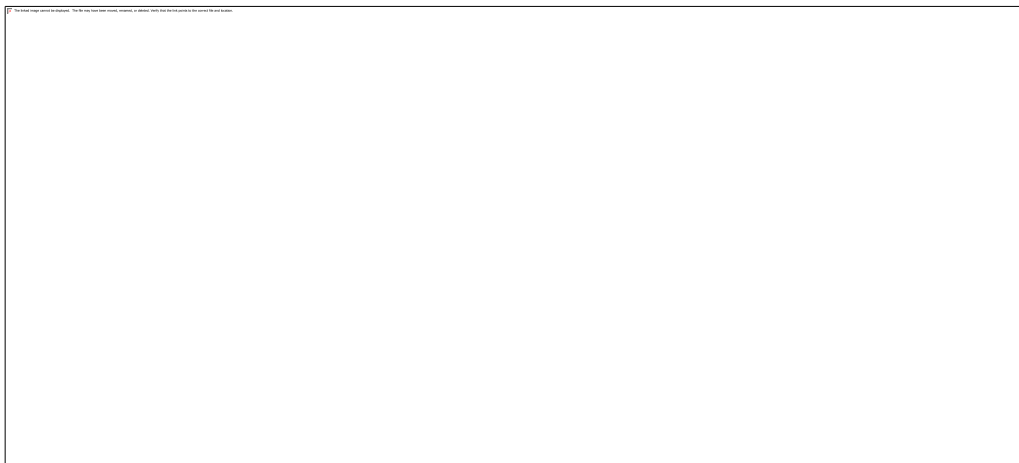
Since 1985, measles vaccine has been administered to Indian infants at 9 months of age, assuming protection by trans-placental antibodies until then. The current strategy for measles elimination focuses on an additional dose at 12-15 months. However, this strategy ignores susceptibility to measles prior to 9 months. We compared results from 2 prospective observational studies undertaken by us in 2005 and 2015. The objective was to (i) determine measles susceptibility before 9 months age, and (ii) change in susceptibility over a decade.

Methods

In the 2005 and 2015 cohorts, 60 and 130 infants respectively were enrolled at birth. In both cohorts, serum anti-measles immunoglobulin G (IgG) was measured by quantitative enzyme-linked immunosorbent assay (ELISA) at birth; 3, 6 and 9 months (just prior to vaccination). The proportion of susceptible infants (defined as antibody titre <200 mIU/ml) was calculated at each time-point.

Results

Figure 1 shows the serial inter-cohort comparisons of the mean (\pm standard deviation) anti-measles IgG antibody level, and proportion of susceptible infants at the four time points. Infants start becoming susceptible to measles by 3 months and the majority are susceptible by 6 months of age. None is protected by maternal antibodies at 9 months. The proportion of susceptible infants at 3 and 6 months increased from 2005 to 2015 (p values 0.065 and <0.001 respectively).



Conclusions

Most Indian infants are susceptible to measles well before the age of routine infant vaccination. These unprotected infants are at increased risk of clinical measles. Measles elimination efforts should focus on earlier (rather than later) vaccination.

Clinical Trial Registration (Please input N/A if not registered)

Not applicable

EPOSTER DISCUSSION SESSION 24: INFECTIONS IN IMMUNOCOMPROMISED CHILDREN - STATION H

ESP17-0615

SPECTRUM OF DISEASE DUE TO NON-TUBERCULOUS MYCOBACTERIA (NTM) IN A TERTIARY REFERRAL CENTRE.

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Background

There are limited data on the epidemiology, diagnosis, management and outcome of nontuberculous mycobacterial (NTM) disease in children. This study sought to characterize NTM disease in a tertiary referral centre with 50 different specialties including renal and heart transplant,

Methods

A dataset of 363 children treated at GOSH since 2000 with a positive mycobacterial culture was collated. Patients with M tuberculosis (TB), BCG or M. abscessus were excluded as they have been described elsewhere. Of the remainder, 93 were confirmed to have treatment for NTM disease. Clinical information was gathered from a retrospective case note review.

Results

The most commonly cultured NTM were MAC (50% of total, 77% of lymph node disease) and M chelonae (15% of total, 32% of immunodeficient patients). 32(60%)patients with lymph node disease underwent surgical excision. 4 (12.5%) surgical complications were noted.

63 children were identified with immunodeficiency and NTM infection. The majority were treated for >12 months (50%) with a combination of 3 or more drugs (59%). 27% of children with immunocompromise and NTM infection died, compared to 9% of children with no known immunocompromise (fishers exact test p value 0.0033).

Conclusions

The majority of disease caused by NTM occurs in vulnerable immunocompromised patients. Treatment courses are long and complicated and associated with poor outcome. There are currently no consensus guidelines for the management of NTM infections in this cohort; here we present one of the largest datasets gathered to date.

EPOSTER DISCUSSION SESSION 04: BROAD-SPECTRUM ANTIBIOTIC USE AND STEWARDSHIP PROGRAMS - STATION D

ESP17-0619

ANTIBIOTIC PRESCRIBING PATTERNS IN PAEDIATRIC AMBULATORY SETTINGS IN A TERTIARY HOSPITAL IN SINGAPORE: A RETROSPECTIVE REVIEW

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Background

Judicious antibiotic use is fundamental to stem the steady rise in antimicrobial resistance. Antibiotic stewardship programmes mostly focus on inpatient prescribing of broad spectrum antibiotics; less is known about the appropriateness of commonly used antibiotics prescribed for children as outpatients. We performed a retrospective review to evaluate the pattern and rates of empiric antibiotic prescribing for children in the ambulatory setting.

Methods

A retrospective review of new antibiotic prescriptions from the paediatric emergency department and paediatric outpatient clinics in a tertiary university hospital between 1st August 2015 and 31st January 2016 was conducted. Prescriptions for topical, prophylactic and continued antibiotics, antiviral and antifungal medications were excluded. Electronic medical records were reviewed to assess the appropriateness of the antibiotic prescriptions for patients diagnosed with viral upper respiratory tract infections (URTI), bacterial URTI, acute otitis media (AOM), community acquired pneumonia (CAP) and skin and soft tissue infections (SSTI).

Results

1362 (68%) new antibiotic prescriptions were generated. Nearly 60% had diagnoses of URTI, AOM, CAP and SSTI. Of the 291 patients with URTI who received antibiotics, 118 patients (40.5%) were diagnosed with viral URTI. Of 173 (59.5%) patients diagnosed with bacterial URTI, only 53 (30.6%) patients received narrow spectrum antibiotics. In patients diagnosed with CAP, AOM and SSTI, antibiotics were prescribed appropriately in 69%, 55% and 43% respectively.

Conclusions

A significant proportion of children presenting to emergency and outpatient settings were prescribed antibiotics inappropriately with a tendency to prescribe broad-spectrum antibiotics especially for URTI and SSTI. This may lead to antimicrobial resistance at the community level and contribute to rising healthcare costs. Clear empiric antibiotic prescribing guidelines and an outpatient antibiotic stewardship programme may be beneficial.

EPOSTER DISCUSSION SESSION 15: OTHER COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION G

ESP17-0630

CYTOKINE PROFILE IN A COHORT OF CHILDREN WITH COMMUNITY ACQUIRED PNEUMONIA, AND CORRELATION WITH CLINICAL FEATURES, ETIOLOGY AND OUTCOME.

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Background

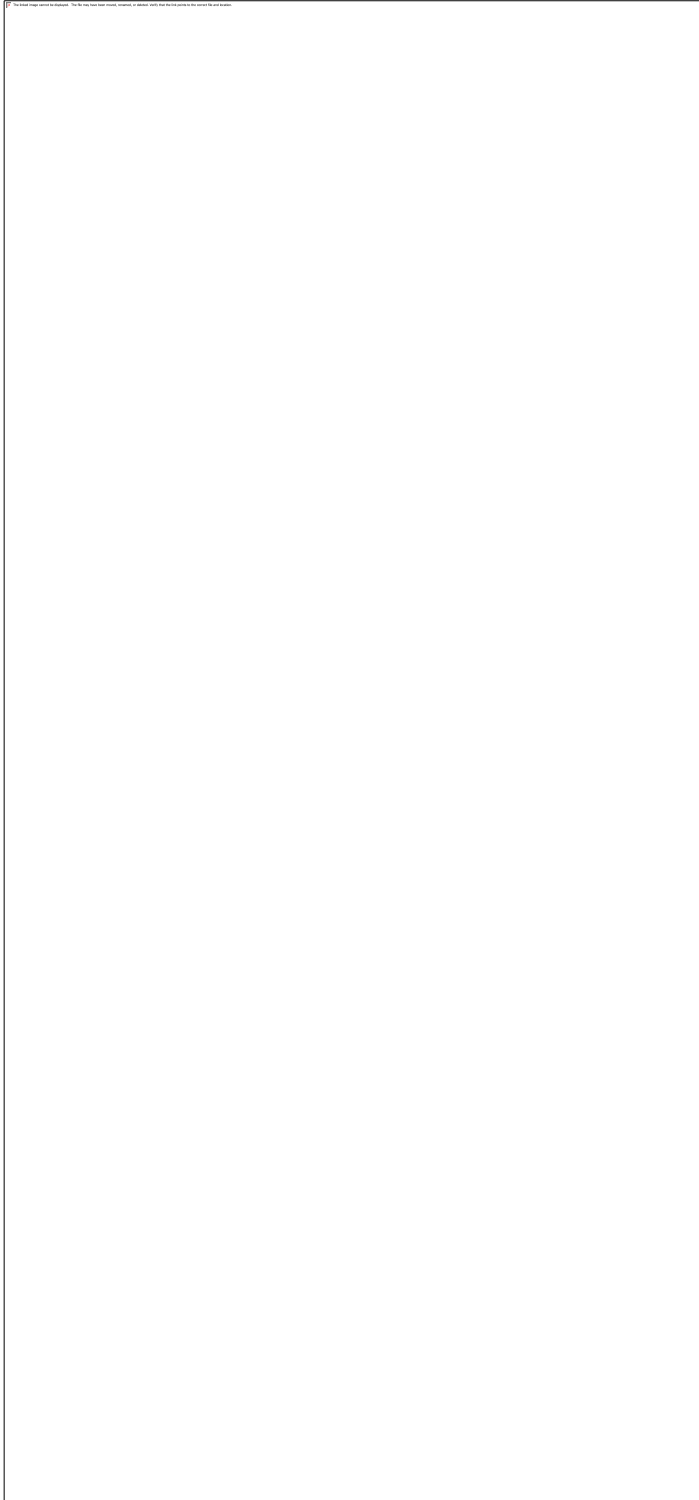
Limited literature suggests that in childhood pneumonia, some cytokines and/or chemokines could be potential biomarkers of disease severity, etiology or outcome. This prospective study was designed to measure a panel of cytokines/chemokines in children with community acquired pneumonia at the time of presentation, and evaluate their relationship to etiology, clinical severity, total leukocyte count, chest radiography, and outcome.

Methods

We enrolled 222 consecutive children (1month to 12years) with severe pneumonia (SP) and very severe pneumonia (VSP) defined by the WHO IMCI criteria. All children underwent chest radiography, blood culture and nasopharyngeal aspirate (NPA) culture. NPA samples were examined for respiratory viruses by multiplex PCR. The cytokines interferon-gamma, IL-1b, IL-4, IL-6, IL-8 and CCL-22 were measured in serum using Luminex.

Results

The etiology was bacterial in 60 children, viral in 71, atypical organisms in 5, and indeterminate/mixed in 86 cases. Figure 1 summarizes the findings. None of the six cytokines showed patterns that could distinguish bacterial vs viral etiology. Similarly, the cytokine profile was not different in children with normal vs high leukocyte count. IL-6 was significantly lower in children with radiographic consolidation (1291.39 vs 1774.41pg/ml) and those with fatal outcome compared to survivors (6144.67 vs 8350.75pg/ml). IL-6 was higher in children classified with SP than VSP (2477.03 vs 2430.80pg/ml). IL-8 was significantly lower in those with radiographic consolidation (1647.33 vs 3039.5 pg/ml).



Conclusions

The pro-inflammatory cytokine IL-6 was higher in children with SP (compared to VSP) and those who survived. This suggests that VSP and fatal outcome may be associated with a dysregulated inflammatory response.

However, our data indicate that these cytokines cannot be used as reliable predictive biomarkers for microbial etiology.

Clinical Trial Registration (Please input N/A if not registered)

Not applicable

EPOSTER DISCUSSION SESSION 12: PUBLIC HEALTH: VIRAL INFECTIONS - STATION D

ESP17-0632

THE DECREASING INCIDENCE OF CONGENITAL RUBELLA IN UNITED KINGDOM 2003-2016

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Background

Rubella vaccines have been part of the UK immunisation schedule since the 1970s. As a result of good coverage of the childhood programme and additional targeted vaccination, Congenital Rubella Infection and Syndrome (CRI and CRS) cases have been decreasing.

Methods

Rubella (congenital rubella) is notifiable in the UK and information about CRS cases is collected and reconciled via two independent systems: the Public Health route (PHE) and through paediatricians (BPSU). Cases are classified as CRS if they have laboratory confirmation and/or are compatible with WHO definition.

Results

Between 2003 and 2016, ten rubella infections were confirmed in pregnant women of whom seven had babies with CRS diagnosed after delivery. Five additional cases of CRS were confirmed postnatally without rubella being identified during pregnancy. Fourteen of the 15 mothers were born abroad and eight were known to have acquired their infection abroad. Sensorineural hearing loss, eye and heart defects were the most common manifestations of CRS, although developmental problems, thrombocytopenia at birth and microcephaly were observed. Two babies born with CRS were known to have died within their first year. Identified cases of CRS decreased from 9 in 2003-2009 (0.17 per 100,000 live births per year) to 3 in 2010-2016 (0.05 per 100,000 live births per year); a 71% reduction.

Conclusions

Congenital rubella infection is now very rare in the UK, with only twelve confirmed cases of CRS in the last 14 years. As we move towards elimination of rubella in the UK, it continues to circulate in some countries. It is therefore important for health professionals to ensure all individuals, particularly those born and raised abroad, have received two doses of MMR vaccine.

EPOSTER DISCUSSION SESSION 16: OTHER COMMUNITY ACQUIRED INVASIVE BACTERIAL INFECTIONS - STATION H

ESP17-0648

AN UPDATED SYSTEMATIC REVIEW OF ECONOMIC EVALUATIONS OF PNEUMOCOCCAL CONJUGATE VACCINES AND THE DEVELOPMENT OF A STUDY REPOSITORY AND ANALYSIS TOOL

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Background

Cost-effectiveness analyses can be an important tool to support vaccine technical committee decisions. This study extends a previously published systematic literature review of economic evaluations of pneumococcal conjugate vaccines. A repository of studies and analysis tool were developed to inform policy decision making.

Methods

The search protocol from the previous review was utilized over an additional 3 years through October 2016. The repository was programmed to analyze studies through 4 modules: 1) Study Description; 2) ICER Results; 3) Results Drivers; and 4) Burden of Disease. Data extracted included study descriptions, methodology, assumptions, results, results drivers, and burden of disease. Extracted data were analyzed to understand differences in study methodologies and assumptions where a European country perspective was included in the analysis.

Results

Of 306 new studies identified, 13 were added to the previously identified 28 totaling 41 studies. 14 (34%) included at least one European country. Studies including European countries compared with studies not including European countries were more likely to include herd effect (86% vs. 63%), a societal perspective (57% vs. 52%), more likely to utilize a decision-analytic model structure (29% vs. 15%), and less likely to utilize a Markov model structure (50% vs. 63%). The most common parameters driving results for studies including European countries were vaccine price and disease incidence (43% of studies each), compared with studies without a European country where the most common results driver was vaccine efficacy (63% of studies).

Conclusions

In comparison to other parts of the world, there are marked differences in methodologies and results drivers compared to studies including European countries. Cost-effectiveness studies provide useful data to decision-makers, however methodologies and inputs need to be transparent and interpreted carefully.

Systematic Review Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 11: VACCINES: VIRAL IMPACT AND NON-SPECIFIC EFFECTS - STATION C

ESP17-0650

SECOND DOSE OF MEASLES-MUMPS-RUBELLA VACCINATION AND THE POTENTIAL ASSOCIATION WITH ADMISSIONS FOR INFECTION AND ANTIBIOTIC PRESCRIPTIONS – A REGISTER-BASED NATIONWIDE DANISH COHORT STUDY

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Background

It has been hypothesized that revaccination with live, attenuated vaccines enhances beneficial non-specific effects of these vaccines. In Denmark, the first dose of the live, attenuated measles, mumps, and rubella vaccine (MMR-1) is recommended at age 15 months and the second dose (MMR-2) at 4 years. We examined if MMR-2 was associated with a lower rate of antibiotic prescriptions and hospital admissions for infection.

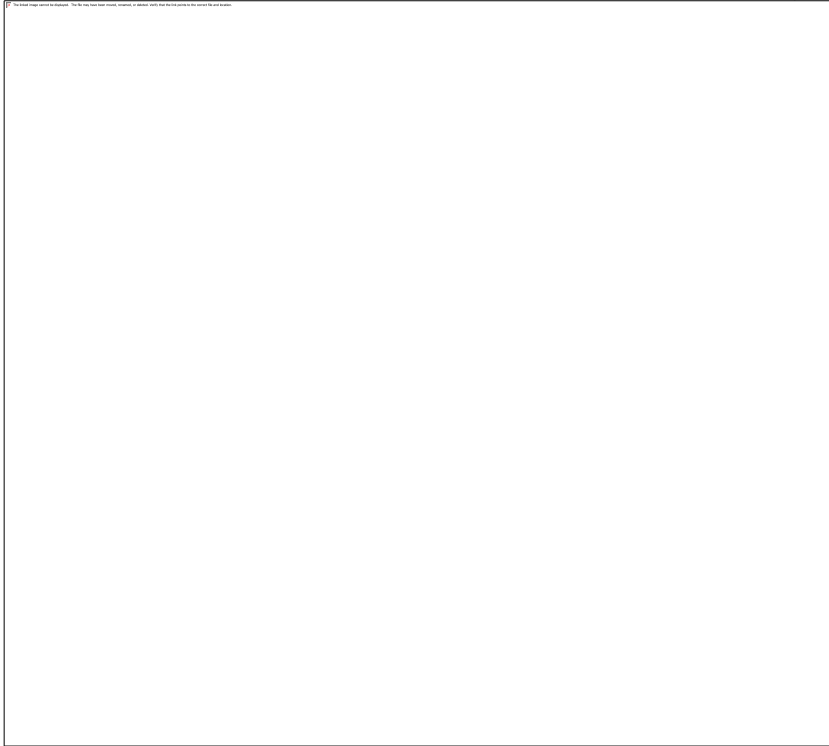
Methods

All children born in Denmark 1 April 2004 - 31 December 2010 who had received MMR-1 before 47 months of age were followed from 47 to 60 months of age for MMR-2 vaccination, admissions for infection, systemic antibiotic prescriptions, and potential confounders in National Danish Registers. We estimated the incidence rate ratio of antibiotic prescriptions and admissions for infections according to whether or not MMR-2 was the most recent vaccine in an adjusted Cox proportional hazards model.

Results

The study included 283,664 children of whom 217,652 (76.7%) received MMR-2 before end of follow-up. MMR-2 as most recent vaccine was not associated with antibiotic prescriptions (Table). However, MMR-2 as most recent vaccine was associated with a lower rate of admissions for any type of infection (adjusted IRR, 0.93; 95% CI 0.88-0.98; Table). The adjusted IRR was 0.97 (95% CI, 0.90-1.03; Table) for admissions with a duration \leq 1 day

and 0.84 (95% CI, 0.74-0.95; Table) for admissions with a duration ≥ 2 days (same IRR, $p=0.039$).



Conclusions

MMR-2 might be associated with a lower rate of admissions lasting ≥ 2 days. More studies are needed on the potential association between revaccination with live, attenuated vaccines and non-targeted severe infections.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 02: TROPICAL INFECTIONS - STATION B

ESP17-0654

MALARIA, A RETROSPECTIVE VIEW THROUGH OURS HOSPITALS.

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Background

Malaria is a protozoan infection caused by Plasmodium (*P. vivax*, *P. falciparum*; *P. ovale*, *P. malariae*, *P. knowlesi*) affecting human being. In our region, there is a high rate of immigration from countries with high malaria burden.

Methods

Retrospective and descriptive study that collects malaria cases from 1996 to 2016 in two hospitals of our region. We included patients under fifteen years who came to paediatric emergencies services and were diagnosed by microscopy parasitological confirmation.

Results

We reported 69 cases (40% female). Patients were originally from Gambia (55%), Senegal (16%) and Guinea Conakry (9%). 57% were visiting friends and relatives and 40% were coming for the first time to our country. 74% didn't take chemoprophylaxis, 9% was incomplete and 12% took it completely.

P. falciparum caused 96% of the cases and *P. vivax* 4%. 35% were severe Malaria (parasitemia average of 15%). The rest had 6.2% of parasitemia.

The main reason for consultation was fever (91%) and seizures (3%). 16% of the patients complained of headache, 5% of myalgia and during their admission 6% presented seizures.

The treatment was quinine sulphate combined with clindamycin (22%), doxycycline (25%) and pyrimethamine sulfadiazine (25%). In the last four years, there has been an increase of artemisinin derivative usage (12%).

All of them had a successful evolution (100% of survival) and were discharged in an average of 6.5 days. Additionally, three of them were diagnosed of schistosomiasis, two sickled cells disease, one sepsis by salmonella and one chronic hepatitis B.

Conclusions

We remark the importance of high suspicion of malaria in children with fever returning from endemic countries. In our cohort, 57% of cases were children visiting friends and relatives. A correct chemoprophylaxis could have avoided most of these cases.

EPOSTER DISCUSSION SESSION 12: PUBLIC HEALTH: VIRAL INFECTIONS - STATION D

ESP17-0661

SPREADING AND SEVERITY OF A NEW RSV-A GENOTYPE (ON1) IN PAEDIATRIC PRACTICES AND HOSPITALS IN BAVARIA (GERMANY), 2010-2016

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Background

In 2010, a new genotype of respiratory syncytial virus A (ON1) emerged and was detected in Germany in 2012. We investigated spreading and severity of ON1 infections in paediatric out- and inpatients in Bavaria (Germany).

Methods

Respiratory samples and clinical data on RSV patients were collected in three prospective surveillance studies conducted in Bavaria between 2010 and 2016 in paediatric practices (PP), wards (PW) and intensive care units (PICU). Within each setting, clinical and demographic characteristics of children with PCR-confirmed RSV were compared by RSV genotype. Association of ON1 and hospitalisation was investigated for a comparable subsample from PP and PW patients (selection of children aged 1-5 years from the seasons 2012/13 and 2013/14) by logistic regression analysis.

Results

A total of 116 children from PP (50% ON1, 10% other RSV-A, 40% RSV-B), 142 from PW (56% ON1, 18% other RSV-A, 27% RSV-B) and 138 from PICU (23% ON1, 39% other RSV-A, 38% RSV-B) were included. In all settings, ON1 was rare in 2011/12, co-circulated with RSV-A GA2 in 2012/13, and had replaced GA2 in 2013/14. Within PP and PW, characteristics of patients with ON1 did not differ from patients with other RSV. In the subsample comparable for age and season (88 children with ON1, 59 with other RSV), the proportion of ON1 was higher in PW (71%) compared to PP (53%; $p=0.053$), especially in the season 2012/13.

Conclusions

After two seasons, RSV-A ON1 had replaced the previously circulating RSV-A GA2 genotype. In 2012/13, the first season with relevant circulation, RSV-A ON1 was more prevalent among hospitalized children, indicating an initially higher severity. Within each setting, however, ON1 did not result in more severe disease than other RSV-A.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 03: ANTIMICROBIAL RESISTANCE AND PHARMACOLOGY - STATION C

ESP17-0671

RISK FACTORS FOR GENTAMICIN RESISTANCE IN COMMUNITY-ONSET URINARY TRACT INFECTIONS DUE TO *E.COLI* IN CHILDREN

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Background

Our aim is to analyze risk factors for gentamicin resistance in community-onset urinary tract infections (UTI) due to *E.coli* in children.

Methods

Retrospective case-control study in a tertiary care hospital between 2014-2016. Cases and controls were children with UTI caused by gentamicin-resistant and susceptible *E.coli* respectively, diagnosed in the Emergency Department and paired by date of admission.

Results

During the study period 905 *E.coli* were isolated from urine cultures in the Emergency Department, 81 (8.9%) gentamicin-resistant strains. We included 54 gentamicin-resistant (47 patients) and 98 gentamicin-susceptible *E.coli* (95 patients) causing febrile UTI. Median age was 11.15mo [IQR 3.78-31.07] in cases and 11.85mo [IQR 4.017-47.19] in controls (p=NS). Cases recurred more frequently (7/54) than controls (3/98) (p<0.01). Percentages of hospitalization were similar, but cases had higher lengths of stay [5.8±5 days vs 4.4±4 days] (p=0.017). Risk factors for UTI caused by gentamicin-resistant *E.coli* are reported in *Table 1*. In the multivariate analysis, patients with chronic conditions had higher risk for UTI due to gentamicin-resistant *E.coli* (OR 3.2; 1.3-7.7, p=0.08), especially those affected by moderate-severe encephalopathy (OR 4.6; 1.3-16.7, p=0.018). Children receiving antibiotic prophylaxis showed higher frequency of gentamicin-resistance, but did not reach statistical significance (OR 3; 0.95-9.59, p=0.06).

Gentamicin resistant strains had higher rates of cefuroxime (29% vs 2%; p<0.01), cefotaxime [27% (13/48) vs 0% (0/78)] and quinolone-resistance [40.7% (22/54) vs 6% (6/98)] (p<0.01), and were more frequently ESBL (20% vs 0%, p<0.01) and carbapenemase producers (7% vs 0%; p=0.015). All strains were amikacin-susceptible.

Conclusions

In our study, the presence of chronic conditions was the main risk factor for UTI due to gentamicin-resistant *E.coli*. In these strains, simultaneous resistance to cephalosporins, quinolones, and ESBL/carbapenemase production was more frequent. Amikacin may be a useful alternative therapy.

EPOSTER DISCUSSION SESSION 17: INVASIVE VIRAL INFECTIONS - STATION A

ESP17-0691

THORAX ULTRASOUND FOR RISK STRATIFICATION OF INFANTS HOSPITALIZED FOR ACUTE BRONCHIOLITIS

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Background

Acute bronchiolitis (AB) is a common cause of hospital admission among infants. Treatment is based on supportive measures, including the use CPAP, high-flow nasal cannula oxygen (HFNC) and mechanical ventilation (MV). Early use of non-invasive ventilation/supportive oxygen therapies (NIV) has emerged as a useful tool to avoid disease progression. The aim of this study was to assess the accuracy of thorax ultrasound (TU) to stratify patients at risk of poor clinical outcome.

Methods

Preliminary results of a prospective, multicenter study including infants <6 months of age admitted for AB. TU was performed during the first 24h. Based on the TU pathologic findings (defined as: ≥ 3 B lines, single-space B line confluence, presence of consolidations) Main outcome was NIV use.

Results

Sixty-five patients were included (mean age 2.2 months (SD 1.7), 55.4% female). Mean duration of symptoms prior to admission: 3.4 days (SD 2.5). Time to TU after admission: 20.6 hours (SD 14.8); median Wood-Downes Score of 5 [IQR 4- 6] at inclusion. Thirty-one patients (47.7%) required NIV [CPAP 14/65 (21.5%), HFNC 29/65 /44%] and 5/64 (7.8%) were transferred to PICU. A TU score ≥ 5 was associated to NIV as shown in Table 1 (RR=4.4 [CI95% 1.12-17.5]. Identification of consolidations was also related to NIV and to CPAP use alone, but not to HFNC alone.

Conclusions

According to our findings, the identification of consolidations in a TU performed during the first 24h of admission was a predictor of NIV in infants below 6 months of age admitted with AB. TU is a promising tool to identify patients at risk of poor outcome that may benefit from prompt oxygen support, but further investigations are needed in order to validate an accurate TU score.

EPOSTER DISCUSSION SESSION 02: TROPICAL INFECTIONS - STATION B

ESP17-0693

EPIDEMIOLOGICAL AND CLINICAL PROFILE OF CHIKUNGUNYA FEVER IN CHILDREN IN BIKANER

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Background

The chikungunya epidemic epitomizes the classic interaction between agent, host and environment. Although there are numerous description of chikungunya fever in literature but most of them are based on adults. In this prospective hospital based observational study, we report clinico-laboratory profile of children with chikungunya infection from January 2016 to December 2016.

Methods

The inclusion criteria was fever with any one of the following features; seizure, loose stools, peripheral cyanosis, skin manifestations or pedal edema. Details of disease from onset of illness till admission were noted and a thorough clinical examination was done at the time of admission. Diagnosis of chikungunya was made by specific chikungunya antibody by IgM antibody ELISA test. Other possible causes were ruled out by scientific and stringent manner.

Results

In this duration, 209 children were diagnosed for chikungunya fever clinically in which 128 were positive for chikungunya IgM antibody ELISA test. The mean age was 11.2±2.1 years. Male to female ratio was 1.8:1. Children of 8–12 years were most commonly affected (56.65%). The disease manifestations were with the prototypical features of fever, rash and arthralgia. The bleeding manifestations ranged from bleeding gums and epistaxis to hematemesis and melena. Febrile convulsions occurred in 4% children with chikungunya. Eighteen infants were enrolled as chikungunya fever. The most characteristic feature of the infection in infants was acrocyanosis and symmetrical superficial vesicobullous lesions were noted in most infants. Erythematous asymmetrical macules and patches were observed which later progressed to morbiliform rashes.

Conclusions

An entirely different spectrum of disease is seen in infants with chikungunya as compared to older children. The morbidity and mortality of the disease may be avoided by the rational use of drugs and close monitoring of all infants.

EPOSTER DISCUSSION SESSION 12: PUBLIC HEALTH: VIRAL INFECTIONS - STATION D

ESP17-0701

NOROVIRUS GENOTYPES CAUSED NUMEROUS OUTBREAKS IN SEMI-CLOSED COMMUNITIES IN BELARUS

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Background

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Norovirus genotypes caused numerous outbreaks in semi-closed communities in Belarus

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Many outbreaks of norovirus gastroenteritis were registered in semi-closed communities in Belarus for the last seven years. The most numerous outbreaks were registered in 2010, 2012 and 2015 - 3, 5 and 7, respectively. The aim of the present investigation was to find the differences in molecular epidemiology of noroviruses circulated in these years.

Methods

Noroviruses were detected in stool samples by RT-PCR, genotyped by sequencing of a 340 nt fragment in 3' RdRp region, and a 280 nt portion of VP1 gene and followed phylogenetic analysis.

Results

Our results:all norovirus gastroenteritis episodes in semi-closed communities in 2010, 2012 and 2015 were caused by emerging norovirus genotypes. The causative agent of 3 outbreaks in 2010 was identified as genovariant GII.4 2009 New Orleans, which previously was not registered in Belarus (sporadic morbidity of 2009-2010 was caused by genovariant GII.4 2006b). Four outbreaks in 2012 were caused by new for Belarusian population norovirus genotypes GII.6 and GII.3 (predominant sporadic morbidity genotypes in 2011 were GII.4 2009 New Orleans and GII.g/GII.12). The most numerous outbreaks (n=7) in semi-closed communities in 2015 were caused by GII.17 norovirus genotype, which previously did not circulated in Belarus and was rare worldwide. During the previous years (2012-2014) norovirus sporadic morbidity was caused by two epidemic genovariants of GII.4 genotype – G II.4 New Orleans/G II.4 Sydney and GII.4e/GII.4 Sydney.

Conclusions

These results suggest that numerous outbreaks in semi-closed communities can serve as indicators of new norovirus emergence.

EPOSTER DISCUSSION SESSION 24: INFECTIONS IN IMMUNOCOMPROMISED CHILDREN - STATION H

ESP17-0707

LOW RISK FACTORS OF SEVERE BACTERIAL INFECTION IN CHILDREN WITH SICKLE CELL DISEASE

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Background

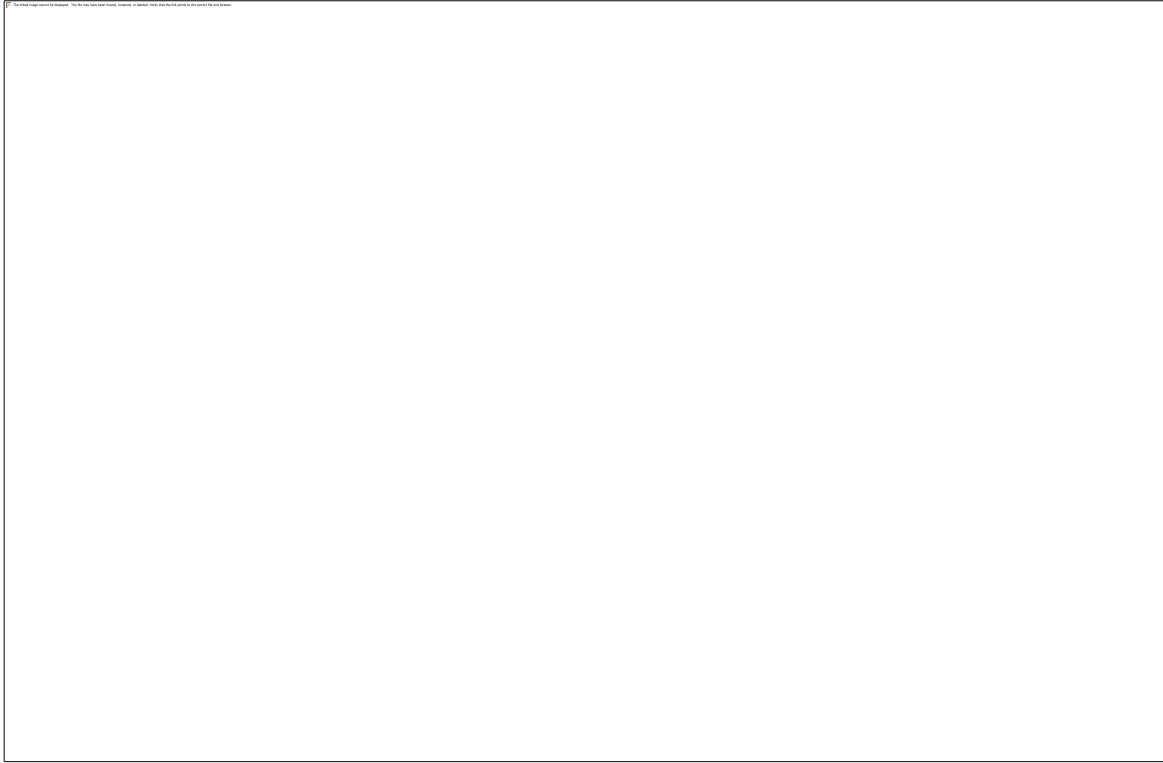
Children with sickle cell disease (SCD) are at risk of severe bacterial infections due to a splenic dysfunction; therefore, they are usually treated empirically with broad-spectrum antibiotics when they develop fever, with hospitalisation in most cases. However, the rate of bacterial infections has decreased in these patients due to vaccination and penicillin prophylaxis in recent years. Aims: To determine the rate of severe bacterial infection (SBI) and to describe low risk factors of SBI in children with SCD.

Methods

Retrospective review of medical records of all patients <18 years with SCD and fever who were admitted to a single tertiary hospital from 11/2004 to 12/2015.

Results

Three hundred and sixteen episodes of fever were included. Median age was 3.1 years (IQR 1.5-5.1); 72.5% males. The majority of patients were completely vaccinated (96.1%) and adherent to penicillin prophylaxis (98.4%). In 13/316 episodes an SBI was confirmed (4.1%; 95% CI=1.8%-6.5%). When cases of confirmed and suspected SBI were included, 69/316 episodes of SBI were observed (21.8%; 95% CI=17.1%-26.6%). Median duration of fever was 2 (1-4) days and length of admission was 5 (3-7) days. Eight patients (2.5%) needed PICU admission and no patients died. Univariate analysis revealed that younger age, normal blood pressure, normal oxygen saturation, and lower white blood cells, neutrophils and CRP at the time of admission were low risk factors of SBI. Multivariate analysis showed that normal oxygen saturation and lower CRP were independent low risk factors of SBI (table 1).



Conclusions

Normal oxygen saturation and lower CRP were independent low risk factors of SBI in this cohort of well-controlled children with SCD and fever. These findings may help clinicians to select patients who could benefit from a less aggressive therapeutic approach.

**EPOSTER DISCUSSION SESSION 08: INFECTION CONTROL AND AMBULATORY USE OF
ANTIMICROBIALS - STATION H**

ESP17-0710

**AN EVALUATION OF THE EFFICACY OF CONTINUOUS INFUSION VANCOMYCIN IN AN INFANT AND
NEONATAL POPULATION**

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Background

A study conducted in 2015 at Evelina London Children's Hospital found that therapeutic vancomycin levels were only being achieved in 64% of patients on a continuous infusion regimen. Subsequently, a new dosing regimen was implemented. The aim of this study is to evaluate the efficacy and safety of the new guidelines

Methods

Data collection from July-December 2016 was both retrospective and prospective. Eight patients from the neonatal and paediatric intensive care units were identified for inclusion in this study. Vancomycin administration and therapeutic drug monitoring was reviewed from paper and electronic drug charts and medical records.

Results

Therapeutic plasma vancomycin levels of 15-25 mg/L were obtained in 100% of infants and neonates. The time taken to achieve therapeutic vancomycin levels ranged from 25-51 hours after administration of the loading dose. Dose adjustments were required in 4 patients. No additional loading doses were required in 6/8 patients who received a loading dose. No signs of renal impairment were observed, with 80% of all measured creatinine levels within the reference range of 18-48 µmol/L.

Conclusions

A significant improvement has been made in obtaining therapeutic vancomycin levels more frequently and in a shorter length of time using the new dosing regimen.

EPOSTER DISCUSSION SESSION 10: VACCINATION PROGRAMMES INCLUDING PNEUMOCOCCAL IMPACT - STATION B

ESP17-0711

EFFECTIVENESS OF 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINE ON INVASIVE PNEUMOCOCCAL DISEASE AND ANTIMICROBIAL NON-SUSCEPTIBILITY IN EUROPEAN CHILDREN: RESULTS OF SPIDNET MULTICENTRE STUDY

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Background

The *Streptococcus pneumoniae* invasive disease network (SpIDnet) conducts population-based surveillance for invasive pneumococcal disease (IPD) in 12 European sites from 9 European countries. Eight sites collect data on antimicrobial susceptibility. We measured the effectiveness (VE) of 13-valent pneumococcal conjugate vaccine (PCV13) against IPD caused by vaccine serotypes and against antibiotic non-susceptible isolates causing invasive disease of vaccine serotypes, among children under five years of age.

Methods

We defined IPD as pneumococcal isolation or detection in normally sterile fluids, and antimicrobial nonsusceptibility as a minimum inhibitory concentration to benzylpenicillin >0.064 mg/L (IPD-PenNS) and to erythromycin >0.25 mg/L (IPD-EryNS) (EUCAST clinical breakpoints v7.0). Full vaccination corresponded to children 1-4 years old who received 3 or 4 PCV13 doses, according to site recommendations. We computed the odds of vaccination in IPD caused by PCV13 serotypes and in non-susceptible PCV13 IPD (cases) and compared them to the odds of IPD caused by nonPCV13 serotypes (controls). We calculated pooled VE as (1-odds ratio of vaccination)*100 adjusted for age, gender, underlying conditions, notification year and site.

Results

We included 235 cases and 487 controls from 10 sites. Overall PCV13 effectiveness was 86% (95%CI: 76; 92) against PCV13 IPD. Restricting to the 8 sites with data available on Penicillin or Erythromycin susceptibility, the PCV13 effectiveness was 91% (95%CI: 81; 95) against PCV13 IPD (n=399), 96% (95%CI: 87; 99) against PCV13 IPD-PenNS (n=244) and 96% (95%CI: 83; 99) against PCV13 IPD-EryNS (n=212).

Conclusions

SpIDnet results suggest high PCV13 vaccine effectiveness against PCV13 IPD overall and against PCV13 IPD non-susceptible to Penicillin or Erythromycin. Continuous, active surveillance is needed to monitor VE and antimicrobial susceptibility while additional interventions become available.

Acknowledgements: SpIDnet projects are co-funded by study sites and the ECDC.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 20: OTHER CONGENITAL AND PERINATAL INFECTIONS - STATION D

ESP17-0726

ANALYSIS OF CONGENITAL PLASMODIUM VIVAX MALARIA: A SIX YEAR PROSPECTIVE OBSERVATIONAL STUDY FROM BIKANER, NORTHWESTERN INDIA

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Background

Congenital malaria is defined as malaria parasitaemia in the first week of life. Due to having very scanty reports of congenital *P.vivax* malaria and its non classical clinical presentations, routine screening should be essential for all neonates in endemic areas. This study describes the occurrence and clinical spectrum of congenital *vivax* malaria in Indian perspective.

Methods

This prospective study was conducted on admitted neonates from January 2011 to December 2016. The species diagnosis was done by peripheral blood smear examination, rapid diagnostic test and polymerase chain reaction analysis. The possibilities of other disease/infections causing similar illness were investigated thoroughly and stringently.

Results

A total of 2968 new born admitted in first week of life were screened. Out of them 81(2.73%) had evidence of parasitaemia (*P.vivax*,62 and *P.falciparum*,19). The criteria for admission in these 62 neonates with congenital *vivax* malaria were septicemia (46.15%), prematurity (38.46%), jaundice (21.15%), perinatal asphyxia (15.38%), and seizures (11.54%). The clinical malaria was seen in 46(88.46%) neonates in which spectrum was anemia (80.77%), thrombocytopenia (76.92%), poor feeding (75%), fever (61.54%) and hepatosplenomegaly (51.92%). Although the presence of parasitaemia didn't differ the proportion of neonates having fever ($\chi^2=0.238$; $p=0.52$) and hypoglycemia ($\chi^2=0.117$; $p=0.63$) from those without parasitaemia, but it was significantly associated with anemia ($\chi^2=14.676$; $p=0.001$) and thrombocytopenia ($\chi^2=12.768$; $p=0.001$). The mean Hb level was 8.8 ± 2.7 gm/dl; mean platelet count was $126329.32\pm 65324.56/\mu\text{l}$; mean reticulocyte count was $3.8\pm 1.2\%$; and mean parasite density was $12888.38\pm 3733.21/\text{mm}^3$. All these neonates were treated according to WHO guidelines and none of them expired.

Conclusions

This study emphasizes the occurrence of *P.vivax* congenital malaria with atypical malaria manifestations. Routine screening should be essential for all neonates in endemic areas for awareness about this preventable and treatable disease.

EPOSTER DISCUSSION SESSION 24: INFECTIONS IN IMMUNOCOMPROMISED CHILDREN - STATION H

ESP17-0736

ROLE OF RESPIRATORY VIRAL INFECTIONS IN A PROSPECTIVE COHORT OF CHILDREN WITH SICKLE CELL DISEASE AND FEVER

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Background

The rate of bacterial infections has declined in children with sickle cell disease (SCD) and fever in recent years, mainly due to vaccination and penicillin prophylaxis. However, the role of respiratory viral infections is not well characterised in these patients. Aims: To describe respiratory viral infections in children with SCD and fever and compare them with those with a severe bacterial infection (SBI).

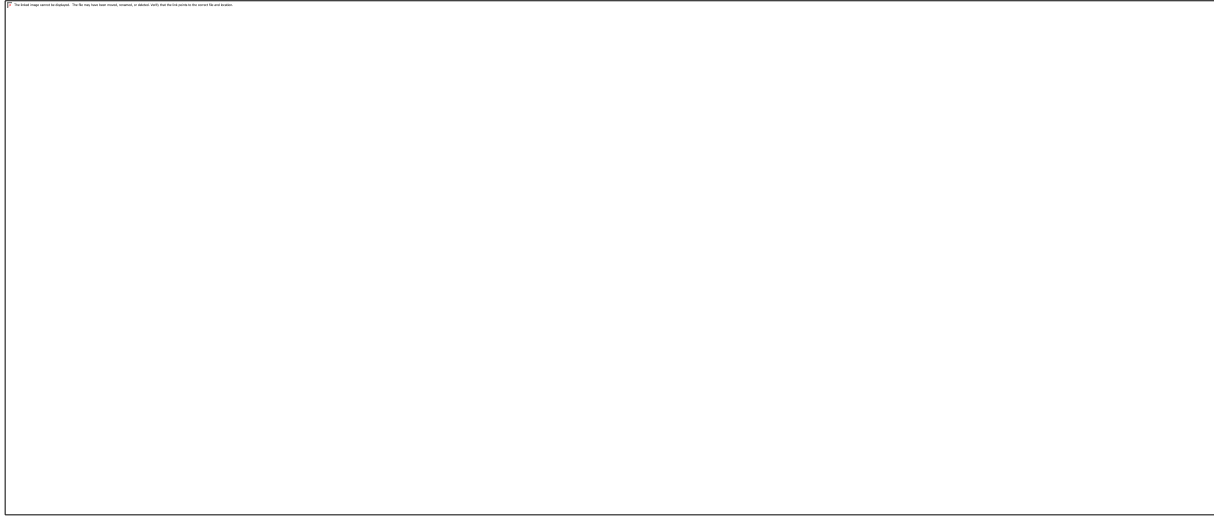
Methods

Nasopharyngeal swab specimens were prospectively collected from patients < 18 years with SCD and fever, over a 1-year period. Samples were tested with multiplexed-PCR to determine respiratory viruses (RV). Clinical characteristics, laboratory parameters and outcome were compared between patients with a viral infection and those with an SBI (patients with virus-bacteria co-infections were excluded).

Results

Thirty nine specimens were collected. Median age of patients was 4.6 years (IQR 2.7-7.2); 74.4% males. All patients were on penicillin prophylaxis and 87.2% were completely vaccinated. There was a RV isolate in 56.4% of the specimens (22/39), and in 70.8% (17/24) of samples from children with acute respiratory symptoms. The most frequently detected RV were human rhinovirus (27.3%), influenza (22.7%) and adenovirus (18.2%). Four patients (10.3%) had a confirmed SBI infection (2 episodes of bacteremia and 2 urinary tract infections), and another 10 patients (25.6%) had a suspected SBI. Children with a RV infection had more frequently acute respiratory symptoms, needed less supplemental oxygen, had lower C reactive protein and had less days of fever and hospitalisation than those children with confirmed or suspected SBI (table

1).



Conclusions

The detection of a RV in well-controlled children with SCD, especially if they have respiratory symptoms and low inflammatory parameters, may have important implications in their management.

EPOSTER DISCUSSION SESSION 24: INFECTIONS IN IMMUNOCOMPROMISED CHILDREN - STATION H

ESP17-0741

AN AUDIT OF CENTRAL LINE INFECTIONS IN A PAEDIATRIC HAEMATOLOGY-ONCOLOGY DEPARTMENT - DOES LINE SITE AFFECT THE RISK OF INFECTION?

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Background

Central line associated bloodstream infection (CLABSI) is a frequent cause of morbidity in paediatric haematology-oncology patients and is associated with significant healthcare costs. Monitoring of CLABSI rates is essential for benchmarking and improvement in quality of care. Currently in our unit prospective monitoring does not occur. Tunnelled central venous catheters (tCVC) are most commonly used and insertion site varies between arm and chest.

We aimed to determine a baseline rate of CLABSI, identify risk factors for infection and examine the differences in rates of infection between insertion sites.

Methods

A retrospective review of all patients with a tCVC inserted between 1st January 2009 and 31st December 2015 was undertaken. Infections were defined as possible, probable or definite, as per Centers for Disease Control and Prevention (CDC) guidelines. Logistic regression analysis was used to establish risk factors and Chi-squared tests to compare rates

Results

Out of 147 patients (mean age 6.5yrs; SD 4.5), 72 children had leukaemia and 75 solid tumours. Overall line infection rate was 0.65 per 1000 CVC days. Infection risk was higher in patients with haematological malignancy (OR 18.75; $p < 0.001$) and with double-lumen lines (OR 9.58; $p < 0.005$). Subgroup analysis of single-lumen lines and haematological malignancy showed a trend to lower rate of infection in arm lines (0.31 vs 1.03 per 1000 CVC days, $p = 0.06$). No change in infection risk was seen with age or neutropenia at insertion.

Conclusions

We observed a low rate of CLABSI. Risk factors for infection in our cohort were haematological malignancy and double-lumen line. For single-lumen arm lines, there is a very low rate of infection. Difference in infection rates with tCVC site has not previously been described, therefore prospective monitoring is required to explore this observation.

EPOSTER DISCUSSION SESSION 01: TUBERCULOSIS - STATION A

ESP17-0756

NEW QUANTIFERON-TB GOLD PLUS ASSAYS FOR THE DIAGNOSIS OF TUBERCULOSIS INFECTION AND DISEASE IN CHILDREN AND ADOLESCENTS – A SPANISH COHORT STUDY

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Background

The existing evidence for the use of QuantiFERON®-TB Gold Plus assays (QFT-Plus; Cellestis/Qiagen) in children is very limited. The assay incorporates only two tuberculosis(TB)-specific stimulatory peptides, but contains an additional antigen tube designed to detect CD8+ T-cell responses. We evaluated the performance of QFT-Plus for the diagnosis of TB infection and disease in children in a routine clinical setting in a low TB burden country.

Methods

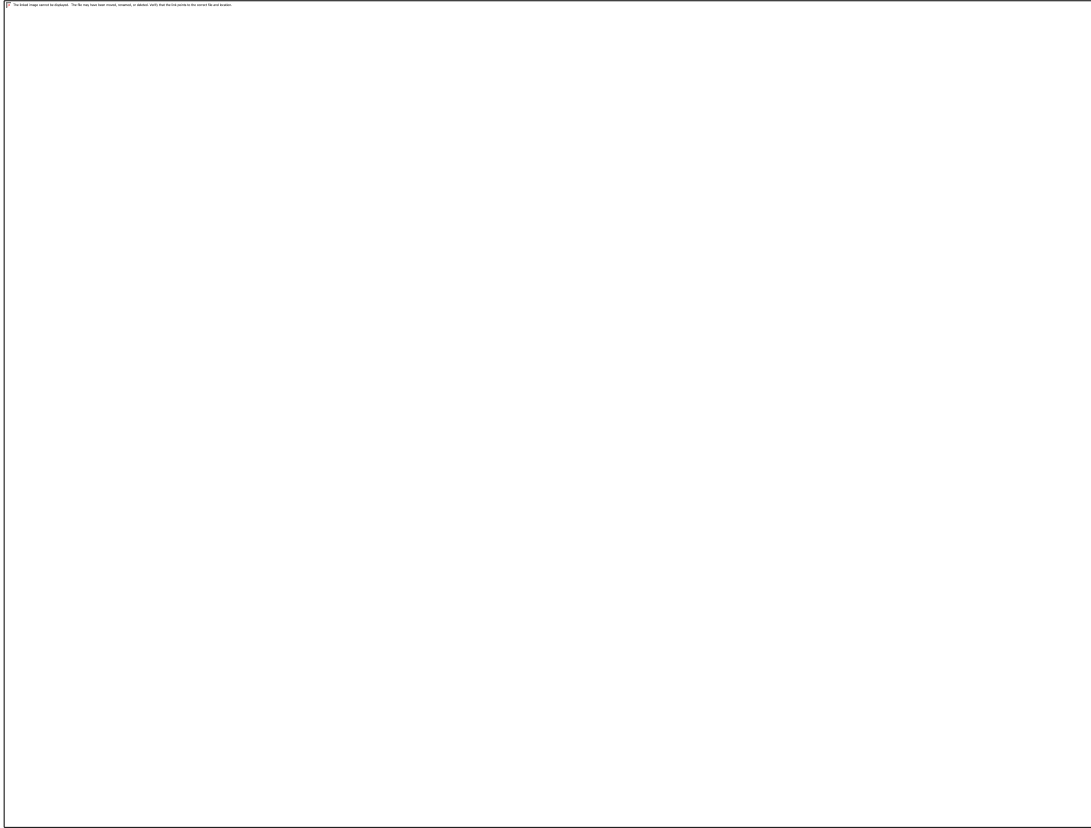
Prospective observational study in a consecutive series of paediatric patients at risk of TB at three tertiary referral units in Spain.

Results

Three-hundred QFT-Plus tests were performed in 283 children (52% male; median [IQR] age 8.7 [4.6-13.6] years), due to screening in immunosuppressed patients (45%), clinical and/or radiological suspicion of TB (27%), TB contact tracing (16%) or new-entrant screening (12%). In 128 patients, tuberculin skin tests (TST) were performed simultaneously.

Overall, 263 (92.9%) were TB-uninfected, 15 (5.3%) had latent TB infection (LTBI), and 5 (1.8%) had TB disease (result constellation of the latter two groups shown in **Table 1a**). Agreement between QFT-Plus and TST results was overall fair ($k=0.240$), but moderate ($k=0.417$) in children assessed after TB contact.

Indeterminate QFT-Plus results due to low mitogen response occurred in 8 (2.8%) children (6 immunosuppressed; all 8 TST-negative). Discordant results between the two QFT-Plus TB antigen-stimulated tubes occurred in 7 (2.3%) patients (**Table 1b**).



Conclusions

In this cohort of children and adolescents QFT-Plus/TST concordance was low, including in patients with LTBI and TB disease. From our data it remains uncertain whether QFT-Plus assays represent a significant improvement over the previous generation QFT assay (QFT-Gold In-Tube). Further data on the performance of QFT-Plus assays in children, particularly in patients with TB disease, are urgently needed.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 02: TROPICAL INFECTIONS - STATION B

ESP17-0757

RENAL FAILURE IN MALARIA CHILDREN: A PROSPECTIVE OBSERVATIONAL STUDY FROM BIKANER, NORTHWESTERN INDIA

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Background

there are scanty reports of acute malarial nephropathy in children with *Plasmodium vivax* mono-infection. This clinical observational study was conducted to evaluate the epidemiology, clinico-laboratory profile and prognosis of RIFLE criteria based acute malarial nephropathy associated with *P. vivax* in children in Bikaner.

Methods

This prospective cohort study was conducted on 376 admitted children of malaria from January 2013 to November 2016. The species diagnosis was made by peripheral blood film examination and rapid malaria tests and confirmed with PCR analysis. Malaria induced acute kidney injury was defined on RIFLE criteria. Other causes of acute nephropathy were ruled out thoroughly. Data were analysed by student *t*-test and ANOVA test.

Results

Sixty eight children (18.10%) had malaria induced acute kidney injury, in which proportion of *P. vivax*, *P. falciparum*, and mixed malaria was 65%, 5% and 75% respectively. Most common affected age was 5-10 years (45%). Most children developed acute kidney injury within 10 days of onset of disease. According to RIFLE criteria 38.33% children were in risk category (having urine output <0.5 ml/kg/hr for >6 hr), 56.66% children were in injury category (having urine output <0.5 ml/kg/hr for >12 hr) and 5% children were in failure category (having urine output <0.3ml/kg/hr for >24 hr). GFR <25ml/min was seen in 66% children. Creatinine level 1.5-3 mg/dl and >3mg/dl were seen in 91.66% and 8.33% children respectively. Haemodialysis was done in 7 children, out of which three survived. Most of the cases (75%) recovered within two weeks (range 4–20 days). Total mortality was 6.67%.

Conclusions

Although acute kidney injury can also be caused by *P. vivax* mono-infection, outcome is less severe as compared to *P. falciparum* mono-infection. Prognosis with *P. vivax* associated malarial nephropathy is good.

EPOSTER DISCUSSION SESSION 01: TUBERCULOSIS - STATION A

ESP17-0759

ADULT-TYPE PULMONARY TUBERCULOSIS IN CHILDREN AND ADOLESCENTS, A NESTED CASE-CONTROL STUDY FROM THE SPANISH NETWORK FOR PEDIATRIC TUBERCULOSIS

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Background

Cavitated or adult-type pulmonary tuberculosis (atPTB) is uncommon in the pediatric age. We aimed to evaluate the risk factors, outcomes and infectiousness of atPTB in children and adolescents in a low-burden TB country.

Methods

Nested case-control study performed within pTBred, a prospective cohort of pediatric patients (<18 years) diagnosed with TB in Spain (01/2014 until 12/2016). atPTB was defined as TB lung disease that associated cavitated images on chest X-ray at diagnosis. Four age-matched controls with non-cavitated pulmonary TB were selected for each case. Epidemiological, clinical, microbiological and infectiousness data were collected using Redcap© software and compared between groups.

Results

Overall, 9 cases and 36 controls were included (median age at diagnosis, 14.7y; 40.0% males), without gender differences between groups. Most of them were immigrants (53.3%), median time from arrival was 4.9 years.

When compared to controls, patients with atPTB had a lower body mass index ($p=0.0192$) and showed more often clinical or radiological manifestations consistent with TB at diagnosis ($p=0.0247$; mainly cough, weight loss and asthenia), and more often had a microbiologically-confirmed TB (100% vs 33.3%, $p=0.0051$) and received directly observed treatment (44.4% vs 8.3%, $p=0.0216$). No differences were observed in complications at diagnosis, extrapulmonary disease rates, TST induration diameter, drug resistance rates, length of treatment, adverse events or cure rates.

In atPTB patients, median(range) time to sputum smear conversion was 20(7-89) days. Median(range) of contacts that were assessed, diagnosed with latent TB or secondary TB cases were 44(2-104), 10(0-22), and 0(0-6), respectively.

Conclusions

Our results reflect flaws in the Spanish TB screening protocols for new immigrants as well a diagnostic delay of atPTB in adolescents, when these patients have already put their close contacts at risk of TB infection.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 08: INFECTION CONTROL AND AMBULATORY USE OF ANTIMICROBIALS - STATION H

ESP17-0760

ANTIBIOTIC USE IN ACUTE OTITIS MEDIA GUIDELINES: A REVIEW OF NATIONAL GUIDELINES

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Background and Objective

One of the main challenges in the management of acute otitis media (AOM) is how to minimise unnecessary antibiotic prescription to prevent rise of antimicrobial resistance whilst achieving optimal patient outcomes including the prevention of complications. Our objective was to compare different approaches to antibiotic administration in AOM as recommended by European and American guidelines.

Methods

A search for relevant guidelines was conducted via Medline, Embase, the Cochrane Library, SIGN, G-I-N, and TRIP and also through searching the websites of national paediatric associations. Additionally, paediatric colleagues from each country were contacted directly to check for completeness of the search and relevance of the guidelines obtained. Individual guidelines were then graded based upon AGREE II Criteria and key recommendations were tabulated. In order to compare guidelines, the levels of evidence used to make recommendations were converted to the Oxford Centre for Evidence Based Medicine Levels of Evidence (LOE).

Learning Points Discussion

- 19 guidelines from 13 countries were obtained.
- There has been a trend towards guidelines suggesting an observational approach whereby children are observed for the first 48-72 hours after presentation.
- There was significant variation in indications for immediate antibiotic treatment. The most frequent reasons included bilateral AOM in children age <2 years, severe illness (defined by fever and otalgia), and otorrhea.
- Based on the AGREE II criteria, guidelines scored between poor and excellent.
- The level of evidence available to inform recommendations was high but interestingly resulted in different recommendations between guidelines.

EPOSTER DISCUSSION SESSION 16: OTHER COMMUNITY ACQUIRED INVASIVE BACTERIAL INFECTIONS - STATION H

ESP17-0761

EPIDEMIOLOGY, CLINICO-LABORATORY PROFILE AND OUTCOME OF BRUCELLOSIS IN CHILDREN

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Background

Brucellosis has not been reported commonly in human because of unawareness about the disease owing to lack of suspicion and lack of diagnostic facilities. This prospective cohort study describes the epidemiology, clinico-laboratory profile and outcome of human brucellosis in children in Bikaner, northwestern India.

Methods

The diagnosis of active brucellosis was confirmed by demonstration of the raised brucella agglutination titre of $\geq 1:320$ in the serum. Detailed history related to the occupation and exposure to the known predisposing factors and presentation of the disease were noted. The possibilities of other disease/infections causing similar illness were investigated thoroughly and stringently.

Results

During last six years (2011-2016), 108 children with active brucellosis were admitted in children hospital, S.P.Medical College, Bikaner, India with a wide spectrum of clinical manifestations. The mean age was 8.8 ± 4.3 years (range 2-16 years) and boys were almost twice in number than girls (1.9:1). Fever (82.66%) was the commonest presenting feature (mean duration 17.6 ± 6.6 days). Joint pain was reported in 70.41% children and majority of them were having multiple joint pain. Sacroiliac joint (42.03%) and knee joint (31.88%) were commonly involved. Other modes of presentation were neurobrucellosis (19.38%), manifested as encephalomyelitis polyradiculoneuropathy and myeloradiculopathy; pulmonary involvement (7.14%) presented as pleural effusion; and cardiac involvement presented as infective endocarditis (3.06%). Analysis of risk factors revealed history of raw milk ingestion (91.84%), occupational contact with animals (30.61%) and household contact (16%). All children were treated with standard protocols according to age and respond well.

Conclusions

Brucellosis is an important emerging zoonotic disease presenting with protean manifestations. High degree of suspicion is crucial for diagnosis specifically in vulnerable group of society.

EPOSTER DISCUSSION SESSION 23: ADVANCES IN DIAGNOSIS OF INFECTION - STATION G

ESP17-0768

COMPARATIVE EVALUATION OF ILLUMIGENE® CMV ASSAY AND REAL TIME COMMERCIAL KIT FOR THE NEONATAL SCREENING OF CONGENITAL CMV INFECTION IN SALIVA SAMPLES

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Background

The screening of newborns for congenital cytomegalovirus (cCMV) infection soon after birth before hospital discharge, is very helpful in order to start the follow up monitoring of infected infants.

Methods

We evaluated a new molecular assay, *illumigene*® CMV, for the screening of cCMV infection in saliva samples, compared with a commercial real time-PCR (ELITechGroup Molecular Diagnostics, Italy).

The *illumigene*® CMV (Meridian Bioscience Inc., OH, USA) is a rapid method that provides results within 40 minutes by sample treatment using lysis buffer to release nucleic acid and amplification with LAMP technology.

Results

Thirty-six saliva specimens were collected with dried swabs (FLOQSwabs, Copan, Italy) from 17 CMV-infected infants between the ages of 1 day and 48 months (median 4.5 months). Eleven out of 17 were asymptomatic and no antiviral treatment was necessary, while one newborn had mild and fluctuating hearing loss and did not require treatment. Finally, 5 infants had severe symptoms and underwent valganciclovir treatment. For 13/17 infants maternal data were as follows: 11 mothers had primary and 2 non primary CMV infection during pregnancy. The following table summarizes the results obtained with both molecular assays in 36 saliva samples. Among the 6 negative samples, 4 were collected when infant underwent therapy with valganciclovir; two samples belong to children who were older than 4 years old. The sensitivity and the specificity of the *illumigene*® assay were both 100%.

	CMV Real Time PCR	
	positive	negative
illumigene CMV positive	30	0
negative	0	6

Conclusions

These preliminary and promising findings prompted us to increase the number of samples for further evaluation of *illumigene*® CMV as a molecular assay for the screening of cCMV programs.

EPOSTER DISCUSSION SESSION 08: INFECTION CONTROL AND AMBULATORY USE OF ANTIMICROBIALS - STATION H

ESP17-0771

CATHETER SALVAGE STRATEGY FOR LONG-TERM CENTRAL VENOUS CATHETER-ASSOCIATED STAPHYLOCOCCUS AUREUS INFECTIONS IN CHILDREN

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Background

Current international guidelines strongly recommend catheter removal in case of *Staphylococcus aureus* central-line associated bloodstream infection (CLABSI), but a catheter salvage strategy (CSS) may be considered in children given anatomical specificities and insertion difficulties. No data is available regarding the outcome of CSS for *S. aureus* CLABSI in children.

Methods

We retrospectively analyzed data from 2010 to 2014 on all children <18 years having a *S. aureus* CLABSI on a long-term CVC in a tertiary hospital. We defined CSS as a CVC not removed and left ≥ 3 days after the clinical suspicion of CLABSI, and CSS failure as persistence or relapse of bacteremia with a *S. aureus* strain having the same antibiotic susceptibility pattern, or the occurrence or the worsening of local or systemic infectious complications between 72 hours and 28 days after the first positive blood culture.

Results

During the study period, 47 *S. aureus* CLABSI were observed in 39 children (including 62% with long-term parenteral nutrition) and 6 (13%) isolates were resistant to methicillin. At the time of CLABSI diagnosis, local inflammatory signs, severe sepsis, and septic thrombophlebitis were observed in 28%, 17%, and 6% of cases, respectively. A CSS was decided in 36 (77%) cases and failed in 11 (31%). No fatal case was reported. Presence of severe sepsis ($p=0.04$) or bloodstream co-infection ($p=0.03$) at the time of diagnosis, and empiric daptomycin monotherapy ($p=0.01$) were significantly associated with CSS failure. All of the 11 cases of failed CSS had at least one of these factors or a complication at the time of diagnosis.

Conclusions

CSS of *S. aureus* CLABSI on a long-term CVC was frequent in the studied hospital, and failed in one third of cases.

EPOSTER DISCUSSION SESSION 09: HOST-PATHOGEN INTERACTION - STATION A

ESP17-0780

OXIDATIVE STRESS AND INFLAMMATION IN CEREBROSPINAL FLUID IN CHILDHOOD BACTERIAL MENINGITIS

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Background

Reactive oxygen and nitrogen species (ROS, RNS) are formed in neutrophils and macrophages as a part of the host immune response to bacterial infection. As a consequence, irreversible oxidative damage to proteins is seen; 3-NO₂-Tyrosine (3NO₂-Tyr) and 3-Chloro-Tyrosine (3Cl-Tyr) being biomarkers of nitrosative and oxidative damage, respectively. In addition, 3Cl-Tyr is a marker of inflammation indicating activation of myeloperoxidase (MPO), an inflammatory enzyme. Oxidative stress in bacterial meningitis (BM) is poorly studied. The aim of this study was to find biomarkers of oxidative stress and inflammation in the cerebrospinal fluid (CSF) of children with BM.

Methods

Biomarkers of protein oxidation (o-Tyr, 3Cl-Tyr, 3NO₂-Tyr) and the physiological end product of phenylalanine oxidation (p-Tyr) were measured in CSF of children from BM study realized in Luanda, Angola 2005-2008. CSF samples were analyzed by UPLC-MS/MS system.

Results

On admission, the ratio of 3Cl-Tyr/Phenylalanine in CSF was raised in children with BM (N=78) compared with children without BM (N=4) (median 0.00038 vs. 0.00002; p= 0.001). The ratio of 3NO₂-Tyr/Phenylalanine did not increase. There was a significant difference in the ratio of 3Cl-Tyr/Phenylalanine among patients with BM caused by *Streptococcus pneumoniae*, *Haemophilus influenzae* type b, and *Neisseria meningitidis* (median 0.001, 0.00003, and 0.00017, respectively, p=0.0031).

Conclusions

These preliminary results, limited by the small size of the non-BM group, show for the first time highly significant pro-inflammatory status (3Cl-Tyr/Phenylalanine) in CSF of BM patients on admission. *S.pneumoniae* caused higher median ratio of 3Cl-Tyr/Phenylalanine than other bacteria suggesting more severe inflammation.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 06: SEVERE BACTERIAL INFECTIONS - STATION F

ESP17-0789

ROLE OF PANTON VALENTINE LEUKOCIDIN IN STAPHYLOCOCCUS AUREUS SKIN AND SOFT TISSUE AND OSTEOARTICULAR INFECTIONS IN CHILDREN

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Background

Staphylococcus aureus (SA) is the main pathogen involved in skin and soft tissue infections (SSTI) and osteoarticular infections (OAI) in children. In the last decade Panton Valentine Leukocidin (PVL) producing SA prevalence increased worldwide. We investigated the role of PVL in SA SSTI and OAI in children.

Methods

All pediatric patients with SA SSTI and OAI observed at Meyer Children's University Hospital from December 2012 to November 2016 were included in the study. This study was supported by Grant RF-2010-2316179 from Italian Ministry of Health.

Results

A total of 109 patients (median age 100 [IQR: 29-148.5] months; male 59.6%) were included in the study. PVL were found in 60 (55%) patients. Table summarizes characteristics of patients according to presence of PVL. Methicillin-resistance was observed in 38.3% of PVL-positive SA vs. 18.4% of PVL-negative ($p=0.019$), clindamycin-resistance in 23.3% vs. 16.3% ($p=0.254$), cotrimoxazole-resistance in 8.3% vs. 2% ($p=0.157$), rifampicin-resistance in 3.3% vs. 2% ($p=0.774$).

Variable	PVL-positive n° (%)	PVL-negative n° (%)	OR	95% CI	p
Family history	25 (42,4)	1 (2,1)	34.559	4.463-267.621	< 0.001
Nosocomial infections	0 (0,0)	15 (30,6)	0.694	0.576-0.836	< 0.001
Purulent infections	49 (81,7)	6 (12,2)	31.924	10.888-93.606	< 0.001
Recurrent infections	31 (51,7)	6 (12,2)	7.661	2.838-20.678	<0.001
Invasive infections	3 (5,0)	5 (10,2)	0.463	0.105-2.044	0.252
Hospital admission	19 (31,7)	32 (65,3)	0.246	0.110-0.549	0.001
ICU admission	1 (1,7)	2 (4,1)	0.398	0.035-4.528	0.587
Surgery	7 (11,7)	7 (14,3)	0.792	0.258-2.436	0.777

Conclusions

PVL was isolated in more than half of patients with SA SSTI and OAI. Considering characteristics of PVL-positive infections and antimicrobial susceptibility results, cotrimoxazole and rifampicin should be considered the preferential treatment option in community acquired recurrent infections.

EPOSTER DISCUSSION SESSION 09: HOST-PATHOGEN INTERACTION - STATION A

ESP17-0803

THE ANTI-PROLIFERATIVE EFFECT OF RSV ON CD4 T CELLS IS DEPENDENT ON IFN- β AND REDUCED IN NEWBORNS

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Background

Type I IFNs are key regulators of the adaptive immune response during infections, including RSV infections. Interferon beta (IFN- β) is a type I IFN that can lead to divergent intracellular pathways, both activating and inhibitory. Although T-cell-mediated immunity is considered to be immature in newborns, it is unknown whether the immune regulation by RSV and IFN- β on newborn T cells is different compared to adults.

Methods

Mononuclear cells or isolated CD4⁺ T cells from cord blood and adult peripheral blood were exposed to RSV or IFN- β . The anti-proliferative effect was determined by CFSE-labeling. The IFNAR-dependent cascade, including IFNAR expression, STAT1 phosphorylation, transcription factors, induction of c-MYC (oncogene) versus p21 (anti-proliferative gene) and the phosphorylation of retinoblastoma were measured after exposure of CD4⁺ T cells to IFN- β .

Results

RSV and IFN- β have an anti-proliferative effect on CD4⁺ T cells that is reduced in newborns. The oncogene c-MYC is highly induced in newborns compared to adults after exposure to IFN- β , whereas the anti-proliferative gene p21 is not. Signaling upstream of c-MYC gene expression such as IFNAR expression and STAT1 phosphorylation were comparable between newborn and adults. Downstream signaling of c-MYC such as induction of p21 and the suppression of retinoblastoma and proliferation were reduced in newborn CD4⁺ T cells.

Conclusions

The anti-proliferative effect of RSV and IFN- β on CD4⁺ T cells is reduced in newborns. Stepwise analysis reveals that IFN- β -mediated differences in newborns arise at the gene expression level. As a result, downstream signaling of c-MYC that lead to the anti-proliferative effect of IFN- β is reduced in newborn CD4⁺ T cells. The distinct IFN- β -signaling in newborns will give novel insights into the ontogeny of T cells during early life immune responses such as RSV infections.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 12: PUBLIC HEALTH: VIRAL INFECTIONS - STATION D

ESP17-0807

CELL MEDIATED IMMUNITY AGAINST VARICELLA-ZOSTER VIRUS WITH AND WITHOUT UNIVERSAL VARICELLA IMMUNIZATION. A COMPARISON BETWEEN GREECE AND BELGIUM

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Background

Varicella-zoster virus (VZV) infection and vaccination induce VZV- specific antibody and T cell-mediated immunity (CMI), which both may be boosted endogenously and/or by exogenous re-exposure. When CMI declines, VZV reactivation can cause herpes zoster (HZ). Universal VZV vaccination is implemented in Greece since 2005 but not in Belgium. Potential increase in HZ following universal VZV vaccination remains controversial. We aimed to examine how differences in boosting opportunities impact VZV responses.

Methods

340 age-matched subjects were recruited, including children (108), adolescents (78), parents (85) and elderly (69). Belgian population and Greek adults had history of medically diagnosed chickenpox, while Greek children either had a history of medically diagnosed chickenpox or had received two doses of VZV-vaccine. Peripheral blood mononuclear cells (PBMCs) and serum were cryopreserved in liquid nitrogen and -80°C, respectively. PBMC were stimulated with VZV peptide mixes. CMI was assessed using interferon- γ /Interleukin-2 Fluorospot. IgG titration was performed against VZV and CMV. Statistical analyses included zero-inflated negative binomial regression in R.

Results

No statistical significant differences were detected between Greek and Belgian adolescents. Belgian children had higher IFN- γ responses against VZV IE63 and gE, but lower IL-2 responses compared to Greek vaccinated children. Belgian children also had higher VZV IE63 responses compared to Greek naturally infected children. Belgian elderly population had higher IFN- γ IE63 responses compared to Greek elderly population. Vaccinated Greek children had lower VZV IgG than Greek children after natural infection. CMV-seropositive parents were more likely to have no measurable VZV CMI response than CMV-seronegative parents.

Conclusions

Our results suggest that individuals residing in an area where universal VZV vaccination has been implemented present with reduced IFN-g responses against VZV compared to individuals from a country where wild virus prevails.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 10: VACCINATION PROGRAMMES INCLUDING PNEUMOCOCCAL IMPACT - STATION B

ESP17-0809

INTEGRATED SAFETY PROFILE OF A NEWLY APPROVED, FULLY-LIQUID DTaP5-HB-IPV-HIB VACCINE

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Background

DTaP5-HB-IPV-Hib is a fully-liquid, combination vaccine containing a 5-antigen pertussis component. It is newly approved in Europe (vaxelis™) for vaccination in infants and toddlers against diphtheria, tetanus, pertussis, hepatitis B, poliomyelitis and invasive diseases caused by *Haemophilus influenzae* type b (Hib). Six studies conducted in US and Europe formed the basis of licensure. The comparator vaccine was INFANRIX™ hexa (DTaP3-IPV-HB/Hib) in European studies and PENTACEL™ (DTaP5-IPV/Hib) in US studies.

Methods

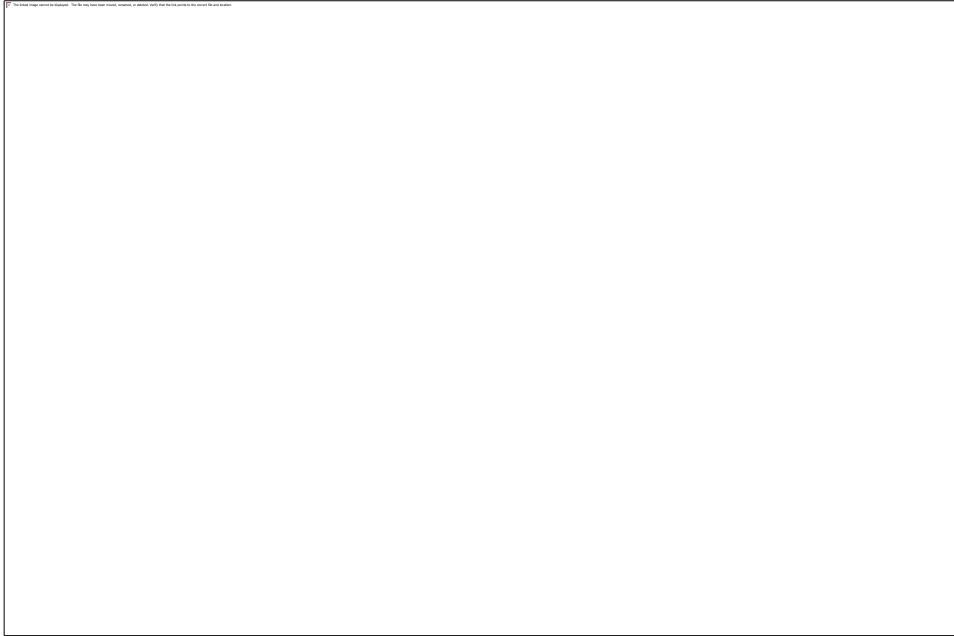
Data from six studies were integrated and analyzed to provide a comprehensive safety profile of the new vaccine. Numbers and proportions of subjects with adverse events (AE) were summarized by treatment group. Group differences in proportion of AE were calculated by Miettinen and Nurminen method, adjusting for study.

Results

The overall clinical AE summary from 5223 subjects from Group 1 (DTaP5-HB-IPV-Hib) and 2295 from Group 2 (control) shows that solicited injection-site and systemic AEs after any dose were very common in both groups. Serious AEs occurred in only 3.9% subjects for Group 1 and 3.7% for Group 2. Vaccine-related serious AEs occurred infrequently, 0.2% for both groups. Most AEs were mild-to-moderate and did not lead to subject withdrawal.

In analysis of all studies, group differences for individual solicited systemic AEs were small (<3%) and not statistically significant, except for pyrexia (estimated difference 9.4% [95% CI: 6.7%, 12%]). In analysis of only European studies, there was no significant difference in rates of pyrexia between DTaP5-HB-IPV-Hib and

INFANRIX™ hexa.



Conclusions

The safety of DTaP5-HB-IPV-Hib is consistent with the safety profile of its components and similar to comparator vaccines, including INFANRIX™ hexa. It provides a new, fully-liquid, and convenient hexavalent vaccination option for use with various vaccination schedules in Europe.

Systematic Review Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 23: ADVANCES IN DIAGNOSIS OF INFECTION - STATION G

ESP17-0817

UTILITY OF INFLAMMATORY MARKERS IN PREDICTING VIRAL AND BACTERIAL INFECTION.

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Background

Besides individual host responses, there is increasing evidence that several different causal microorganisms may trigger different inflammatory responses, and levels of several markers are associated with different etiological patterns. The aim of our study is to analyse the utility of inflammatory markers in differentiating viral and bacterial infection.

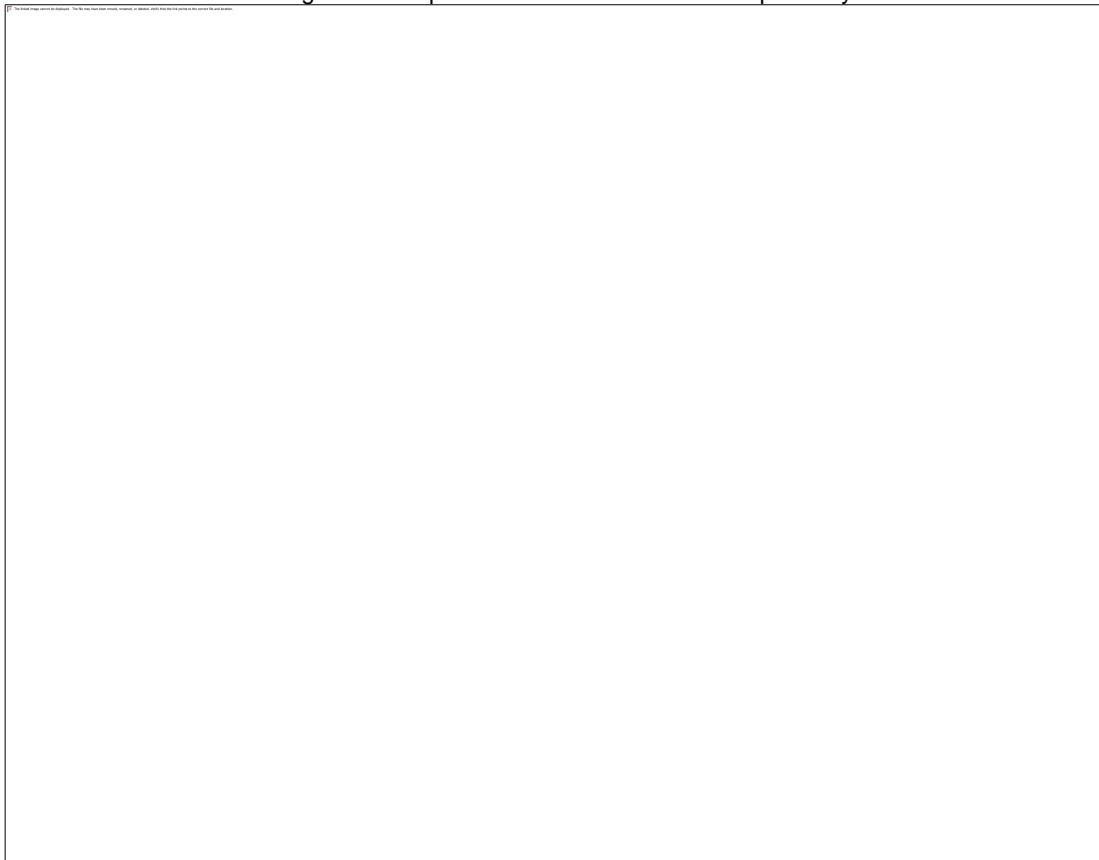
Methods

Retrospective study in which pediatric patients hospitalized with microbiological isolates and defined clinical syndromes were analyzed for leukocytosis, neutrophilia, C-reactive protein (CRP) and procalcitonin (PCT).

Results

406 patients were included and classified according to the clinical syndrome: acute gastroenteritis (24), bronchiolitis (89), meningo-encephalitis (37), osteomyelitis (24), pneumonia (64), sepsis (112), septic arthritis (14) and soft tissue infections (42); and to isolated microorganisms: *Staphylococcus aureus* (16), Group A *Streptococcus* (11), *Neisseria Meningitidis* (51), *Streptococcus pneumoniae* (32), respiratory syncytial virus (59) and rotavirus (24). Sepsis, osteomyelitis and soft tissue infections showed the highest CRP and PCT values. The microorganism that managed to achieve the highest increase of all inflammatory markers was *Pneumococcus* regardless of the syndrome, followed by meningococcus and *S.pyogenes*. As a diagnostic tool, leukocytosis >15.000/mm³ represents a positive predictive value (PPV) of 69% for bacterial infection, as well as, neutrophilia

>12.000/mm³ and PCT >2ng/mL that represent 94% and 96% PPV respectively.



Conclusions

PCT and neutrophilia levels are the best discriminating markers. Both PCR and PCT can be considered useful markers in osteomyelitis and sepsis. The microorganisms with the highest correlation with the analyzed variables are meningococcus and pneumococcus. The combination of inflammatory markers, according to the clinical síndrome, may allow to predict the etiological cause but they are not sufficiently efficient in an independent way, reason why new markers with greater capacity of prediction are still needed.

EPOSTER DISCUSSION SESSION 03: ANTIMICROBIAL RESISTANCE AND PHARMACOLOGY - STATION C

ESP17-0828

PHARMACOKINETICS OF COLISTIN IN CHILDREN

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Background

Limited pharmacokinetic (PK) data in young children suggest that, when colistimethate sodium (CMS) is administered at doses of $\leq 200,000$ IU/kg/day, peak serum colistin concentrations may not reach $2 \mu\text{g/ml}$ (MIC breakpoint for susceptibility of *Pseudomonas aeruginosa* and *Acinetobacter baumannii*). We herein present preliminary PK results of CMS administration in pediatric patients at dosages $\geq 200,000$ IU/kg/day q8h.

Methods

Patients receiving iv CMS for infections caused by multi-drug resistant Gram-negative bacteria were enrolled, aged i) 1mo-2yrs, ii) 3-8yrs and iii) 9-14yrs old, and dosed at i) 200,000, ii) 300,000, and iii) 350,000 IU/kg/day in 3 divided doses. Blood samples were collected immediately before and 30, 60, 90, 120, 240, 360 min after the end of infusion of the 1st and 5th dose of CMS; samples were immediately centrifuged and serum maintained at -80°C . Colistin concentrations were determined by liquid chromatography-tandem mass spectrometry. Toxicity was assessed through physical examination and monitoring of liver and kidney function.

Results

Serum colistin concentrations were determined in 7 patients enrolled. One patient, 32mo old, received 200,000 IU/kg/day with C_{max} $3.7 \mu\text{g/mL}$ and C_{min} $0.3 \mu\text{g/mL}$ at steady state. 5/7 patients received 300,000 IU/kg/day, 3 aged 1mo-2yrs with mean (range) C_{max} $5.7(2.2-8.7) \mu\text{g/mL}$ and C_{min} $1.8(0.2-3.5) \mu\text{g/mL}$, and 2 aged 3-8yrs with C_{max} $4.7(2.7-6.7) \mu\text{g/mL}$ and C_{min} $0.8(0.2-1.4) \mu\text{g/mL}$. One patient, 5mo old, received 350,000 IU/kg/day with C_{max} $20.8 \mu\text{g/mL}$ and C_{min} $2.8 \mu\text{g/mL}$. No neurotoxicity or nephrotoxicity were noted.

Conclusions

These preliminary results suggest that with higher CMS doses, serum colistin concentrations reach the level of $2 \mu\text{g/mL}$, without significant toxicity. Significant inter-patient variability may be a problem. CMS PK may become non-linear at doses $>300,000$ IU/kg/day.

Acknowledgments

Funded by Action 'Aristeia II' of the Operational Program 'Education and Lifelong Learning' of the European Social Fund and the Greek State.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 11: VACCINES: VIRAL IMPACT AND NON-SPECIFIC EFFECTS - STATION C

ESP17-0831

IMPACT OF A VACCINATION PROGRAMME IN CHILDREN VACCINATED WITH PROQUAD (MMRV VACCINE) AND PROQUAD-SPECIFIC EFFECTIVENESS AGAINST VARICELLA IN THE VENETO REGION OF ITALY

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Background

Monovalent varicella vaccines have been available in Veneto, Italy since 2004. In 2006, a single dose varicella vaccination program (VP) was offered to children age 14 months. ProQuad® (Merck & Co, United States), a quadrivalent measles-mumps-rubella-varicella vaccine, was introduced in May 2007 and used, among other varicella vaccines, until October 2008. The study aimed to evaluate the effectiveness of a single dose of ProQuad and the population impact of the VP on varicella of any severity in children who received a first dose of ProQuad at 14 months of age.

Methods

All children born in 2006-2007, i.e., eligible for varicella vaccination after ProQuad was introduced, were retrospectively followed through individual-level data linkage between the Pedianet database (varicella cases) and the Regional Immunization Database (vaccination status). Direct effectiveness of ProQuad was estimated as the incidence rate of varicella in ProQuad-vaccinated children less than 6 years of age compared to children with no varicella vaccination from the same birth cohort. Three vaccine impact measures of the VP on varicella incidence were estimated by comparing children eligible for the VP to an unvaccinated historical cohort from 1997-1998: total effect (the combined effect of ProQuad vaccination and being covered by the Veneto VP); indirect effect (the effect of varicella vaccination in unvaccinated individuals); and overall effect (the effect of the VP on varicella in the entire population, regardless of vaccination status).

Results

The adjusted direct effectiveness of ProQuad was 94%. The vaccine impact measuring total, indirect, and overall effect was 97%, 43%, and 90%, respectively.

Conclusions

This study provides the first data on the effectiveness and impact of ProQuad against varicella and confirms its high effectiveness against varicella as a single dose vaccine.

EPOSTER DISCUSSION SESSION 06: SEVERE BACTERIAL INFECTIONS - STATION F

ESP17-0835

PERTUSSIS IN THE 21ST CENTURY. EPIDEMIOLOGY AND RISK FACTORS ASSOCIATED WITH WORSE OUTCOME.

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Background

Pertussis is an important and frequent disease in our environment, causing significant morbidity, and in certain cases, mortality. This study aimed to determine risk factors associated with severe pertussis in hospitalized children. Severe cases were defined as those requiring admission to the pediatric intensive unit care (PICU).

Methods

This retrospective and observational study evaluated children hospitalized under one year of age with laboratory confirmed pertussis during the last 10 years (October 2006 - May 2016). Variables assessed included demographics, clinical symptoms and relevant medical and immunization history.

Results

One hundred and one hospitalized children under one year of age were enrolled. Median age was 2 [1-4] months; 48 (47.5%) were males. Thirteen children (13%) were admitted to the PICU and, therefore, classified as having a severe disease.

Children admitted to PICU were more frequently younger than 2 months of age ($p=0.03$) and presented higher CRP ($p=0.01$), higher leukocyte count ($p=0.001$), higher neutrophil count ($p=0.03$), and higher lymphocytes ($p=0.003$). Apnea was also associated with PICU admission (67 vs 28%; $p=0.01$) as well as not having received any dose of pertussis vaccination (92 vs 42%; $p=0.09$). RSV detection was positive in 7/34 children (20.6%), but was not linked to severe cases.

Conclusions

A significant proportion of infants with pertussis developed severe disease and had to be admitted to PICU. These patients were more frequently younger than 2 months, developed apnea more frequently and had higher level of leukocytes, lymphocytes, neutrophils and CRP. Prevention of pertussis in young infants should be a priority.

EPOSTER DISCUSSION SESSION 15: OTHER COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION G

ESP17-0847

VALIDATION OF A CLINICAL RESPIRATORY SCORE (THE RESVINET SCALE) IN PEDIATRIC PATIENTS SUFFERING FROM RESPIRATORY INFECTION IN A PRIMARY CARE SETTING

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Background

The ReSVinet Scale has been previously validated for its use in hospitalized children younger than two years of age, allowing parents to assess the severity of a respiratory disease in a way that can be compared to that of a clinician. Our aim was to validate the same tool for its use in milder infections in a Primary Care setting.

Methods

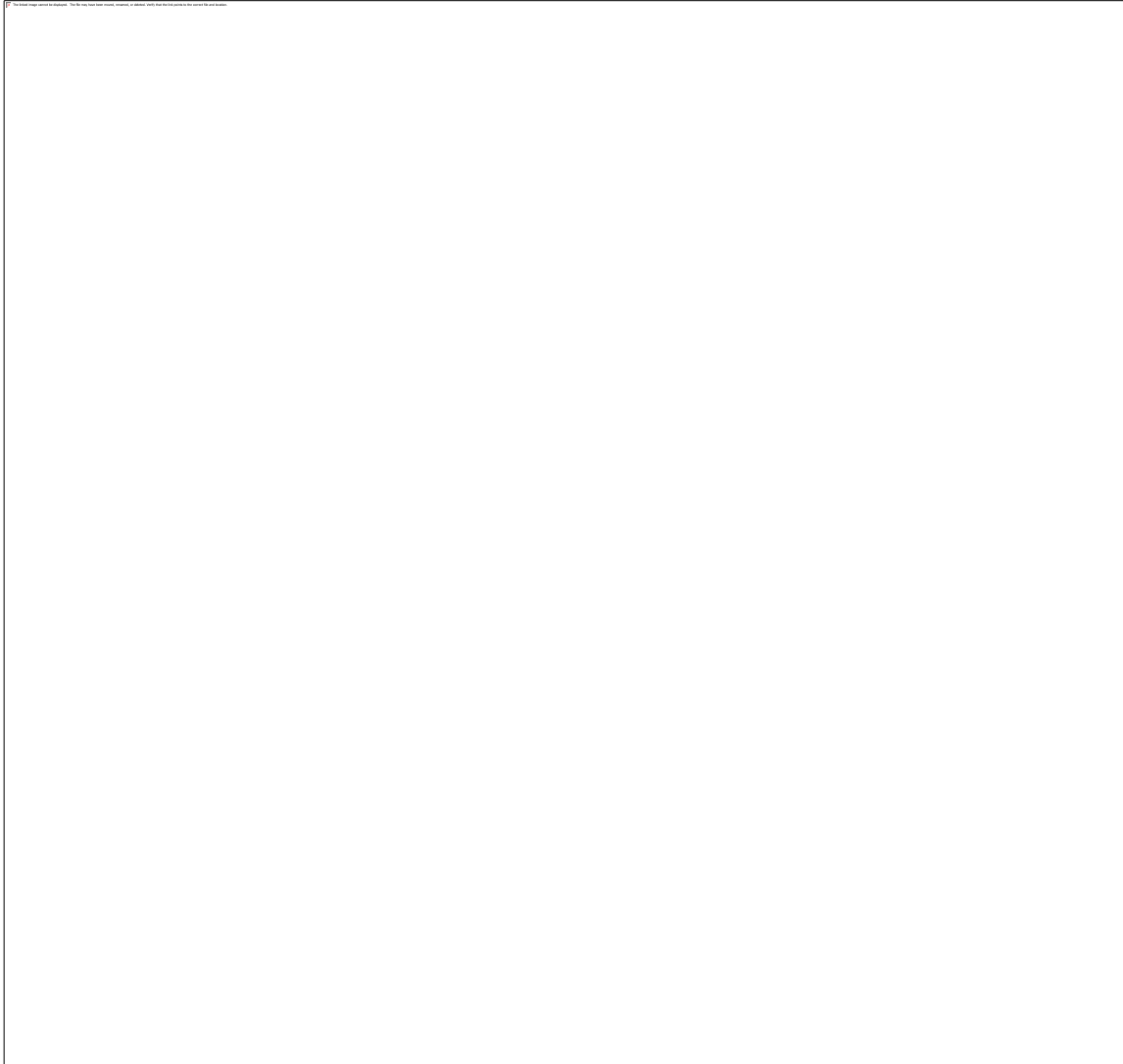
Eleven general pediatricians employed the ReSVinet Scale (seven items- feeding intolerance, medical intervention, respiratory difficulty, respiratory frequency, apnoea, general condition and fever) to assess 245 children with respiratory infection ranging from 1 month to 14 years. Parents independently evaluated their children at the same time using an adapted version of the Scale.

Internal consistence was measured using Cronbach's alpha for each of the two groups of observers (clinicians/parents). Interobserver reliability was assessed with weighted Kappa index. Pearson correlation coefficient was used to calculate the correlation of values reported by the two groups. As outcomes of severity we tested the correlation between the ReSVinet Score and the Wood-Downes Score (Pearson correlation coefficient), and referrals to an Emergency Department.

Results

Cronbach's alpha was 0.644 for physicians and 0.68 for parental assessments. Interobserver reliability between parents and physicians was acceptable (0.716). The correlation between total values reported by both groups

was strong ($r= 0.77$, $p<0.001$). The correlation between the total ReSVinet score and the Wood-Downes Score was $r= 0.57$ ($p < 0.0001$). No patient was referred to an Emergency Department.



Conclusions

Results obtained suggest that the ReSVinet Score could also be a useful tool for assessing children with milder respiratory infections presenting in Primary care, allowing parents the evaluation of their children in a way that can be reliably compared to those of a clinician.

EPOSTER DISCUSSION SESSION 02: TROPICAL INFECTIONS - STATION B

ESP17-0850

P. FALCIPARUM IN IMMUNOCOMPROMISED CHILDREN UNDER 5 YEARS OLD IN KWAHU-SOUTH, GHANA; ARE THERE MISSED INFECTIONS?

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Background

Malaria in sub-Saharan Africa causes about 3,000 child deaths each day. In Ghana, where malaria and HIV geographically overlap about 20,000 children die from malaria annually and estimated 34,557 children are living with HIV. *P. falciparum* is the most dominant species and causes the most severe clinical manifestations. Ghana is a resource-limited country where RDTs are fast becoming a common diagnostic tool as a faster, easier and cheaper alternative, rivaling gold standard microscopy. This prospective survey compared RDT and light microscopy to PCR among children under 5 years living with HIV.

Methods

This study, part of a larger study, compared the performance of First Response® Malaria Ag *P. falciparum* (HRP2) malaria rapid diagnostic test kit (RDT) and expert microscopy in diagnosing *P. falciparum* malaria in HIV positive and HIV negative people under the age band of under 5 years, using real time PCR as the gold standard. In microscopy, at least 100 high power fields were examined before a slide was reported as negative.

Results

Out of the 92 under 5 year olds living with HIV 8 (8.7%) had malaria. Of these, 6 (75%) were not on cotrimoxazole prophylaxis. Sensitivity of light microscopy was higher (94%) than that of RDT (83); specificity was 75% and 81% respectively. However, a chi-square test of the diagnostic tools did not show any significant difference ($p=0.13$) between them with regard to malaria detection.

Conclusions

Both RDT and light microscopy can detect *P. falciparum* malaria in this population. Microscopy may continue to be the first choice of diagnostic tool in this setting, but the use of easier, cheaper and faster RDT which requires less expertise may still be encouraged as it also provides comparable results.

EPOSTER DISCUSSION SESSION 08: INFECTION CONTROL AND AMBULATORY USE OF ANTIMICROBIALS - STATION H

ESP17-0858

EVALUATION OF THE EFFECTIVENESS OF THE HAND HYGIENE COMPLIANCE MONITORING SYSTEMS IN HEALTH CARE ASSOCIATED INFECTIONS

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Background

Health care-associated infection (HCAI) is one of the most important causes of mortality and morbidity worldwide, with approximately 2 million infections and 100,000 deaths per year. HCAs cause the prolonged hospitalization duration and increase the cost of hospitalization. Hand-hygiene is the most effective method to prevent HCAs. However hand-hygiene compliance is 33-65 % in health care providers.

Methods

This study aims to evaluate and compare HCAI surveillance using conventional hand-hygiene and electronic hand hygiene recording and reminder system in anesthesia and reanimation intensive care unit. HCAI surveillance was recorded in anesthesia and reanimation intensive care unit from April 2016 to August 2016 in Marmara University Pendik Research and Training Hospital. Hand hygiene compliance was observed by conventional methods in the first two months and electronic hand hygiene registration and reminder system in the second two months.

Results

During in this study 248 patients were observed in four months. Carbapenemase-resistant Enterobacteriaceae rate was 41.7% in conventional hand-hygiene observation and 40.7% in electronic hand hygiene recording and reminder system and the difference was not statistically significant (p: 0.531). The nosocomial infection rate in April 2016 was 55.3%, in May 2016 47.8%, in June 2016 was 32,3%, and in July 2016 was 24.1%. The ventilator-associated pneumonia rate was 29.1% in conventional hand-hygiene observing and 19.7% in electronic hand hygiene recording and reminder system. The central-line associated bloodstream infection rate 25.4% in conventional hand-hygiene observing and 10.6% in electronic hand hygiene recording and reminder system.

Conclusions

As a conclusion, electronic hand hygiene recording and reminder system can reduce health-care associated infections

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 10: VACCINATION PROGRAMMES INCLUDING PNEUMOCOCCAL IMPACT - STATION B

ESP17-0863

VACCINE-PREVENTABLE MENINGITIS IN CHILDREN IN FRANCE FROM 2011 TO 2013

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Background

France is one of the countries where vaccine hesitancy is the highest and vaccination coverage is declining. Many cases of childhood bacterial meningitis can be prevented with vaccines. The aim of this study was to determine the number of vaccine-preventable meningitis or purpura fulminans in children not vaccinated or with an incorrect vaccination status according to the French immunization schedule.

Methods

From January 2011 to December 2013, we analyzed all cases of vaccine-preventable meningitis and purpura fulminans in children aged <18 years, reported by the national network of bacterial meningitis in children of the Pediatric Infectious Diseases Group of the French Pediatric Society (GPIP/ACTIV). A capture-recapture study showed that this network covers 64% of children meningitis occurring in France. We analyzed vaccination status according to the age and the French immunization schedule.

Results

49 children had an incorrect vaccination status for the bacterial species implicated: 27 *N. meningitidis* group C (55%); 19 *S. pneumoniae* (39%); 3 *H. influenzae* b cases (6%) and none *M. tuberculosis*. The median age was 2.6 years old. We reported 3 deaths: 1 due to *N. meningitidis* group C (age 16.1 years) and 2 due to *S. pneumoniae* (ages: 6.1 months and 3.6 years). Thirty six patients (73%) had received no injection of the vaccine concerned, 7 (14%) had missed one injection and 6 (12%) had a vaccination delay.

Conclusions

During these 3 years-study, 49 bacterial meningitis of which 3 deaths could have been avoided if the vaccination schedule had been followed. As the network GPIP/ACTIV covers about 64% of the children meningitis in France, we can admit that 49 is a minimum and even more cases could have been prevented with correct vaccination. Improving vaccination coverage must be a priority.

EPOSTER DISCUSSION SESSION 13: PUBLIC HEALTH: BACTERIAL INFECTIONS AND CLINICAL EPIDEMIOLOGY - STATION E

ESP17-0868

A CRITICAL ANALYSIS OF THE EPIDEMIOLOGIC PROFILE OF SEROGROUP B MENINGOCOCCAL DISEASE IN BRAZIL, 2001-2015

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Background

The recent licensure of serogroup B recombinant protein meningococcal vaccines in Brazil emphasizes the importance of a better knowledge of the real burden of serogroup B meningococcal (MenB) disease, in order to establish evidence based vaccination policies.

The objective of this study was to analyze incidence rates and case fatality rates of MenB disease in Brazil from 2001 to 2015, according to age group and region.

Methods

Analysis of the Ministry of Health database. The annual trend analysis was performed using the *Annual Percent Change (APC)*, with the modeling method *Joinpoint*, using the calendar year as the regression variable (software *Joinpoint Regression Program*, version 3.3). Protocol was approved by the local Ethics Committee.

Results

A decreasing trend in the incidence rates of MenB disease, from 0.55 cases/100,000 habitants in 2001 to 0.05 in 2015, was observed. The decreasing trend was significant in the period from 2001 to 2009, with an annual mean reduction of 17.2%.

The State of São Paulo consistently presented the highest incidence rates of MenB disease. The mean CFR was 15% (13% in infants to 34% in adults >60 years).

The proportion of cases with serogroup identified increased from only 33% in 2001, to 55% in 2015.

Conclusions

Incidence rates of MenB disease presented a decreasing trend in all age groups and in all regions of the country, from 2001 to 2015. Despite an improvement in the quality of the diagnosis, it is still highly heterogeneous in the diverse regions, presenting important deficiencies that still prevent the possibility of a robust and reliable analysis of the burden of the meningococcal disease in Brazil.

EPOSTER DISCUSSION SESSION 05: VACCINE IMMUNOLOGY - STATION E

ESP17-0887

THE RESPONSE TO MONOVALENT, TRIVALENT OPV AND IPV AFTER TRIVALENT OPV AT BIRTH

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Background

Controversy raised on oral polio vaccine administered at birth. Benefit shown on the overall reduction of infant mortality rate and intensive immune response developed following any polio vaccination afterwards. The aim of the study is to observe the antibody response to mOPV, tOPV, IPV mono and IPV in combination after tOPV at birth.

Methods

Single blinded randomized controlled trial was done on 120 healthy normal infant age from 42 to 80 day who had tOPV before the age of 1 month. Samples divided into 4 groups, each receiving 3 doses of mOPV(P1), tOPV, IPV mono and IPV in combination. Blood samples were drawn prior the first dose, one month after the second and the third dose. The Polio neutralizing antibodies were expressed in GMT, comparison were made on the antibody response to each group.

Results

Thirtyfive percent infants had zero neutralizing antibody despite first tOPV at birth, and seroconversion after 2 doses of any Polio vaccine were 100% to all polio virus (P1,P2,P3). Seroconversion (raised fourfold or twice if the GMT over 1000) in the babies born with maternal antibody showed a slower responses but not statistically significant. Response to tOPV after 2 dose reach the highest point, but statistically not significant. GMT measured one month after the third dose had a good response except for P2 and P3 in mOPV group, which contain only P1 antigen. The good response in any vaccine is supposed due to the priming of the tOPV given early as before one month of age.

Conclusions

tOPV priming was related with a non-inferior Polio GMT result in all groups receiving either tOPV, IPV, and IPV combination. Infants with undetectable antibody prior to intervention achieved faster Polio seroprotection.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 10: VACCINATION PROGRAMMES INCLUDING PNEUMOCOCCAL IMPACT - STATION B

ESP17-0896

HPV VACCINE SAFETY: THE EVIDENCE IS THERE

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Background and Objective

HPV vaccine, introduced globally in population-based programs for cancer prevention, has been the subject of controversy among the public and healthcare workers. Since we published a review of HPV vaccine safety in 2013,^[1] case reports and case series documenting rare disease outcomes following vaccination have been interpreted as providing causal evidence of serious vaccine effects. We sought to provide a comprehensive updated review of all evidence on HPV vaccine safety.

[1] Macartney K et al. Safety of Human Papillomavirus Vaccines: A Review. *Drug Saf.* 2013;36(393-412).

Methods

We replicated the comprehensive search strategy we used in 2013 but including 9-valent HPV vaccine and specific adverse events of special interest (AESI), based on recent case reports. We included all available studies that contained original data (controlled clinical trials, observational cohort studies, surveillance and case reports). Quality assessment of studies was performed using internationally accepted appraisal tools including STROBE and data on overall vaccine safety profile, local and systemic adverse events and multiple AESI were systematically collated.

Learning Points Discussion

- Our data demonstrate the safety of HPV vaccine in both females and males based on numerous high quality studies providing both epidemiologic and mechanistic evidence.
- Local reactions and self-limited systemic adverse reactions are reported in both clinical trials and surveillance data, but are consistent with the safety profile found for other vaccines.
- Syncope is reported more commonly after adolescent HPV vaccination and measures to manage the risk of syncope are important.
- Case reports of other AESI including autoimmune disease, postural orthostatic tachycardia syndrome, primary ovarian failure, Guillain-Barre syndrome and demyelinating diseases are not supported by higher level evidence implicating causal association.

EPOSTER DISCUSSION SESSION 09: HOST-PATHOGEN INTERACTION - STATION A

ESP17-0899

NEONATAL VITAMIN A SUPPLEMENTATION AND IMMUNE RESPONSES TO ORAL POLIO VACCINE IN ZIMBABWEAN INFANTS

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Background

Oral vaccines are less immunogenic when given to infants in developing countries. Several factors may contribute, including micronutrient deficiencies; however, the biological mechanisms remain unclear. Vitamin A is a potent immunomodulator and influences mucosal responses to oral vaccines. We hypothesised that neonatal Vitamin A supplementation (VAS) would improve responses to oral vaccines given early in infancy.

Methods

We conducted a cross-sectional study of infants recruited at birth to the ZVITAMBO trial, a randomized controlled trial of neonatal VAS versus placebo carried out in Zimbabwe between 1997-2001. We measured poliovirus-specific IgA to type 1-3 polio strains by semi-quantitative capture ELISA in cryopreserved serum samples collected at 6 months of age, one month after their last immunisation with trivalent oral poliovirus vaccine (OPV).

Results

A total of 181 infants fulfilled inclusion criteria, of whom 80 were randomised to high-dose neonatal VAS and 101 to placebo. There were no significant differences in maternal or infant variables between groups. At 6 months of age (one-month post-immunisation), median (IQR) vaccine titres among infants randomised to neonatal VAS versus placebo were 932 (421-3001) versus 1774 (711-5431) for Sabin 1 ($P=0.04$); 1361 (705-3402) versus 2309 (1081-4283) for Sabin 2 ($P=0.15$); and 1584 (796-4216) versus 2260 (996-5723) for Sabin 3 ($P=0.14$). After adjusting for breastfeeding status, birth weight and infant sex in a linear regression model, there was only weak evidence of difference in log mean titres between VAS and placebo groups for Sabin 1 ($P=0.07$) and no evidence of difference for Sabin 2 ($P=0.37$) and Sabin 3 ($P=0.52$).

Conclusions

Neonatal VAS did not augment OPV responses in Zimbabwean infants. Further research is required to understand the impact of VAS on responses to other oral vaccines.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 08: INFECTION CONTROL AND AMBULATORY USE OF ANTIMICROBIALS - STATION H

ESP17-0903

EFFECT OF STANDARD PRECAUTIONS WITHOUT PATIENT ISOLATION ON BACTERAEMIA RATES AMONG PEDIATRIC CANCER PATIENTS IN A SETTING WITH HIGH PREVALENCE OF MULTI-DRUG RESISTANT ORGANISMS

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Background

Preventing and managing infections due to multi-drug resistant Gram Negative Bacilli (MDR-GNB) in immunocompromised cancer patients in situations with a high prevalence of MDR-GNB is extremely challenging. The effect of multi-modal infection control and antibiotic stewardship strategies in such situations is not well documented in developing countries. The objective of the current study was to evaluate the effect of such interventions on all cause bacteraemia rates in children (<18 years) with cancer in a tertiary care oncology centre in eastern India.

Methods

This retrospective study was performed for the period 2012-2016. Infection control interventions included standard precautions, staff education, chlorination of water supply, screening for colonisation prior to stem-cell transplantation for MDR-GNB. Isolation of patients infected or colonised with MDR-GNB was not possible due to limited number of isolation rooms and high prevalence of such organisms. Antibiotic stewardship interventions included policy based prescribing, daily review of antibiotics, antibiotic policy optimization based on hospital antibiogram, relative potency testing.

Results

Blood culture positivity rates showed a declining trend in the number of patients infected and positive samples without patient isolation despite very high rates of 3rd generation cephalosporin and carbapenem resistance among MDR-GNB.

Year	Total patients where blood taken	Total samples of blood cultures	Total patients with positive blood cultures	Total samples with positive blood cultures	Blood culture positivity rate for patients	Blood Culture positivity rate for samples
2012	99	269	25	38	25.3	14.1
2013	134	433	47	70	35.1	16.2
2014	196	711	69	110	35.2	15.5
2015	255	936	67	112	26.3	12.0
2016	298	1048	70	118	23.5	11.3

Conclusions

Bacteraemia rates in paediatric cancer patients can be kept under control without isolation of MDR-GNB infected/colonized patients through standard precautions.

EPOSTER DISCUSSION SESSION 09: HOST-PATHOGEN INTERACTION - STATION A

ESP17-0906

TIMING OF INNATE AND ADAPTIVE IMMUNE RESPONSES DURING ACUTE DENGUE VIRAL INFECTION

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Background

During the course of dengue viral infection, innate and adaptive immune responses at the acute infection period may dictate the disease severity. In this study, the frequency of activated innate and adaptive immune cells at different time points during acute dengue viral infection were determined.

Methods

The blood samples from pediatric dengue infected patients during febrile, convalescence and afebrile stages were determined by a polychromatic flow cytometry for the analysis of activated and matured populations of natural killer cell, monocyte, dendritic cell, T cell and B cell.

Results

A robust activation of NK cells and monocytes was found during febrile stage. No significant expression of maturation marker was observed for plasmacytoid dendritic cells whereas high expression frequencies of some maturation markers including CD40 and CD86 were observed for myeloid dendritic cells. In contrast, high frequencies of activated CD4+ and CD8+ T cells as well as antibody secreting cells were observed during afebrile stage.

Conclusions

The results showed the presence of activated innate immune cells during the early phase of infection. However, a partial maturation of dendritic cells was observed. Moreover, specific immune responses appeared during late stage of the disease once the fever symptom disappeared. The results suggested that specific immune responses may not be able to play a protective role during the course of dengue viral infection due to the kinetic of responses. The data obtained from this study also suggested a rationale design of a novel dengue vaccine with an aim to induce rapid specific immune responses in order to induce a protective immune response against dengue viral infection.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 17: INVASIVE VIRAL INFECTIONS - STATION A

ESP17-0908

ACUTE FLACCID MYELITIS ASSOCIATED WITH ENTEROVIRUS D 68

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Title of Case(s)

ACUTE FLACCID MYELITIS ASSOCIATED WITH ENTEROVIRUS D 68

Background

In 2014, a large outbreak of enterovirus D68 (EV-D68) occurred in North America and Europe. Most individuals affected were children with respiratory disease. Simultaneously, an increase in polio-like Acute Flaccid Myelitis (AFM) cases was observed. Many children with AFM had a recent history of respiratory illness and many tested positive for EV-D68. The concomitant peak incidences of both respiratory disease caused by EV-D68 and AFM, led to the hypothesis that EV-D68 was causing these AFM cases, but at that point in time, no firm evidence could be established. While 2015 had a low incidence of EV-D68 infections as well as for AFM cases, both the virus and the AFM condition was seen again in 2016. It is likely that in 2016, 30-40 cases of EV-D68-associated AFM occurred in Europa, while in the US more than 60 cases of AFM occurred, of which a number were linked with EV-D68.

Case Presentation Summary

A survey was sent to virological laboratories and pediatric neurologists, requesting clinical data and viral isolates.

Data of 12 patients were returned, showing that all patients developed limb weakness (12/12), many had bulbar abnormalities (6/12), mainly difficulties with swallowing, and some had autonomic dysfunction (2/12).

Phylogenetic analysis showed that all EV-D68 isolates belong to the new B3 clade, which is associated less with respiratory illness and more with neurological abnormalities.

Learning Points/Discussion

More evidence is pointing toward causality, but much remains unknown. National differences exist in whether AFM is notifiable and virological testing for cases of AFM. Collaboration between health-care professionals is needed to collect missing data which will help us understand this severe clinical syndrome.

EPOSTER DISCUSSION SESSION 12: PUBLIC HEALTH: VIRAL INFECTIONS - STATION D

ESP17-0915

ASTHMA AND LUNG FUNCTION IN ADULTHOOD AFTER EARLY CHILDHOOD RHINOVIRUS AND RESPIRATORY SYNCYTIAL VIRUS WHEEZING EPISODE

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Background

Increased prevalence of asthma and lung function abnormalities are present in childhood after respiratory syncytial virus (RSV) and rhinovirus (RV) induced wheezing. The adulthood outcome of early childhood RSV induced wheezing is controversial and in case of RV the adulthood outcome has not been studied.

Methods

One-hundred children were hospitalized for wheezing at the age of less than 24 months in 1992-1993 at Kuopio University Hospital (Finland). In admission adeno, influenza (A,B), parainfluenza (1, 2, 3), and RSV were studied by antigen detection in the nasopharyngeal aspirates and later RSV and RV were detected by polymerase chain reaction (PCR) from frozen samples.

In 2010, 40 (40%) subjects and 60 population based controls attended the follow-up study including spirometry (pre-bronchodilator, pre-BD, and post-BD measurements), and exhaled nitric oxide (FENO).

Results

64% of RV group [OR 17.0 (95%CI 3.9 – 75.3) vs. controls], and 43% of RSV group [6.1(1.5 – 24.9) vs. controls] and 12% of controls had current asthma. Mean FENO values were [43.1 95%CI (12.3–73.9)] in RV group (p=0.001 vs. controls, p=0.028 vs. RSV cases), [18.5, (7.5 –29.6)] in RSV group (p=0.696 vs. controls) and [18.0 (14.5–21.4)] in controls. RV positive cases had significantly lower pre-BD MEF50 and higher MEF50, FEV1 and FEV1/FVC responses to bronchodilators than controls. RSV positive cases had significantly lower pre- and post-BD FVC values compared to controls.

Conclusions

Cases with RV and RSV induced early childhood wheezing have increased asthma risk in adulthood, but RV positive cases have significantly higher FENO values compared to RSV positive cases and controls.

RV positive cases have signs of reversible obstruction in lung function testing. RSV positive cases have a restrictive pattern of lung function deficit.

EPOSTER DISCUSSION SESSION 15: OTHER COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION G

ESP17-0916

NASOPHARYNGEAL VIRAL CARRIAGE IN ASYMPTOMATIC CHILDREN

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Background

In the advent of low threshold PCR methods for viral screening, the viral carriage rate for asymptomatic children is poorly characterized and likely to represent subclinical infection. We aimed to study the viral carriage in nasopharyngeal swab samples from healthy 2-year-old children.

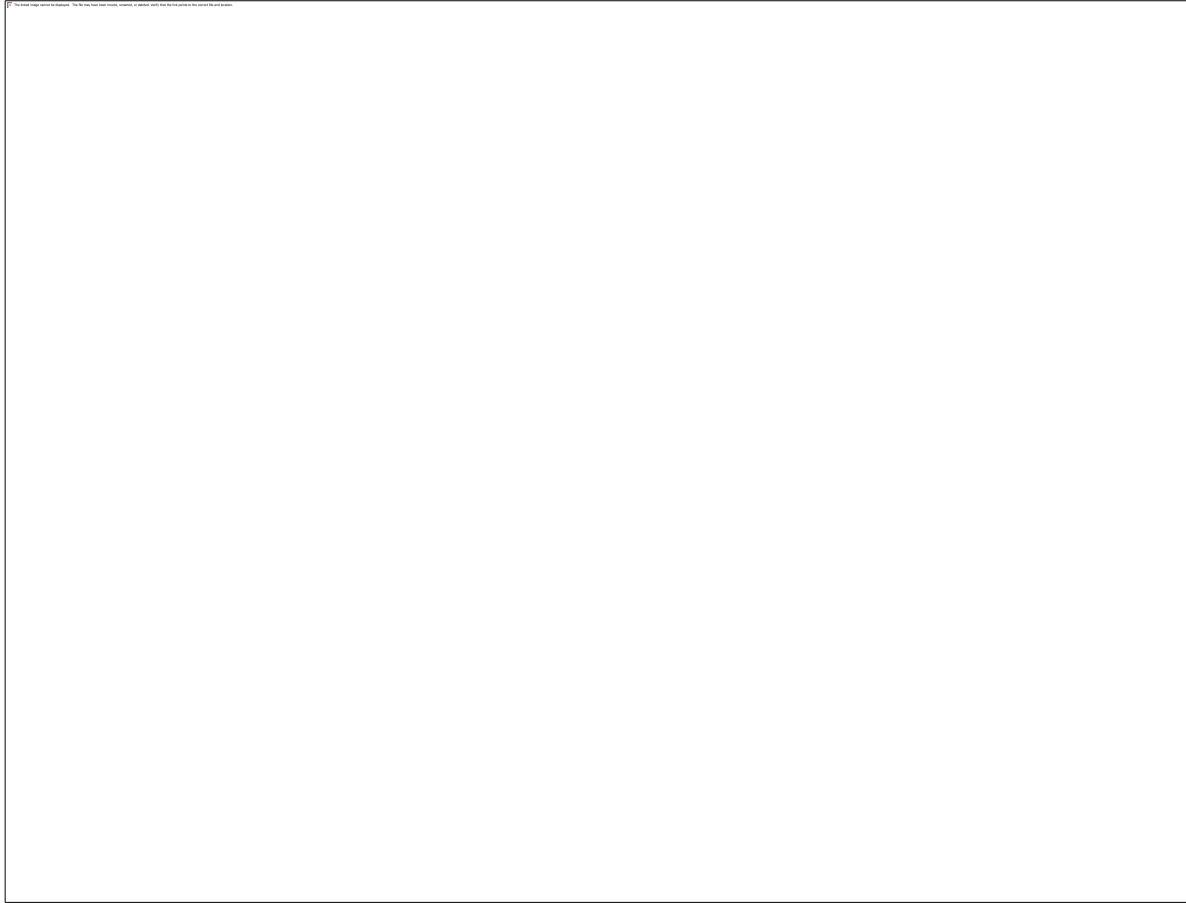
Methods

This was a cross-sectional study including 67 2-year-old Caucasian children participating the Vitamin D intervention in infants (VIDI) trial in Finland. In this double-blind trial, healthy term infants are randomized to receive 10 or 30 µg vitamin D₃ daily from 2 weeks to 2 years of age. We analyzed nasopharyngeal swab samples taken at the 2-year follow-up visit in January (19), February (16), June (18) and August (5) 2015 and analyzed by multiplex real-time RT-PCR for the following viruses: influenza A (H1pdm09/H3) and B (Yamagata/Victoria), respiratory syncytial, human corona (hCoV, HKU1, OC43, NL63, 229E), adeno, rhino and enterovirus D68.

8 children had had an upper respiratory tract infection within one week of follow-up visit. These samples were omitted.

Results

From 59 samples, 20 were positive for the following viruses: rhinovirus (11), RSV (1), hCoV (5) and influenza A (1). Rhinovirus, hCoV and RSV were found in one sample and rhinovirus and hCoV and in one sample (Fig; the seasonality and positive findings in 59 nasopharyngeal samples).



Conclusions

Asymptomatic nasopharyngeal viral carriage rate in children at 2 years of age is likely to have a seasonal pattern assessed by the described method. This should be considered when interpreting results from multiplex virus PCR from nasopharyngeal samples. The finding needs to be further characterized in a larger sample.

Clinical Trial Registration (Please input N/A if not registered)

NCT01723852

EPOSTER DISCUSSION SESSION 02: TROPICAL INFECTIONS - STATION B

ESP17-0926

DENGUE SHOCK SYNDROME IN THAI CHILDREN

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Background

Dengue shock syndrome (DSS) is the most severe manifestations of dengue infection with high mortality. We studied DSS in hospitalized children at Queen Sirikit National Institute of Child Health (QSNICH), Bangkok, Thailand to describe clinical features and explore factors associated with poor outcomes.

Methods

Medical records of patients diagnosed DSS during Jan 1, 2009 – Dec 31, 2015 were reviewed. Serology and virology confirmation were done at Armed Force Research Institute of Medical Science (AFRIMS), Bangkok as the Dengue surveillance program.

Results

Two-hundred and twenty-two of 4,695 children hospitalized with Dengue had DSS (4.7%). Ninety percent were secondary dengue infection and all 4 Dengue serotypes including DEN 1 (31%), DEN 3 (29%), DEN 2 (24%), and DEN 4 (16%) were found. The patients' mean age was 7.8 years (range 3 months – 16 years). The mean duration of fever before shock was 5 ± 1.5 days (range 1-10 days). Almost all patients had evidences of plasma leakage including hemoconcentration (52%), pleural effusion on chest film (59%) and hypoalbuminemia (86%). Manifestations commonly found in DSS were lethargy (81%), vomiting (69%), hepatomegaly (59%), abdominal pain or tenderness (55%), and bleeding (48%). The mean platelet count was 28,124/cu.mm., (range 2,000 – 104,000). Fifty-nine percent had narrowing pulse pressure or faint pulses, whereas 41% had hypotension or unmeasurable BP. Twenty-four percent required mechanical ventilation and 34 (16%) died. Factors significantly associated with death were presenting with hypotension or unmeasurable BP (OR 7.6, 95% CI 3.1-18.6) and platelet count less than 20,000/mcL (OR 2.2, 95% CI 1-4.5).

Conclusions

Nearly all DSS were from secondary dengue infection. The most significant factor associated with death is severe degree of shock, therefore early detection of shock should be emphasized.

EPOSTER DISCUSSION SESSION 14: BACTERIAL EVALUATION OF COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION F

ESP17-0932

MOLECULAR EPIDEMIOLOGY AND ANTIGENIC PROFILE OF BORDETELLA PERTUSSIS CLINICAL ISOLATES CIRCULATING IN BARCELONA FROM 2007 TO 2015

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Background

The reemergence of whooping cough has been attributed to the adaptation of *Bordetella pertussis* to the immunity induced by the acellular pertussis vaccine (ACV). This vaccine contains the following proteins variants among others: pertussis toxin (PtxA2/Ptx4), pertactin (Prn1/Prn7) and type 3 fimbriae (Fim3-1). The objectives of this study are to determine the molecular epidemiology and the ACV antigens variants of *B. pertussis* from Barcelona.

Methods

167 non-duplicate *B. pertussis* clinical isolates, collected between 2007 and 2015 at Hospital Vall d'Hebron (Barcelona) were studied. Genetic relatedness was determined by pulsed-field gel-electrophoresis (PFGE) and multi-locus variable-number repeat analysis (MLVA). ACV antigens variants were studied by PCR and sequencing

Results

The 167 isolates were distributed in 15 different pulsotypes being only three of them the most prevalent ones (A: 29.9%, E: 24.6% and C: 18%). The pulsotype similarity analysis showed that 93.4% of the isolates were grouped into two clades: clade I, mainly containing isolates from 2007 to 2010, and clade II, which mainly included isolates from 2011 to 2015. MT27 was found in 80% of the isolates. 100% of the isolates encoded the *ptxA1* allele, 97.1% the *prn2* and the 52.2% the *fim3-1*. In addition, the 97.1% of the isolates contained the type 3 Ptx promoter, associated to a higher production of pertussis toxin.

Conclusions

In our area, two *B. pertussis* lineages coexist from 2007 to 2015. The first was more prevalent until 2010, having being progressively replaced by the second one thereafter. In general, the alleles found in both populations differ from those included in the ACV. Overall, these results suggest that in our area, *B. pertussis* may have adapted to the immunity induced by the ACV.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 10: VACCINATION PROGRAMMES INCLUDING PNEUMOCOCCAL IMPACT - STATION B

ESP17-0938

VACCINATION AGAINST VARICELLA AND HERPES ZOSTER – POINTS TO CONSIDER

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Background and Objective

Varicella is the clinical manifestation of primary varicella-zoster virus (VZV) infection, typically during childhood, leading to latent VZV infection, while herpes-zoster (HZ) results from reactivation of dormant virus later in life. Both diseases are associated with significant medical and socio-economic burden, but can be prevented by vaccination.

However, introduction of varicella universal routine vaccination (URV) has been tempered by the prediction of an increase in HZ incidence in the short–medium term following its implementation due to the reduction of the exogenous boosting effect (i.e. exposure to wild-type virus). **Methods**

PubMed and Web of Science were searched up to December 2016 without restrictions on the publication date, including original research articles and reviews. The literature was reviewed and evidence on the interplay between varicella prevention and HZ are discussed.

Learning Points Discussion

- Although dynamic transmission models including exogenous boosting predict that varicella URV would increase the HZ incidence, this has not been confirmed by almost 20 years of real-world evidence.
- Epidemiological data show no reduction in the mean age of HZ patients, and no difference in HZ incidence rates in places with high versus low varicella vaccination rates.
- Clinical data indicates that subclinical endogenous reactivation of latent VZV can boost the anti-VZV immune response.
- Evidence indicates that children vaccinated for varicella have a lower risk of developing HZ early in life.

In conclusion, endogenous and exogenous boosting exist, but their actual impact on HZ incidence remains to be established. Additional clinical and epidemiological data could be helpful to guide public health decisions on implementation of a comprehensive VZV prevention program. Nevertheless, both varicella and HZ vaccination programs demonstrated to offer protection from the substantial burden associated with these diseases.

Funding: GlaxoSmithKline Biologicals SA

EPOSTER DISCUSSION SESSION 04: BROAD-SPECTRUM ANTIBIOTIC USE AND STEWARDSHIP PROGRAMS - STATION D

ESP17-0947

A COMPARISON OF METRICS TO EVALUATE TRENDS IN ANTIMICROBIAL CONSUMPTION IN A TERTIARY CHILDREN'S HOSPITAL

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Background

The capacity to accurately measure and report antimicrobial consumption is an essential element of antimicrobial stewardship (AMS). Though days of therapy (DOT) and defined daily doses (DDD) are common metrics used to measure consumption, no established metric exists in children. Our aim was to model different metrics of meropenem consumption based on electronic prescribing and dispensary data in a tertiary children's hospital, and to analyse trends in meropenem consumption and resistance over time.

Methods

Using an established electronic prescribing system, we extracted data on all meropenem administrations from 2010 to 2016. Dispensing data was available from pharmacy for 2016. Meropenem susceptibility of all Enterobacteriaceae isolates was extracted over the same period. Consumption was expressed as DOT per 1000 patient-days (DOT/1000PD), DDD per 1000 patient-days (DDD/1000PD). Time series analysis was undertaken to explore trends in both consumption and non-susceptibility of Enterobacteriaceae to meropenem.

Results

Meropenem consumption was highly seasonal and increased over time. Between 2010 and 2016 there was an increase of 17.2% (95% CI 13.3 to 20.1%) in DOT/1000PD. There were no significant changes to the patient caseload, nor meropenem dosing over this period and so trends in DDD/1000PD were similar. Dispensary data from 2016 yielded higher DDD/1000PD than those observed from administration data, but the similarities with DOT/1000PD persisted. Over the study period, the probability of meropenem resistance in Enterobacteriaceae increased by 85% (from 1.3 to 2.5%).



Conclusions

Analysis and reporting of accurate antimicrobial consumption is an essential component of AMS. Meropenem DOT and DDD exhibited similar increases over time in both admin and dispensing data. Increased meropenem consumption occurred in parallel with an increase in meropenem resistance in Enterobacteriaceae.

EPOSTER DISCUSSION SESSION 18: COMMUNITY ACQUIRED LIFE-THREATENING BACTERIAL INFECTIONS - STATION B

ESP17-0949

INCREASE IN INVASIVE SEROGROUP W MENINGOCOCCAL DISEASE IN 2015 AND 2016 IN THE NETHERLANDS

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Background

In the Netherlands, the incidence of invasive serogroup W meningococcal disease (MenW) has been very low in the last decade. However, increased numbers of MenW cases were observed in 2015 and 2016. MenW vaccination is not included in our national immunization program. We assessed changes in the MenW incidence in the last two years in the Netherlands and described the recent cases.

Methods

All microbiological laboratories in the Netherlands submit *Neisseria meningitidis* isolated from blood or cerebrospinal fluid (i.e. invasive meningococcal infections) to the Netherlands Reference Laboratory for Bacterial Meningitis for serogrouping and finotyping. We compared the incidence rate (IR) of MenW in 2015 and 2016 with the IR in 2005-2014. We described age, mortality and finotype of the MenW cases in 2016.

Results

During 2005-2014, there were on average four MenW cases per year (range: 1-7; IR=0.02/100,000/year). The IR increased significantly in 2015 to 0.05/100,000 (n=9; IRR=2.3 [95%CI:1.1-4.8]) and 2016 to 0.29/100,000 (n=50; IRR_{2016vs2005-2014}=12.8 [8.4-19.6]; IRR_{2016vs2015}=5.5 [2.7-11.2]). In 2016, 33% of Men cases were MenW (50/151); this was 10% (9/90) in 2015 and 3% (38/1454) in 2005-2014. In 2016, MenW incidence was highest in persons of 65 years or older (0.68/100,000; n=21), followed by 15-24 year olds (0.53/100,000; n=11) and children <5 years old (0.34/100,000; n=3). The case fatality rate was 12% (6/50). Almost all strains had finotype P1.5,2:F1-1 (44/47; 94%).

Conclusions

The MenW incidence increased rapidly in 2016 in the Netherlands due to a specific finotype, which is associated with the hypervirulent clonal complex 11. Meningococcal disease is unpredictable, but patterns of increase suggest we may expect increasing rates in the coming years. Continuous surveillance is performed to support timely vaccine policy decisions.

EPOSTER DISCUSSION SESSION 14: BACTERIAL EVALUATION OF COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION F

ESP17-0952

ANTIBODIES FROM LYMPHOCYTE SUPERNATANT AGAINST PNEUMOCOCCAL CAPSULAR POLYSACCHARIDES IN CHILDREN ADMITTED TO HOSPITAL WITH PNEUMONIA IN NEPAL

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Background

Current diagnostic techniques for evaluation of pneumonia aetiology are either insensitive or non-specific. Antibody-secreting B cells are thought to only transiently circulate during infection and have the potential to be exploited for aetiological diagnosis. We used an assay of lymphocyte supernatant (ALS) to assess the concentration of pneumococcal anti-capsular antibodies spontaneously secreted by circulating plasmablasts from children with pneumonia in Nepal.

Methods

We enrolled children aged 2 months to 14 years admitted to Patan Hospital, Nepal from February 2014 until October 2016. Clinical, radiographic, haematological, and microbiological data were collected prospectively, including nasopharyngeal (NP) cultures to identify pneumococcal serotypes. Peripheral blood mononuclear cells (PBMCs) were obtained within 48h of admission and incubated for 48 hours before analysis of supernatants for production of anti-pneumococcal capsular polysaccharide antibodies using a fluorescent bead assay (Luminex).

Results

554 children were enrolled and ALS was done on from 515 children (93.0%). On the basis of clinical, radiographic, haematological and microbiological data, children were classified as definite pneumococcal infection (DP), probable pneumococcal infection (PB), probable bacterial infection (PB), unknown (U), probable viral infection (PV) and definite other bacterial infection (DOB). ALS from an initial subset of 90 participants detected serotype-specific responses up to 0.5 µg/ml in some children from 4–14 days following onset of illness, although these did not clearly correlate with classification of children.

Conclusions

Pneumococcal antibodies are spontaneously produced on culture of PBMCs obtained from some children soon after admission with pneumonia. However, further investigation is required to determine the pattern of anti-polysaccharide antibody production in relation to time since disease onset, disease severity and age.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 24: INFECTIONS IN IMMUNOCOMPROMISED CHILDREN - STATION H

ESP17-0958

HAEMATOLOGIC EFFECTS OF TRIMETHOPRIM-SULFAMETHOXAZOLE AS PNEUMOCYSTIS-PNEUMONIA PROPHYLAXIS DURING HIGH-DOSE METHOTREXATE THERAPY

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Background

While Highdose-Methotrexate (HDMTX) is part of several chemotherapeutic regimens, Trimethoprim-Sulfamethoxazole (TMP/SMX) is commonly used to prevent *Pneumocystis-jiroveci* pneumonia, in immunocompromised patients. Since these drugs are folate antagonists, co-administration is not recommended to avoid cumulative toxicity. We explored haematologic effects of co-administration of HDMTX and TMP/SMX.

Methods

Consolidation therapy for acute lymphoblastic leukaemia include four courses of HDMTX (5000mg/m²/d intravenously) together with daily 6-Mercaptopurine (50mg/m² orally). For Pneumocystis-pneumonia-prophylaxis, patients receive either TMP/SMX 5mg/kg/d (based on TMP component) p.o. for 3 or 4 days weekly or Pentamidine 300mg by inhalation once monthly.

We retrospectively compared blood count parameters before and 14 days after HDMTX-administration (Wilcoxon-Test) as well as relative changes of these parameters between patients with and without TMP/SMX prophylaxis (Mann-Whitney-U-Test).

Results

We analyzed 112 HDMTX-episodes in 28 patients (1.4 to 19.1; median 5.4 years old; 42.9% female.). Compared to baseline parameters at HDMTX-administration, 14 days thereafter we observed widely spread changes of the white blood count (WBC, -78.4 to +251.8; median -6.7%), absolute neutrophil count (ANC, -85.5 to +406.2; median -12.6%), lymphocytes (Ly, -94.8 to +161.4; median -5.0%), thrombocytes (Thr, -78.5 to +173.2; median -13.2%) and haemoglobin (Hb, -32.3 to +44.1; median +3.8%). The WBC (p=0.003), ANC (p=0.029) and Thr (p<0.001) were significant lower and Hb (<0.001) was significant higher as prior to HDMTX-administration. Difference of lymphocytes was not significant.

Comparing episodes with TMP/SMX-prophylaxis (n=51) and with Pentamidine-prophylaxis (n=61), relative changes showed no significant differences for any of the tested parameters

Conclusions

While most parameters decreased after HDMTX (additionally caused by 6-Mercaptopurine co-administration), co-administration of TMP/SMX seems to have no significant influence on these changes.

Thus, our results do not support the recommendation to avoid co-administration of HDMTX and TMP/SMX.

EPOSTER DISCUSSION SESSION 15: OTHER COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION G

ESP17-0959

THE CLINICAL BURDEN OF HOSPITALISATION FOR RESPIRATORY SYNCYTIAL VIRUS (RSV) INFECTION IN PREMATURE INFANTS DURING THE FIRST 2 YEARS OF LIFE

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Background

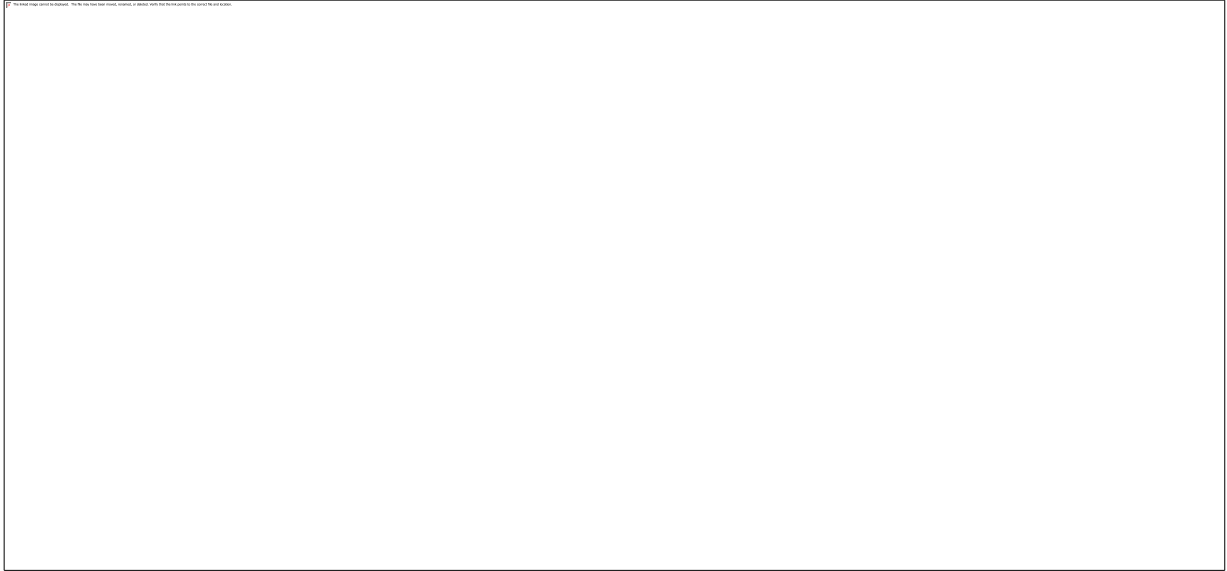
Premature birth is a well-recognised risk factor for RSV hospitalisation (RSVH) in early childhood. This study assessed the burden of RSVH during infancy in premature infants born <36 weeks' gestational age (wGA).

Methods

All live births from 2000-2011 recorded by the Information Services Division (ISD) of the NHS National Services Scotland were included in the study. RSVHs within the first two years of life, including details of length of stay and high dependency unit/intensive care unit (HDU/ICU) requirement, were assessed. Results were stratified by wGA at birth.

Results

Of 623,373 infants, 28,654 (4.6%) were hospitalised for RSV infection, the vast majority (88.0%) of whom were born ≥ 36 wGA. Whilst infants born <36 wGA represented only a small proportion of the total RSVHs (12.0%), admission rates were nearly 3.5 times higher than for those born ≥ 36 wGA (171.6/1000 vs. 51.0/1000). Premature infants born <36 wGA also spent over twice as long in hospital (mean 5.6 vs. 2.5 days) and three times as many cases required HDU/ICU support (6.6% vs. 2.2%) compared to infants born ≥ 36 wGA. Extremely premature infants (<29 wGA) had the highest rates of RSVH (447.4/1000) and greatest morbidity (mean stay: 10.0 days; HDU/ICU: 8.8%). Infants born at 33-35 wGA had a nearly 2.5 times higher rate of RSVH than infants born ≥ 36 wGA (124.5/1000 vs. 51.0/1,000) and accounted for around half (51.9%) of all admissions of infants born <36 wGA.



Conclusions

The burden of RSVH during infancy is substantial. Infants born <36 wGA are at a substantially greater risk of RSVH and for increased morbidity than those born ≥ 36 wGA. A strong association exists between the level of prematurity and the rate and severity of RSVH.

EPOSTER DISCUSSION SESSION 15: OTHER COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION G

ESP17-0963

VIRUS-VIRUS INTERACTIONS BETWEEN COMMON RESPIRATORY VIRUSES IN HEALTHY INFANTS AND CHILDREN

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Background

Observations from epidemiological studies suggest existence of interaction between common respiratory viruses, where presence of one virus modulates susceptibility to infection by another virus. This study investigated viral prevalence in nasopharyngeal samples of infants and statistical associations indicating virus-virus interaction between the three most common viruses.

Methods

Within two prospective cohorts, healthy children aged 0-6 years were repeatedly sampled during asymptomatic and/or symptomatic periods. In the first sub-group (n=334), nasopharyngeal samples were collected upon occurrence of acute respiratory symptoms (wheezing/cough and fever), the second sub-group of infants (n=161) was sampled monthly, irrespective of symptoms. Samples were analyzed by PCR for respiratory viruses. Positive or negative associations between commonly detected viruses were explored using generalized estimation equations analysis adjusted for seasonality and infant characteristics. Models were tested for interaction between viral associations and presence/absence of symptoms.

Results

In total 1208 asymptomatic and 1040 symptomatic nasopharyngeal samples were collected. Of these, 496 (41%) and 832 (80%) samples, respectively were virus positive. Co-infections occurred in 190 samples (8.5%). Human Rhinovirus (HRV) was most commonly detected (n=1084, 48%), followed by Coronavirus (n=134, 6.0%) and RSV (n=127, 5.6%). Significant negative associations were observed between presence of HRV and coronavirus in both asymptomatic (aOR: 0.22; 95%CI:0.08-0.56) and symptomatic samples (aOR: 0.38; 95%CI:0.23-0.61). Virus-virus interactions for RSV-HRV and RSV-coronavirus differed by symptom-status (model interaction-term: $P < 0.10$). When symptomatic, RSV-HSV and RSV-coronavirus were negatively associated (aOR: 0.44; 95%CI:0.27-0.72, aOR: 0.39; 95%CI:0.16-0.99). Without acute respiratory symptoms, associations appeared positive (aORs > 1.0), but non-significant.

Conclusions

Our study suggests negative virus-virus interactions between HRV, RSV and coronavirus, which are partly dependent on presence of respiratory symptoms. This interference may have implications for impact of viral vaccines and control strategies on respiratory disease.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 05: VACCINE IMMUNOLOGY - STATION E

ESP17-0965

THE DEVELOPMENT OF THE INFANT IMMUNE SYSTEM AND ITS RESPONSE TO VACCINATION: A SYSTEM ANALYSIS APPROACH.

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Background

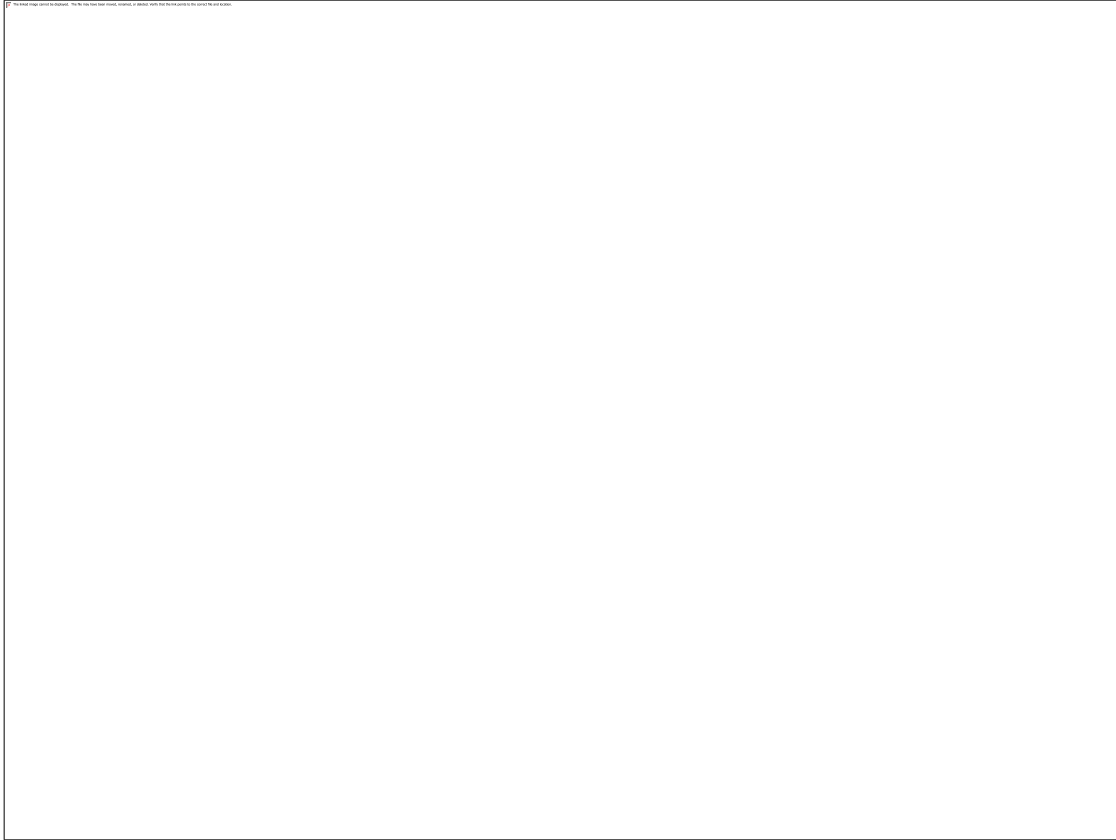
Infant immune responses are less protective than in adults but our understanding of the development of the immune system early in life is limited.

Methods

We conducted two observational studies: 1) Baseline study: Healthy children <2 years were enrolled (n=148) and analyzed by age: <3mo; 3-6 mo; 6-9 mo; 9-12 mo; >12 mo; 2) Vaccination study: infants at 2mo (n=24), 6mo (n=16) and 12mo (n=7). Samples were obtained on day (d) 0 (pre-vaccination), d7 and d30 after vaccination. Whole-blood samples were analyzed by measuring immune cell populations by flow cytometry and transcriptional profiles with microarrays.

Results

Infants <3mo had reduced numbers of CD19+, naïve and transitional B cells compared with children 6-9 mo ($p<0.05$). Memory B cells and plasmablasts were increased in >12mo compared with those <3mo ($p<0.05$). CD4+ Tfh cell numbers were reduced in <3mo and gradually increased with age. Baseline immune profiles demonstrated significant underexpression of innate immune genes (interferon, monocytes, and inflammation) and plasma cells; but overexpression of T cell genes in infants <6mo. Routine vaccines in 2mo were associated with significant changes in numbers of B and T cell populations (**Fig. 1 A-I**), and significant over-expression of genes related to interferon, inflammation, monocytes and plasma cells on d7 (339 genes) and overexpressed genes of inflammation and B cells at d30 (111 genes).



Conclusions

We identified significant age-dependent differences in immune cellular and gene profiles in infants. Vaccinations induced marked changes in B and T cell populations and expression of immune-related genes. These findings may facilitate studies of novel infant vaccines.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 01: TUBERCULOSIS - STATION A

ESP17-0970

RECURRENT TUBERCULOSIS AFTER DISCHARGE FROM A PAEDIATRIC TUBECULOSIS CLINIC

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Background

There is a scarcity of data on the long-term prognosis of children who have been evaluated and treated for tuberculosis (TB) infection or disease. We surveyed 4,731 patients <18 years seen at the TB clinic at Astrid Lindgren Children's Hospital, Stockholm, Sweden during 1999-2015. 2,248 were referred from migrant screening because of a positive tuberculin skin test (TST) or interferon-gamma release assay (IGRA), and 2,021 for contact tracing.

Methods

We had 216 cases of TB, 1,606 of latent tuberculosis infection (LTBI), and 2,685 that we considered uninfected. 72 children had a history of previous TB treatment. Of those with LTBI, 1,204 (75%) took preventive treatment. Of those considered uninfected, 538 were BCG vaccinated and TST+/IGRA-. On January 1, 2017, all patients were matched with the Swedish national TB registry, for a total observation time of 33,284 person-years after discharge from the TB clinic.

Results

We identified 35 TB recurrences, with a median time from discharge of 2.3 years. There were 6 recurrences in patients treated for TB (2.7% of the cases, 368/10⁵ person-years of observation), 2 in patients with previous TB (2.8%, 392/10⁵), 24 in patients with LTBI (1.5%, 245/10⁵), and 3 in patients considered uninfected (0.1%, 15/10⁵). Of those with a recurrence after LTBI, we considered only 10 to have reliably completed preventive treatment.

Conclusions

Treatment of LTBI in order to be effective must be rigorously pursued, but even then, there remains a certain residual risk of future TB disease. TB infection is unlikely in TST+ children with IGRA-, and the use of TSTs alone for screening of BCG vaccinated persons should be avoided unless the pre-test probability of TB infection is very high.

EPOSTER DISCUSSION SESSION 14: BACTERIAL EVALUATION OF COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION F

ESP17-0972

REDUCTION IN OTITIS MEDIA INCIDENCE IN PRIMARY HEALTH CARE IN ICELAND FOLLOWING PCV-10 IMMUNISATION

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Background

Pneumococcal conjugate vaccine (PCV-10) immunisation was introduced in the Icelandic childhood vaccination program in 2011, without catch-up, with a 97-98% uptake of the primary vaccine doses for birth-cohorts 2011-2014. The aim was to determine the effect of PCV-10 immunisation on primary care visits for respiratory tract infections (RTIs) in children.

Methods

All primary care physician visits due to RTIs in children <3 years of age in Iceland, 2008-2015 were recorded. The National Vaccination Registry was used to determine if the child had been vaccinated. Children that had received ≥ 2 doses of any PCV were classified as vaccinated. Children previously vaccinated born in 2010 and earlier and non-vaccinated children born in 2011 and later were excluded. Repeated visits within 30 days were excluded. Birth cohorts 2008-2010 (Non-Vaccinated-Group, NVG) were compared to birth cohorts 2011 and later (Vaccinated-Group, VG). Annual incidence rates (IR) for Otitis Media (OM), pneumonia and Other RTI were compared between the groups for children <1, <2 and <3 years of age. Large sample Z test was used and incidence rate ratios (IRRs) calculated.

Results

For OM, the IRs for the NVG and the VG for children <1, <2 and <3-year-old were: 0.490 vs 0.429, 0.640 vs 0.605, 0.571 vs 0.549 respectively with IRRs: 0.877, 0.944 and 0.961. For pneumonia, the IRs were unchanged from NVG to VG for children <1, <2 and <3-year-old (0.0220 vs 0.0228, 0.0475 vs 0.0481, 0.0551 vs 0.550 respectively. For Other RTIs, the IRR for children <1 years of age was 0.914 with no change noted in other age groups.

Conclusions

A significant reduction in primary health care visits for OM in children vaccinated with PCV-10 was confirmed. This clearly demonstrate the effect of the PCV-10 vaccination.

EPOSTER DISCUSSION SESSION 24: INFECTIONS IN IMMUNOCOMPROMISED CHILDREN - STATION H

ESP17-0974

PERSISTENCE OF FALSE POSITIVE SERUM LEVELS OF (1-3)-SS-D-GLUCAN AFTER INFUSION OF INTRAVENOUS IMMUNOGLOBULINS

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Background

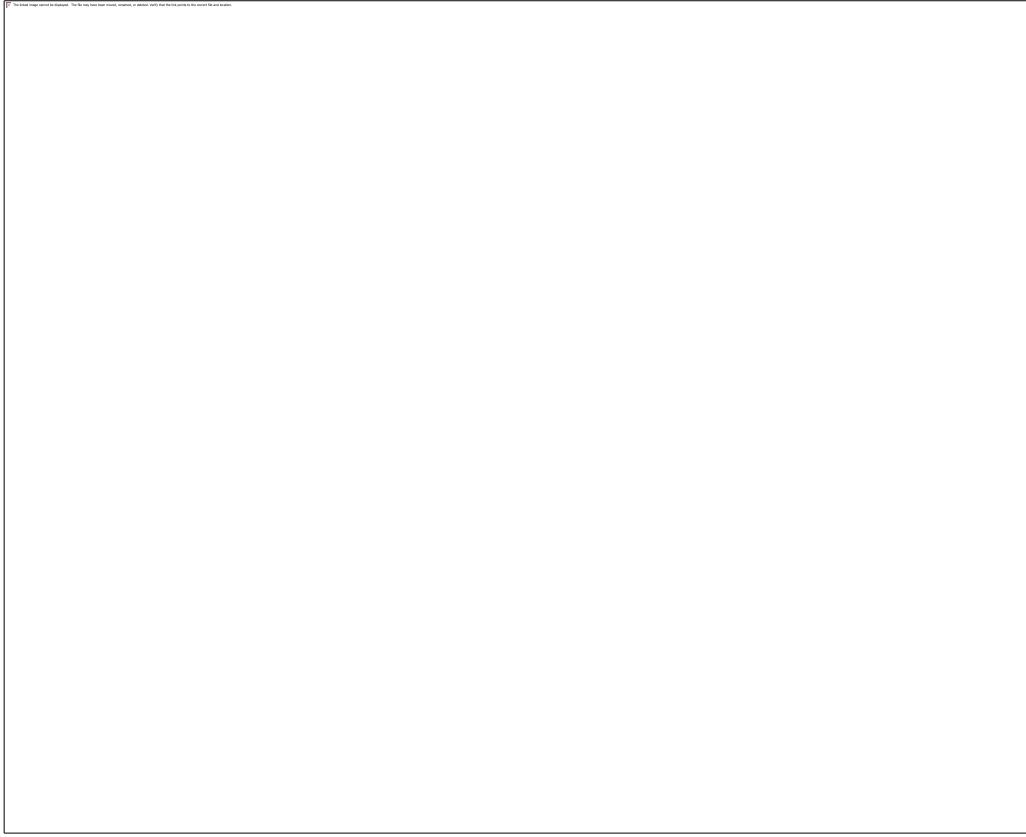
According to EORTC (European Organization for Research and Treatment of Cancer) criteria, (1-3)- β -D-Glucan (BDG) is a marker for invasive fungal diseases (IFD). Administration of intravenous immunoglobulin preparations (IVIG) was reported to lead to false-positive BDG serum levels >80pg/ml. Aim of the study was to determine time interval to normalisation of serum BDG levels after IVIG administration.

Methods

In 22 paediatric hemato-/oncologic patients, we analysed 92 BDG serum levels obtained within 4 weeks after IVIG administration and correlated them to 57 IVIG episodes. BDG levels were determined using an automated Fungitell Assay.

Results

Within 3 days after IVIG administration (0.5 to 1.0 g/kg IVIG), peak levels ranged from 21.47 to 660.38 (median 201.4) pg/ml and 85.7% (95% SD: 77.3-100) of patients had BDG serum levels >80pg/ml. By days 7, 14, and 21 (+/- 1 day each) after IVIG infusion, BDG serum levels have normalised (<80pg/ml) in 64.0 (95% SD: 45.1-82.8), 76.5 (95% SD: 62.3-90.8) and 100%, respectively.



Conclusions

IVIG administration leads to false-positive BDG levels in the vast majority of patients. Elevated BDG levels have to be expected for more than 2 weeks after IVIG administration, while BDG levels normalised within 3 weeks in all patients. BDG should, therefore, not be used for the diagnosis of IFD within 3 weeks after IVIG administration.

EPOSTER DISCUSSION SESSION 07: HIV/AIDS - STATION G

ESP17-0980

PREVALENCE AND PATIENT CHARACTERISTICS OF NONINVASIVELY MEASURED LIVER FIBROSIS IN PERINATALLY HIV-1-INFECTED CHILDREN

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Background

Since the introduction of combination antiretroviral therapy (cART), liver disease has emerged as an important long-term comorbidity in chronic human immunodeficiency virus (HIV)-infection. Recently, several didanosine-exposed, virologically suppressed HIV-infected adolescents without viral hepatitis were unexpectedly diagnosed with non-cirrhotic portal hypertension. This prompted us to study the prevalence and patient characteristics of noninvasively measured liver fibrosis in perinatally HIV-infected children.

Methods

We included perinatally HIV-infected children without viral hepatitis or other pre-existing liver diseases from two academic outpatient clinics in the Netherlands. Liver fibrosis was assessed using the aspartate-aminotransaminase-to-platelet ratio index (APRI), fibrosis-4 (FIB-4) score, enhanced liver fibrosis (ELF) score and transient elastography (TE), with thresholds for detecting significant liver fibrosis set at APRI \geq 1.5, FIB-4 \geq 1.45, ELF \geq 10.18, and TE \geq 7.4. We explored associations between liver fibrosis and patient characteristics using multivariable linear regression analysis.

Results

We included 88 participants (median age 11.2 [IQR 7.4-14.6] years, 53% male), of which 93% were using cART, and 76% had undetectable plasma HIV viral load. APRI and FIB-4 did not indicate any fibrosis, while ELF and TE indicated a low prevalence of 4% and 3%, respectively. Higher ELF scores were associated with lower protein C and S activity and higher CD4+ T-cell counts, while participants with a Centers for Disease Control and Prevention HIV stage B diagnosis had lower ELF scores.

Conclusions

We found a very low prevalence of significant liver fibrosis in this cohort of perinatally HIV-infected children, of which the majority was virologically suppressed on cART. Lower protein C and S activity – but not poor virological control or low CD4+ T-cell counts – were associated with higher ELF scores, suggesting hypercoagulability may be a potential risk factor for developing paediatric HIV-related liver fibrosis.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 11: VACCINES: VIRAL IMPACT AND NON-SPECIFIC EFFECTS - STATION C

ESP17-0981

ASSESSMENT OF VARICELLA VACCINE EFFECTIVENESS AND RISK FACTORS FOR BREAKTHROUGH INFECTION IN GERMANY BY USING HEALTH INSURANCE CLAIMS DATA, 2006-2015

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Background

In Germany, routine childhood varicella vaccination is implemented since 2004. Two varicella vaccine doses are recommended since 2009 with a minimum interval of 4 weeks. First-dose varicella and measles-containing vaccine (MCV) are preferably to be given as separate injections. We utilized a countrywide monitoring system containing individual-based health insurance claims data on administered vaccines and vaccine-preventable disease diagnoses to estimate varicella vaccine effectiveness (VE) and to analyse risk factors for breakthrough infection.

Methods

We applied proportional hazard models to estimate VE under various conditions and compared the risk of acquiring varicella among unvaccinated children in regions with high vs. low vaccination coverage.

Results

Among 1.4 million children we identified 29,404 varicella cases over a maximum follow-up of eight years post-vaccination. One-dose VE (VE1) was 81.9% (95%CI 81.3-82.5); two-dose VE (VE2) was 94.2% (95%CI 94.2-94.6). With dose one given 1-27 days after MCV, VE1 was 32.2% (95%CI 10.4-48.6) and VE2 was 92.8% (95%CI 84.8-96.6). VE was not associated with age at vaccination (11-14 vs. ≥ 15 months), time since vaccination, or vaccine type (single-compound vs. combined vaccines). The time interval between subsequent varicella doses (1-27 days, 28 days-1 year, >1-3 years, >3 years) was not significantly associated with VE2, but the VE2 point estimate was lower with 1-27 days between doses. Unvaccinated children had an approximately twofold higher risk of acquiring varicella when living in regions with low vaccination coverage.

Conclusions

Two-dose varicella vaccination provides high protection for at least eight years. Unvaccinated children benefit from herd effects. An interval of <4 weeks between varicella vaccine doses may have implications on VE, while longer intervals lead to similar VE. When the first varicella vaccine dose is given shortly after MCV, a second dose is absolutely essential.

**EPOSTER DISCUSSION SESSION 22: NON-INVASIVE GASTROINTESTINAL AND MUCOSAL INFECTIONS
- STATION F**

ESP17-0982

ROTAVIRUS HOSPITALIZATIONS IN THE ABSENCE OF ROTAVIRUS VACCINATION IN 2015-2016 IN THE NETHERLANDS

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Background

Survey.

Background

The Netherlands has recently experienced an unexplained reduction in rotavirus activity in the absence of infant rotavirus vaccination. We evaluated the current contribution of rotavirus to acute gastroenteritis (AGE) hospitalizations with special focus on infants with medical risk conditions including prematurity (<36wks GA), low birth weight (LBW) or severe congenital pathology (combined prevalence in the Dutch infant population: 8%).

Methods

Methods

Within the Risk-group Infant Vaccination Against Rotavirus (RIVAR)-project, a combined observational and implementation study, 12 hospitals conduct active prospective AGE surveillance in children < 2 years during the baseline period without rotavirus vaccination. Stool samples are tested by PCR for rotavirus and norovirus depending on the admission hospital.

Results

Results

Between November 2014-2016, 354 AGE episodes were recorded. Of these, 173 were rotavirus tested and 90 were positive (52% of tested cases). In comparison, 123 AGE episodes were norovirus tested and 16 were positive (13%). Nosocomial AGE contributed 13% of episodes and 24% of rotavirus episodes. Of 313 AGE patients with recorded health status, 52 (17%) had prematurity, LBW or severe congenital pathology. Among rotavirus AGE risk-group prevalence was 24%. Risk-groups accounted for 46% of nosocomial AGE episodes. Length of hospital-stay for community-acquired rotavirus AGE was significantly increased among risk-groups versus healthy infants (median LOS= 6.5 days versus 2.5 days, p=0,029).

Conclusions

Conclusion

Despite lower endemic state, rotavirus is still dominant in infant AGE hospitalizations and an important nosocomial pathogen. Nearly one quarter of rotavirus AGE occurs among medical risk-groups and these infants require prolonged hospitalization. Rotavirus vaccination has the potential to generate significant health gains in particular for risk-groups.

EPOSTER DISCUSSION SESSION 15: OTHER COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION G

ESP17-0988

PREVALENCE AND CHARACTERIZATION OF HAEMOPHILUS INFLUENZAE IN THE NASOPHARYNX OF YOUNG CHILDREN, SOUTH AFRICA

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Background

Haemophilus influenzae, a coloniser of the nasopharynx (NP), is capable of causing infections such as otitis media, pneumonia and meningitis in young children. *H. influenzae* may be encapsulated (serotypes a-f) or unencapsulated (non typeable strains). This study describes the dynamics of each *H. influenzae* serotype, including non typeable *H. influenzae* strains, in the nasopharynx of healthy young children enrolled in an *H. influenzae* type b-vaccinated birth cohort in Cape Town, South Africa.

Methods

One hundred and thirty seven participants were recruited from the Drakenstein sub-district between 2012 and 2013. Nasopharyngeal swabs were collected from the infants at birth and fortnightly thereafter for the first year of life, with additional sampling at 18 and 24 months. The cultured *H. influenzae* isolates were confirmed with molecular identification techniques. Molecular typing was performed to classify the *H. influenzae* isolates into the six serotypes and non typeable strains.

Results

A total of 3504 nasopharyngeal samples were collected. None of the children were colonised at birth. *H. influenzae* prevalence at 2 weeks of age was 2.8% (3/109), reaching a peak of 52.7% (68/129) at 24 weeks of age. NTHi accounted for 92.9% (1248/1344) of the *H. influenzae* positive isolates, with serotypeable 7.0% (94/1344) and cap-deficient variants 0.1% (2/1344) accounting for the remainder. Serotype a,b,c,e and f accounted for 0.15%, 1.9%, 1.3%, 1.78% and 1.86% respectively. *H. influenzae* serotype d was not detected.

Conclusions

NTHi accounted for the vast majority of *H. influenzae* isolates in this cohort (93%). Hib colonisation was uncommon. Serotype d was not recovered. Findings from this study will form the basis for subsequent studies, which include the role of *H. influenzae* (serotypes and NTHi) in the development of respiratory tract infections.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 13: PUBLIC HEALTH: BACTERIAL INFECTIONS AND CLINICAL EPIDEMIOLOGY - STATION E

ESP17-0994

INCREASING HEALTHCARE WORKERS'(HCW) UPTAKE OF SEASONAL INFLUENZA VACCINATION (SIV) IN A TERTIARY PEDIATRIC HOSPITAL IN GREECE

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Background

Globally, influenza vaccination rates remain low among HCWs who are an important priority group for vaccination. Our aim was to improve 2016-2017 SIV rates among Greek HCWs by developing tailored interventions based on identified facilitators and barriers from a previous survey.

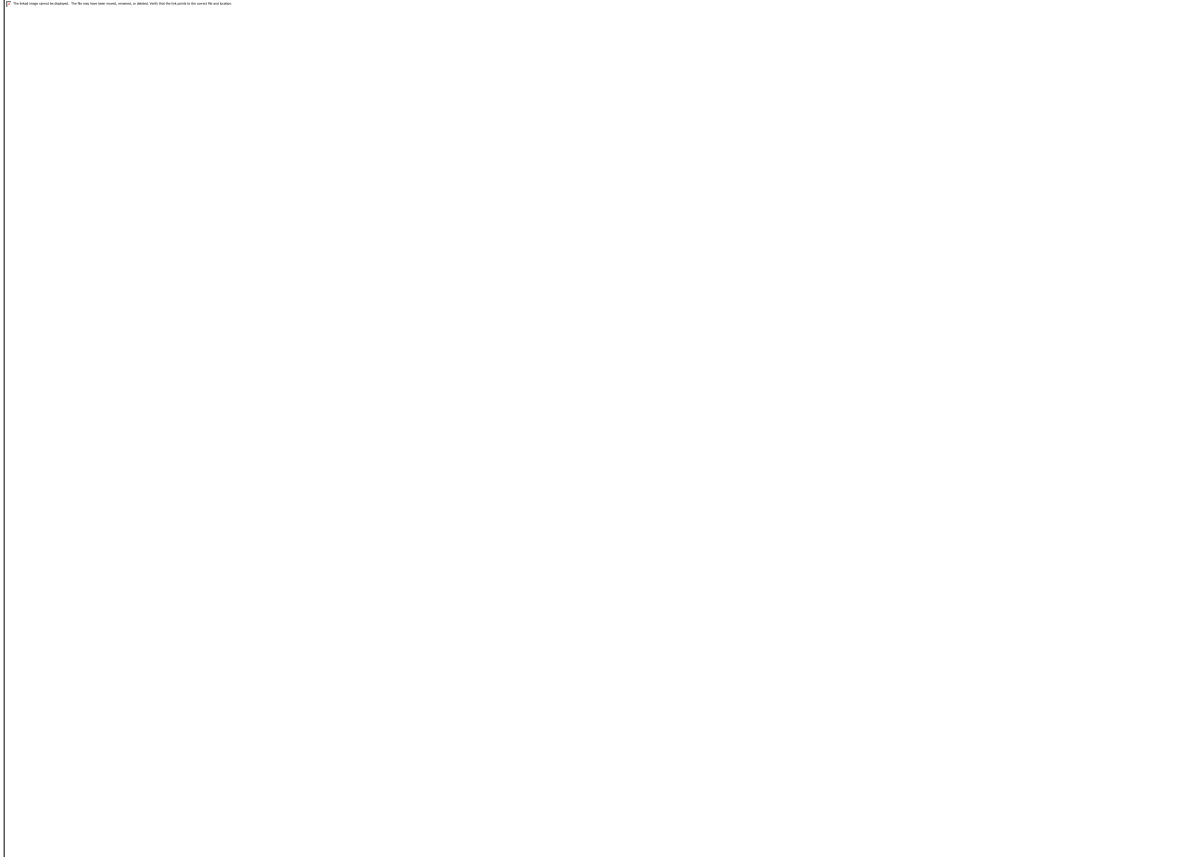
Methods

A cross-sectional anonymous survey of HCWs was conducted during the 2015-2016 influenza season to assess HCWs' attitudes, knowledge and perceptions on SIV. A multifaceted intervention was designed based on the findings, to improve HCW SIV uptake. In the fall of 2016 we implemented the intervention that included: **a.** a 2-page Q-and-A leaflet, distributed throughout the hospital, addressing the most common myths about seasonal influenza vaccine's safety and effectiveness; **b.** Four visits by the Infection Control(IC) director and nurses to each unit to discuss the importance of SIV and vaccinate on-site; **c.** Regular SIV clinic hours at the hospital's IC office were established and advertised; and **d.** A sticker indicating they had been vaccinated was handed out to all HCWs after SIV. Rates of HCW SIV were tracked through IC records.

Results

Our 2015 survey identified 3 main findings: **a.** Non-vaccination rates were significantly higher among nurses(75.7%) and cleaning/food service workers(72.7%), compared to doctors (40%)($P<0.001$). **b.** Misconceptions and concerns regarding vaccine side-effects(40.1%) and ineffectiveness(26.6%) were common; and **c.** Less than half of HCW(48.7%) stated that they had enough information about where and when they could get vaccinated at the hospital.

In January 2017, the hospital's vaccination rate was at 30.8% - much higher than previous years of around 19%. The vaccination increased in all types of HCW with a considerable 2-fold increase of vaccinated nurses (Figure 1).



Conclusions

A simple, low cost but tailor-made vaccination strategy can lead to an increase of SIV uptake.

EPOSTER DISCUSSION SESSION 04: BROAD-SPECTRUM ANTIBIOTIC USE AND STEWARDSHIP PROGRAMS - STATION D

ESP17-0997

TARGET GROUPS FOR PEDIATRIC ANTIMICROBIAL STEWARDSHIP PROGRAMS, RESULTS OF A DRUG UTILIZATION STUDY OF SYSTEMIC FLUOROQUINOLONES IN HOSPITALIZED CHILDREN

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Background

Fluoroquinolones (FQ) are increasingly prescribed for children, despite being labeled for only a limited number of pediatric indications. In this multicenter retrospective drug utilization study, we analyzed indications for systemic FQ prescriptions in hospitalized children and the appropriateness of the prescribed dose.

Methods

Using data obtained from electronic medical files, the study included all children who received a systemic FQ prescription in two Belgian university children's hospitals between 2010-2013. Two authors reviewed prescribed daily doses. Univariate and multivariate logistic regression models were used to analyze risk factors for inadequately dosing.

Results

262 FQ prescriptions for individual patients were included for analysis. 16.8% of these prescriptions were for labeled indications, and 35.1% were guided by bacteriological findings. Prescribed daily dose was considered to be inappropriate in 79 prescriptions (30.2%). Other FQ than ciprofloxacin accounted for 9 prescriptions (3.4%), of which 8 were correctly dosed. Underdosing represented 45 (56.9%) dosing errors. Infants and preschool children were at particular risk for dosing errors, with associated adjusted OR of 0.263 (0.097-0.701) and 0.254 (0.106-0.588) respectively.

Conclusions

FQ were often prescribed off-label and not guided by bacteriological findings in our study population. Dosing errors were common, particularly in infants and preschool children. FQ prescriptions for children should be improved by specific pediatric antimicrobial stewardship teams.

EPOSTER DISCUSSION SESSION 14: BACTERIAL EVALUATION OF COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION F

ESP17-0998

B CELLS ARE ESSENTIAL FOR BACTERIAL CLEARANCE IN EXPERIMENTAL MYCOPLASMA PNEUMONIAE PNEUMONIA

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Background

Mycoplasma pneumoniae (Mp) is a major cause of bacterial pneumonia in children. We recently showed that besides causing infection Mp also colonizes the upper respiratory tract of asymptomatic children. However, the contribution of protective antibodies to immunity against Mp carriage and infection is unclear.

Methods

We investigated the influence of antibodies on pulmonary infection and nasal carriage in a novel C57BL/6 mouse model, which resembles the human situation.

Results

C57BL/6 mice developed significant pneumonia 3 days after nasal inoculation, which was cleared within 28 days, while carriage outlasted in the nose. This model resembles the human situation where carriage is observed after symptomatic infection for up to 4 months. Upon infection with Mp, serum levels of specific IgM rapidly increased, followed by specific IgG. By contrast, specific antibodies were not detected in nasal lavages, suggesting that they may not contribute to clearance of carriage. Furthermore, Btk/KO mice, which lack natural antibodies and have reduced B cells, showed carriage and clearance of infection at the same rate as the wild-type strain. In contrast, complete B-cell deficient MuMT mice were unable to clear Mp in the lungs and exhibited higher carriage rates over time. Adoptive transfer of wild-type serum 14 days post infection into MuMT mice reconstituted the wild-type phenotype in terms of bacterial control.

Conclusions

We show that neutralizing antibodies against *M. pneumoniae* are essential for resolution of disease by bacterial clearance in the lungs but have a limited effect on clearance of nasal carriage. These results have major implications for understanding the role of antibodies in *M. pneumoniae* host-pathogen interactions, and thus, for the current research on vaccine-induced antibody responses.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 09: HOST-PATHOGEN INTERACTION - STATION A

ESP17-1023

EVALUATION OF THE EXPRESSION LEVEL OF 12/15 LIPOXYGENASES IN RESPIRATORY SYNCYTIAL VIRUS INFECTION

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Background

Human respiratory syncytial virus (RSV) severity is thought to be caused, at least partially, by an excessive immune response. Pulmonary leukocyte infiltration is the result of a coordinated expression of diverse chemokines with distinct cellular specificities. Lipoxygenases (LOXs), regulate inflammation and have been suggested to play an important role in the immune response to viral infection. To further our understanding of the role of LOX in respiratory viral infection, we studied 12/15-lipoxygenase in RSV-related airway inflammation, and related inflammatory chemokines (CCL5 and CCL3) during experimental RSV infection.

Methods

Female BALB/c mice, challenged intranasally with RSV A2. Mock mice were given PBS. At day 5 after infection mice were sacrificed. BAL fluid was collected, and differential cell counts were performed. The total RNA from the BAL cells and the lung tissue was extracted and cDNA was synthesized. Real-time RT-PCR was performed on cDNA samples using the SYBRs Premix for Lox 12/15 and chemokines expression. The amount of target ($2^{-\Delta\Delta CT}$) was obtained by normalizing to the level of the housekeeping gene endogenous β -actin.

Results

RSV infection induced mRNA expression of CCL5 and CCL3 in both BAL and lung tissue cells. In addition RSV infection enhanced expression of 12/15-LOX in both BAL and lung cells.

Conclusions

In conclusion, we confirm that RSV infection leads to the increased expression of 12/15 LOX and the related chemokines CCL5 and CCL3 in BAL fluid and lung tissue cells. These results provide new insights into the role of lipoxygenase pathways in the development of inflammation during viral airway infection requiring further studies how 12/15 LOX could serve as a target for intervention for patients with viral respiratory tract infection.

EPOSTER DISCUSSION SESSION 11: VACCINES: VIRAL IMPACT AND NON-SPECIFIC EFFECTS - STATION C

ESP17-1024

INACTIVATED QUADRIVALENT INFLUENZA VACCINE REDUCES HEALTHCARE AND ANTIBIOTIC USE IN CHILDREN AGED 6-35 MONTHS: A RANDOMIZED CONTROLLED EFFICACY TRIAL SUBANALYSIS IN EUROPEAN/EASTERN MEDITERRANEAN COUNTRIES

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Background

The efficacy of inactivated influenza vaccines in young children can vary. We therefore performed a clinical trial to evaluate the efficacy and effect on healthcare use of an inactivated quadrivalent influenza vaccine (IIV4) in children aged 6-35 months

Methods

A phase III, observer-blind, randomized efficacy trial was conducted in five cohorts in seven high/upper-middle income European/Eastern Mediterranean countries and six upper/lower middle-income tropical/sub-tropical countries during 2011-2014. Healthy children aged 6-35 months (N=12,018) received IIV4 or a control vaccine. Primary endpoints were reverse transcription polymerase chain reaction (RT-PCR)-confirmed moderate to severe influenza and influenza of any severity. This post-hoc subanalysis included children from European/Eastern Mediterranean countries in two cohorts: 2011-2012 (n=1,777) in Belgium, Czech Republic, Poland, Spain, United Kingdom and 2012-2013 (n=1,564) in these five countries plus Lebanon and Turkey. Efficacy was analysed in the pooled total vaccinated cohorts.

Results

Vaccine efficacy (95% confidence interval) against RT-PCR-confirmed influenza of any severity was 66.6% (57.0-74.4%). Cases were mainly caused by A/H3N2 (52.3%), A/H1N1 (20.5%), and B/Yamagata (24.3%). A total of 59.8% of antigenically characterized isolates were vaccine mismatched. IIV4 reduced the relative risk of influenza-related general practitioner visits, emergency room visits, and antibiotic use (Table).

Conclusions

IIV4 was efficacious in European/Eastern Mediterranean countries despite substantial vaccine mismatch, and afforded important reductions in influenza-related general practitioner and emergency room visits. An additional medical benefit of IIV4 was a meaningful reduction in the use of antibiotics associated with influenza illness, which in turn could reduce the selective pressure inducing antimicrobial resistance, a growing public health concern worldwide.

Clinical Trial Registration (Please input N/A if not registered)

GlaxoSmithKline Biologicals SA funded this study (NCT01439360)

EPOSTER DISCUSSION SESSION 06: SEVERE BACTERIAL INFECTIONS - STATION F

ESP17-1034

EARLY LIFE FAECAL BACTERIAL COMPOSITION OF INFANTS IN A SOUTH AFRICAN BIRTH COHORT – THE DRAKENSTEIN CHILD HEALTH STUDY

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Background

There are few data on the faecal microbiome in early life amongst African infants. We aimed to characterize the faecal bacterial communities of infants and mothers amongst participants in a South African birth cohort study.

Methods

We collected faecal specimens from a low-socioeconomic, peri-urban community in Western Cape, South Africa. Specimens were collected from 90 mothers and 107 infants at the time of delivery, 72 infants at 4-12 weeks and 36 infants at 20-28 weeks of life. We generated bacterial sequences from the V4 hypervariable region of the 16S ribosomal RNA gene using Illumina MiSeq technology.

Results

Bacterial profiles in the meconium (dominated by Proteobacteria (78%), Firmicutes (13%) and Actinobacteria (7%)) were distinct from those of maternal faeces (dominated by Firmicutes (65%), Actinobacteria (16%) and Bacteroidetes (9%)). A shift in infant faecal bacterial profiles was observed at 4-12 weeks and 20-28 weeks where specimens were dominated by Actinobacteria (60%, 53%), followed by Firmicutes (21%, 33%) and Proteobacteria (16%, 11%). Prior to hospital discharge, Enterobacteriaceae were more prevalent amongst infants who were exclusively formula-fed compared to those who were exclusively breast-fed ($p=0.039$). This trend was also observed with continuous exclusive formula-feeding up until 4-12 weeks of age ($p=0.007$). At 4-12 and 20-28 weeks of age, HIV-exposed uninfected infants had higher proportions of *Weissella* ($p<0.0001$, $p=0.0001$) and higher faecal bacterial diversity ($p=0.02$, $p=0.002$) compared to HIV-unexposed infants.

Conclusions

The bacterial community of meconium in our study is distinct from that found at 4-12 and 20-28 weeks of life. Infant faecal bacterial profiles were distinct from those of their mothers at all time points studied. Early life feeding practices and maternal HIV status are potential drivers of infant faecal bacterial profiles in this South African cohort.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 11: VACCINES: VIRAL IMPACT AND NON-SPECIFIC EFFECTS - STATION C

ESP17-1041

MID-SEASON 2016/17 VACCINE EFFECTIVENESS (VE) OF THE LIVE ATTENUATED INFLUENZA VACCINE (LAIV) AMONG TWO-YEAR-OLD CHILDREN IN FINLAND

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Background

In 2016, the US Advisory Committee on Immunization Practices voted against further use of LAIV due to no observed VE over three consecutive seasons. In contrast, moderate VE (45.4%, 95%CI: 18.2%–63.5%) against laboratory-confirmed influenza (LCI) type A was measured in 2015/16 with A(H1N1) dominance in Finland, where LAIV was introduced for two-year-olds in 2015 and continued in the National Vaccination Program in 2016/17. This nationwide, register-based cohort study aimed for mid-season VE of quadrivalent LAIV and trivalent inactivated influenza vaccine (IIV).

Methods

Population register information of all children born 2014 and living in Finland in week 40, 2016 was linked with register data on influenza vaccinations and LCI. Each child was followed till the occurrence of LCI type A, death, or week 3, 2017. VE was estimated for LAIV and IIV separately, having the unvaccinated cohort as a reference for both, using Cox regression modelling vaccination as a time-dependent variable (excluding days 1-14 after vaccination).

Results

Of 55694 children, 19.1% were vaccinated with LAIV, 8.4% with IIV; most of them (~80%) already by week 48, 2016. The influenza A(H3N2) epidemic peaked early (weeks 51-52, 2016). Counting 148 unvaccinated, 20 LAIV, and 6 IIV vaccinated LCI type A, crude VE was estimated at 30.7% (95%CI: -10.7%-56.7%) for LAIV and 55.1% (-1.7%-80.2%) for IIV.

Conclusions

Mid-season VE figures indicate a non-significant trend towards both vaccines having a positive impact. Since case numbers are small and 95%CIs widely overlapping, differences in the performance of LAIV compared to IIV and compared to last season's figures cannot be drawn as reliably as with end-season estimates. Confounding, i.e. differences in healthcare-seeking behavior and clinical decision to sample respiratory specimens, has been suggested and will be addressed in end-season analyses.

EPOSTER DISCUSSION SESSION 14: BACTERIAL EVALUATION OF COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION F

ESP17-1062

COMPARISON OF PNEUMOCOCCAL SEROTYPES COLONISING THE UPPER AND LOWER RESPIRATORY TRACT OF CHILDREN PRESENTING WITH LOWER RESPIRATORY TRACT INFECTION

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Background

Nasopharyngeal (NP) colonisation by *Streptococcus pneumoniae* is a necessary first step in the pathogenesis of pneumonia and yet the dynamic nature of pneumococcal colonisation remains incompletely understood. We compared differences in serotype distribution and carriage density of pneumococci present in the nasopharynx vs. induced sputum [IS] of children presenting with lower respiratory tract infection (LRTI) in a South African birth cohort.

Methods

We collected paired NP and IS from 733 LRTI events from 360 children. Pneumococcal isolates were identified by bacterial culture and serotyped by latex agglutination. Quantitative *lytA* real-time PCR (rtPCR) was performed on total nucleic acid extracted from both NP and IS specimens.

Results

Pneumonia incidence was 0.32 (95% CI 0.30–0.34; median age 2.6 years [IQR 1.8–3.6]) episodes per child-year (e/cy). 176 (19%) cases of pneumonia were severe. There was no difference in the rate of recovery of pneumococci from NP and IS (68% [499/733] and 69% [503/733], $p = 0.75$). In both NP and IS, the most frequently encountered vaccine-types were 19F, 9V, 19A and 6A while non vaccine-types included 15B/15C, 21, 10A, 16F, 35B, 9N and 15A. Preliminary analysis of serotype data from 129 children showed a 78% (107/129) concordance in pneumococcal serotype distribution between NP and IS. Co-colonization by multiple pneumococcal serotypes was identified in 12% (21/172) and 14% (31/224) of NP vs. IS samples respectively. We found small but significant differences in the carriage density of pneumococci detected in IS vs. NP (mean cycle threshold [Cq], 26.01 vs. 27.02, $p < 0.001$).

Conclusions

The difference in carriage densities suggests that it is not just the presence but serotype-specific carriage density that could distinguish pneumococcal carriage dynamics between these two divergent anatomical sites and disease progression.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 16: OTHER COMMUNITY ACQUIRED INVASIVE BACTERIAL INFECTIONS - STATION H

ESP17-1063

INCIDENCE AND MANIFESTATIONS OF NEUROBORRELIOSIS IN SWEDEN

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Background

Borrelia burgdorferi is a common cause of bacterial meningitis but there are very few studies on incidence in Europe.

Aim: To report the incidence and symptoms of neuroborreliosis in children in a Swedish region.

Methods

Medical records of children (<15 years) treated for neuroborreliosis 2002-2014 were studied retrospectively. The patients were identified in the computerized registers of discharge diagnoses at the Departments of Pediatrics and Infectious Diseases in Gothenburg, Borås, Trollhättan and Halmstad, south Sweden, using ICD-10 diagnosis codes G51.0, G01.9 and/or A69.1 were identified during 2002-2014. but only those living in the city of Gothenburg and 10 surrounding municipalities were included. Of those, patients with symptoms compatible with neuroborreliosis and a white blood cell (WBC) count in cerebral spinal fluid (CSF) ≥ 7 cells/mm with $\geq 80\%$ mononuclear cells were included.

Results

548 children were included. The median age was 7 (1-14) years. The total incidence for the 13 year period was 2.8/10,000 and remained unchanged during the period. The incidence was significantly higher in rural (4.0/10,000) than in urban municipalities (2.1/10,000). The most common presenting symptoms were headache (n=335), fatigue (n=330) and cranial nerve palsies (n=329). The median duration of symptoms before admittance was 4.0 days for facial palsy and 14.0 days for other symptoms (P<0.001). The median WBC count in CSF was 129 (7-1069) cells/mm³.

Conclusions

This study is the largest so far in a pediatric population. The incidence of neuroborreliosis was higher than in previous European reports. This might be explained by increased *Borrelia* awareness, the distribution of tick population in Sweden, and the possibility that Swedish children more frequently play in the forest.

EPOSTER DISCUSSION SESSION 12: PUBLIC HEALTH: VIRAL INFECTIONS - STATION D

ESP17-1073

ASSESSING THE ASSOCIATION BETWEEN RECURRENT WHEEZE AND RSV AND NON-RSV BRONCHIOLITIS IN INFANCY

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Background

Studies have suggested an association between respiratory syncytial virus(RSV) bronchiolitis and subsequent predisposition to wheeze in early childhood but it is unclear if this effect persists. Our aim was to assess the association of RSV and non-RSV bronchiolitis with different wheeze phenotypes.

Methods

Hospital Episode Statistics were used to identify all infants admitted to hospital in England during 2006 diagnosed either with bronchiolitis or urinary tract infection (UTI)(as controls). Patients with both diagnoses and all those who had been admitted to neonatal intensive care at birth were excluded from the analysis. Following these two cohorts over the subsequent eight years, any admissions with wheeze were identified. RSV status was determined from diagnostic coding and wheeze phenotype from timing of recurrent wheeze episodes.

Results

We identified 14969 infants admitted with bronchiolitis and 3577 admitted with UTI. These cohorts went on to have 6542(43.7%) and 646(18.1%) admissions with wheeze, respectively($p < 0.005$), representing an excess of 3839 wheeze admissions per cohort year among infants who had bronchiolitis. Table 1 shows the odds ratios (and 95% CIs) of at least one admission with different wheeze phenotypes.

	All		Wheeze Phenotype		
	Wheeze	Transient Early	Persistent Early	Persistent	Late onset
All cause Bronchiolitis	2.4(2.1-2.8)	6.3(4.2-9.8)	9.4(3.5-38.2)	2.7(1.5-5.4)	1.6(1.3-2.0)
RSV	2.3(2.0-2.6)	5.5(3.8-8.3)	5.1(2.1-15.1)	2.09(1.1-4.2)	1.6(1.3-2.0)
Non-RSV	2.9(2.0-4.2)	4.1(1.4-10.0)	12.0(2.4-50.4)	3.25(0.5-12.1)	2.2(1.1-3.9)

Conclusions

We found an increase in the risk of subsequent re-admission with wheezing in those with previous bronchiolitis compared to those with UTI irrespective of infectious cause. This could be because bronchiolitis increases subsequent predisposition to wheeze or due to genetic or other predisposition to both conditions. Interventions that reduce bronchiolitis in infancy could result in significant additional reductions in later morbidity and healthcare costs.

EPOSTER DISCUSSION SESSION 18: COMMUNITY ACQUIRED LIFE-THREATENING BACTERIAL INFECTIONS - STATION B

ESP17-1075

RISK FACTORS OF SEVERE BACTERIAL INFECTION IN CHILDREN IN EUROPE (THE EUCLIDS PROJECT)

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Background

Sepsis and severe focal infections (SFI) represent a significant burden of disease in hospitalized children and are an important cause of admission to paediatric intensive care units (PICU). We aimed to describe the risk factors associated with sepsis and SFI across Europe.

Methods

Eligible patients were children from 1 month-to-18 years with sepsis or SFI admitted to any of the 195 hospitals in the 15 countries in Europe constituting the EUCLIDS consortium clinical network (www.euclids-project.eu). From July-2012 to December-2014 a total of 3549 eligible patients with complete data were recruited.

Results

3549 children were included. Median age was 40.0 months (IQR=12.5–97.1). 54.3% male. 52.2% (n=1852) had sepsis and 47.8% (n=1697) SFI. 246 (9.6%) of the cases and 300 (12%) of the first or second degree relatives had a personal history of serious infection. Prematurity (n=246, 8.4%) was associated with an increased risk of severity (OR=9.052). There was paternal consanguinity in 2.2% (n=51). 2.1% (n=48) of first- or second-degree relatives had an immunodeficiency. The 29.6% (n=522) of the patients lived with smokers at home. Among the unvaccinated or incompletely vaccinated patients (n=184, 7.2%), the major infections were pneumonia (n=35, 19%), central nervous system (CNS) infections (n=27, 14.7%) and pyelonephritis (n=17, 9.2%), with *S.pneumoniae* and *E.coli* being the main causative agents.

Conclusions

The major risk factors associated with sepsis or severe focal infection in Europe are the personal or family history of previous severe infection, prematurity and exposure to tobacco. The greatest burden of disease is associated with meningococcal or pneumococcal infection, immunopreventable diseases; which on the other hand increase the risk of ICU admission.

Clinical Trial Registration (Please input N/A if not registered)

**EPOSTER DISCUSSION SESSION 22: NON-INVASIVE GASTROINTESTINAL AND MUCOSAL INFECTIONS
- STATION F**

ESP17-1080

CHANGES IN THE EPIDEMIOLOGY OF ACUTE BACTERIAL GASTROENTERITIS (ABG) IN A PEDIATRIC EMERGENCY SERVICE IN THE LAST DECADE

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Background

Some European countries have observed changes in ABG epidemiology. This study aims to evaluate if the same occurred in our centre.

Methods

Retrospective study with analysis of the medical records of all children with positive stool cultures admitted to a Paediatric Emergency Service between 2007 and 2015. Stool cultures were performed at the decision of the clinician observing the child, without significant variability throughout the study period.

Results

There were 1065 positive stool cultures (33%), with 1079 identified bacteria: 641 (59%) *Campylobacter* spp, 405 (38%) *Salmonella* spp, of which 188 (46.4%) *S. enteritidis* and 192 (47.4%) *S. typhimurium*, 32 (3%) *Yersinia enterocolitica* and 1 *Shigella* spp. A decrease in *Salmonella* spp was noticed (93 cases, 55%, in 2007; 23, 25.3%, in 2015; $p < 0,001$) due to a significant reduction in *S. enteritidis* (70 cases, 41.4%, in 2007; 3 cases, 3.3%, in 2015; $p < 0,001$). *S. typhimurium* did not change significantly (17 cases, 10.1%, in 2007; 19 cases, 20.9%, in 2015). Although the number of *Campylobacter* spp identified did not vary significantly over the years, its proportion increased from 38% of all positive cultures in 2007 to 73% in 2015 ($p < 0,001$), becoming the dominant strain in all age groups. The mean age was 2.1 years. No seasonality in infection by *Campylobacter* spp was found, whereas *Salmonella* spp was more prevalent in the summer months. Hospitalisation occurred in 199 (19%) cases, mostly in *Salmonella* spp infections. Outcome was favourable in all.

Conclusions

Although the number of ABG caused by *Campylobacter* spp did not increase in recent years, due to the important reduction in *S. enteritidis* infections it is now largely predominant, distributed throughout the year and occurring mainly during the first years of life, with few hospitalisations.

EPOSTER DISCUSSION SESSION 16: OTHER COMMUNITY ACQUIRED INVASIVE BACTERIAL INFECTIONS - STATION H

ESP17-1083

INVASIVE GROUP A STREPTOCOCCUS INFECTIONS IN CHILDREN: BACTERIAL VIRULENCE FACTORS AND HOST SUSCEPTIBILITY: THE STREPTOPEDIA STUDY

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Background

Group A *Streptococcus* (GAS) is increasingly responsible of invasive infections in developed countries. With the same GAS strain, different individuals can develop a wide variety of clinical phenotypes. Our study aims at exploring the potential association between virulence factors, host's immunity and the occurrence of an invasive GAS infection (iGAS).

Methods

Since 2015, we are prospectively including, on a national basis, children aged ≤ 15 years hospitalised for an iGAS or treated ambulatory for a non-invasive GAS infection (niGAS). Patients with iGAS were separated in 2 groups: those with or without known risk factor for iGAS, such as varicella. All strains were analysed by emm-genotyping and PCR of virulence genes: *SpeA*, *SpeB*, *SpeC*, *ssa*, *sic*, *smeZ*. The immunological assessment in patients with iGAS included abdominal ultrasound, whole-blood counts and smears, determinations of plasma immunoglobulin and complement levels.

Results

A total of 55 patients with niGAS and 64 with iGAS were included, of which 44 had a known risk factor for iGAS and 20 not. Emm type 1 prevailed among invasive strains (34%) and was associated with *sic* virulence gene ($p < 10^{-5}$), whereas Emm89 prevailed among non-invasive strains (25%). There was no significant difference in serotypes or virulence genes between patients with or without risk factor for iGAS.

Conclusions

Bacterial findings are in accordance with previous studies highlighting the particular invasiveness of emm type 1 clone. The immunological analysis of our cohort may help us to precise the role of specific GAS serotypes or virulence genes in the occurrence of iGAS.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 18: COMMUNITY ACQUIRED LIFE-THREATENING BACTERIAL INFECTIONS - STATION B

ESP17-1085

PHENOTYPE OF EUROPEAN CHILDREN REQUIRING ICU ADMISSION DUE TO SERIOUS BACTERIAL INFECTIONS (THE EUCLIDS PROJECT)

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Background

Sepsis and severe focal infections (SFI) represent a significant burden of disease in hospitalized children and are an important cause of admission to paediatric intensive care units (PICU). We aimed to describe the characteristics and outcomes of children requiring ICU admission due to sepsis and SFI across Europe.

Methods

Eligible patients were children from 1 month-to-18 years with sepsis or SFI admitted to any of the 195 hospitals in the 15 countries in Europe constituting the EUCLIDS consortium clinical network (www.euclids-project.eu). From July-2012 to December-2014 a total of 3549 eligible patients with complete data were recruited.

Results

3549 children were included. Median age was 40.0 months (IQR=12.5–97.1). 54.3% male. A total of 52.2% (n=1852) had sepsis and 47.8% (n=1697) had SFI. A total of 38.5% (n=1362) patients required PICU admission with a median duration of stay of 4 days (IQR=2-9). The main clinical syndromes were meningitis/encephalitis (n=331, 24.3%), septic shock (n=319, 23.4%), pneumonia (n=250, 18.4%) or severe sepsis (n=110, 8.1%). The main microorganisms isolated were *N.meningitidis* (n=299, 21.9%), *S.pneumoniae* (n=135, 9.9%), *Group A Streptococcus* (n=103; 7.6%) and *S.aureus* (n=81; 5.9%). During hospitalization, 35.5% (n=949) of the children required oxygen, 23.4% (n=749) invasive ventilation and 12.1% (n=384) inotrope support. 2.1% (n=68) died.

Conclusions

A high proportion of severe childhood infections require ICU admission and are due to central nervous system infections or present as septic shock. The major causative agents are meningococcus and pneumococcus. The burden of disease lies predominantly in children under 5 years. The infant mortality rate due to sepsis or severe focal infection in Europe is relatively low.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 19: CONGENITAL VIRAL AND BACTERIAL INFECTIONS - STATION C

ESP17-1114

RENAL DYSFUNCTION IN INFANTS AND TODDLERS WITH CONGENITAL CYTOMEGALOVIRUS INFECTION; CROSS-SECTIONAL STUDY IN THE NATIONAL REGISTER OF CONGENITAL CYTOMEGALOVIRUS INFECTION (REDICCMV)

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Background

Despite renal disease is uncommon in patients with congenital cytomegalovirus infection (cCMV), the virus replicates in kidneys and is secreted into urine in large quantities for years. We aim to determine the prevalence and severity of the biochemical manifestations of glomerular and tubular renal dysfunction in infants and toddlers affected with cCMV.

Methods

Cross-sectional study within the National Spanish Register of Congenital Cytomegalovirus Infection (REDICCMV; <http://www.cmvcongenito.es>). First-morning urine samples from patients aged <5 years were analyzed for hematuria (urine dipstick, qualitative result), beta-2-microglobulin levels (≤ 300 $\mu\text{g}/\text{mL}$), protein/creatinine (Pr/Cr; ≤ 200 mg/mg) and albumin/creatinine ratios (Alb/Cr; ≤ 30 mg/mg), and viruria (DNA-CMV copies/mL, expressed as \log_{10}) where available. Samples obtained under stressful conditions and those with bacteriuria or a positive culture were excluded. Clinical and epidemiological data were collected by means of the Redcap® software.

Results

Ninety samples from 52 patients (21 females; median age: 23.6mo) were included. Elevated Pr/Cr, Alb/Cr and beta-2-microglobulin were observed in 39/86 (45.3%), 20/86 (23.2%) and 9/67 (13.43%) samples, respectively; hematuria was observed in 2/80 (2.5%) samples. Median viruria was 3.9 \log_{10} DNA-CMV copies/mL (available in 45 samples). None of the patients developed signs or symptoms consistent with proteinuria, fluid or electrolyte imbalances, or acute or chronic renal failure.

Overall, 19.6%, 19.6%, 7.8% and 43.1% of patients were small for gestational age at birth, developed neurosensorial hypoacusia, neurodevelopmental delay and received antivirals, respectively. The latter were not associated with proteinuria or albuminuria. Proteinuria positively correlated with albuminuria ($r=0.640$, $p<0.0001$) and also with viruria ($r=0.451$, $p=0.03$).

Conclusions

Symptom-free mild proteinuria and albuminuria were observed in 45% and 25% of the samples in our cohort of infants and toddlers with cCMV, respectively, and the former correlated with urine CMV viral load.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 15: OTHER COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION G

ESP17-1115

C-REACTIVE PROTEIN AS A PREDICTOR OF PLEURAL EFFUSION AMONG HOSPITALISED CHILDREN WITH SUSPECTED BACTERIAL CAP

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Background

The role of acute phase reactants at admission due to bacterial community acquired-pneumonia (CAP) is controversial. Pleural effusion is the main complication of CAP with high impact in the total length of admission and the thoracic drainage requirement. Thus, we aimed to assess the predictive value of C-reactive protein (CRP) in children with suspected bacterial CAP to identify those at risk of pleural effusion.

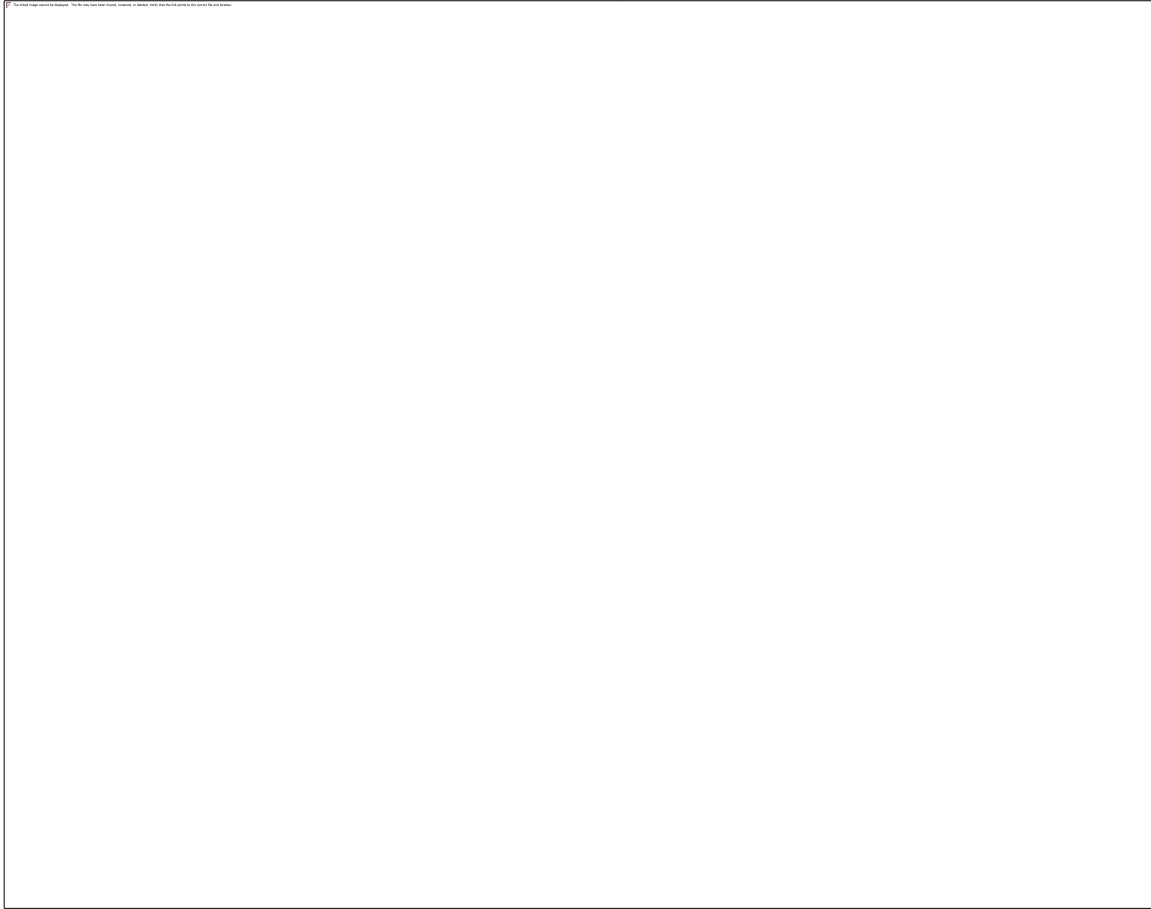
Methods

Epidemiological, clinical and microbiological data have been collected from all the previously healthy <14-year-old children admitted with suspected bacterial-CAP to a tertiary hospital during 6 years (2011-2016). Suspicion of bacterial aetiology was defined as classic clinical and radiological manifestations, as well as CRP levels >80 mg/L at admission. CRP was assessed in all subjects at admission in the Emergency Department. Suspected atypical and viral CAP, bronchoaspiration or nosocomial pneumonia as well as immunocompromised patients were excluded.

Results

Two hundred and ninety-two children were recorded, 52% (152) having pleural effusion. Main results are summarized in the table below. Among variables studied, CRP levels were higher in those with pleural effusion and had a strong negative impact on the length of stay, with statistical significance. Using ROC analysis, CRP had the highest predictive value for the development of pleural effusion, with a value of 168 mg/L for a specificity of 60% and a sensitivity of 70%. PCT levels were also significantly higher in subjects with pleural effusion but the

sample was small (n=32), since it is not measured routinely.



Conclusions

Our results suggest that CRP levels should be measured at admission in all children with suspected bacterial CAP in order to identify those at risk of developing pleural effusion.

EPOSTER DISCUSSION SESSION 09: HOST-PATHOGEN INTERACTION - STATION A

ESP17-1116

STUDYING UPPER RESPIRATORY TRACT BACTERIAL COLONISATION BY PCR IN SALIVA– GOOD FOR GROUP A STREP AND STAPH, SATISFACTORY FOR PNEUMOCOCCUS AND HAEMOPHILUS, POOR FOR MORAXELLA

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Background

Predicting the impact of bacterial and viral vaccines on transmission of respiratory tract bacteria and thus population protection effects relies on non-invasive sampling techniques and rapid low cost laboratory analysis of large numbers of samples. Children (and adults) do not like nasal swabs. Obtaining saliva is easy, painless and can be done frequently, permitting detailed longitudinal studies.

Methods

We obtained paired nasal swabs (Sw) and saliva (Sa) samples from 95 healthy pre-school children attending daycare in Coimbra, Portugal in 2015. Samples were stored frozen in skim milk-tryptone-glucose-glycerol (STGG) broth. DNA was extracted direct from 200µL aliquots and further aliquots cultured on agar plates (colistin blood agar, Columbia blood agar and bacitracin) under standard conditions and culture lawns stored and subjected to further DNA extraction. Quantitative PCR reactions were performed on both extracts from both samples from each child for pneumococcus (*Sp-lytA*), Group A strep (*GAS-ntpC*), *Haemophilus influenzae* (*Hi-hdp*), *Moraxella catarrhalis* (*Mc-ompJ*) & *Staphylococcus aureus* (*Sa-uc*).

Results

Detection rates for each sample type, method and species are shown in the table.

--

Rates in brackets are for each sample combining both methods. The bottom row is detection rates combining both samples and both methods.

Conclusions

Pneumococcus can be detected by PCR in saliva, albeit at lower sensitivity and at lower average density than in nasal swabs. Many saliva samples contain viable Sp and Sa but not Hi or Mc organisms. Staph and GAS are more often detected in saliva than in the nose. While adding lawn PCR increases sensitivity and thus power of carriage studies, direct PCR can detect bacterial DNA in the absence of viable organisms and gives a measure of colonisation density. Using both methods in both samples maximises sensitivity but uses many resources.

Acknowledgments

Pfizer

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 14: BACTERIAL EVALUATION OF COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION F

ESP17-1117

BACTERIAL AETIOLOGY IN BRONCHOALVEOLAR LAVAGE FLUID AND NASOPHARYNGEAL SWABS IN SPANISH CHILDREN WITH SUSPECTED CHRONIC LOWER RESPIRATORY TRACT INFECTIONS

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Background

Lower respiratory tract infections (LRTIs) are important causes of childhood morbidity and mortality worldwide. This study assessed the prevalence and concordance of bacteria isolated from the nasopharynx and LRT of Spanish children with suspected chronic LRTIs for whom bronchoalveolar lavage (BAL) was indicated.

Methods

This epidemiological, cross-sectional study was conducted in 7 hospitals and enrolled children ≥ 6 months to < 6 years of age with persistent or recurrent respiratory signs/symptoms not responding to usual treatment. BAL fluid (BALF) and nasopharyngeal swab (NPS) specimens were collected and cultured. Isolates of *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Moraxella catarrhalis* were further characterized by determining serotype, antibiotic susceptibility, and load. Concordance of findings from BALF and NPS from the same patient was defined by serotype and antibiotic susceptibility.

Results

S. pneumoniae, *H. influenzae*, or *M. catarrhalis* were identified from BALF and NPS specimens in 30.5%-51.1% and 46.6%-56.0% of the 191 evaluable children, respectively. Only 6.3% of BALFs and 3.7% of NPS yielded bacteria other than *S. pneumoniae*, *H. influenzae*, or *M. catarrhalis*. Co-colonisation was detected in 3.7% of BALFs and 2.1% of NPS. Approximately 26% of pneumococcal isolates were PCV13 serotypes, and 96% of *H. influenzae* isolates were non-typeable (NTHi). Concordance between BALF and NPS was 51.0% for *S. pneumoniae*, 52.1% for *H. influenzae*, and 22.0% for *M. catarrhalis* isolates.

Conclusions

NTHi, *S. pneumoniae*, and *M. catarrhalis* were the main bacteria in both BALF and NPS. Poor concordance between findings suggests that BALF can be a more accurate predictor than NPS of the aetiology of suspected chronic LRTIs. As NTHi was the most prominent bacterial organism isolated in their BALF, children with suspected chronic LRTIs would benefit from a vaccine that protects against NTHi.

Funding: GlaxoSmithKline Biologicals SA

Clinical Trial Registration (Please input N/A if not registered)

NCT02838407

EPOSTER DISCUSSION SESSION 05: VACCINE IMMUNOLOGY - STATION E

ESP17-1122

IMMUNOGENICITY AND IMMUNOLOGICAL MEMORY INDUCED BY THE 13VALENT PNEUMOCOCCAL CONJUGATE(PCV13) AND 23VALENT PLAIN POLYSACCHARIDE VACCINE(PPV23) IN HIV-INFECTED PATIENTS

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Background

Memory B cell(MBC) subpopulations have distinct roles in the establishment of pneumococcal conjugate vaccine-induced immunological memory, which is considered as an *in vitro* correlate of vaccine effectiveness: IgM-MBC replenish the MBC pool whereas switched-IgG(sIgG)-MBC differentiate into antibody-secreting plasma cells upon antigen reencounter. In contrast PPV23 has been associated with MBC depletion. We investigated the pneumococcal-serotype(PS)-specific immunological memory and immunogenicity induced by a combined schedule of PCV13/PPV23 in HIV-infected adults.

Methods

Forty HIV(+) adults (27-57 years) on ART with undetectable viral loads and CD4 T-cell count between 200 and 894 cells/ μ l [Group A (n=23 patients): ≥ 400 cells/ μ l; Group B (n=17 patients): CD4 200-400 cells/ μ l] received 1 PCV13 followed by 1 PPV23 given one year apart. Blood samples were obtained pre- and 1 month post-vaccination for phenotypic analysis of PS3- and PS14-specific IgM (PS⁺CD19⁺CD10⁻CD27⁺CD21⁺IgM⁺) and sIgG (PS⁺CD19⁺CD10⁻CD27⁺CD21⁺IgM⁻) MBC by flow-cytometry and quantification of PS-specific IgG antibodies by ELISA.

Results

PS-specific antibodies raised significantly one month after completion of PCV13/PPV23 immunization schedule ($p=0.003$, $p=0.002$ for PS14, PS3 respectively) compared to baseline. However, Group B patients had lower antibody titers at all time-points ($p<0.05$). One month post-PCV13, PS-specific IgM-MBC remained stable in Group A ($p=0.06$; $p=0.25$ for PS14, 3 respectively) but were significantly decreased in Group B ($p=0.05$; $p=0.01$ for PS14, 3 respectively). PS-specific sIgG-MBC increased significantly in both groups (Group A: $p<0.05$; Group B: $p<0.001$ for both PS studied). PPV23 decreased PS-specific IgM-MBC (Group A: $p=0.04$, $p=0.05$; Group B: $p=0.04$, $p=0.03$ for PS14, 3 respectively) whereas PS-specific sIgG-MBC remained constant in both groups (Group A: $p=0.25$, $p=0.3$; Group B: $p=0.23$; $p=0.5$ for PS14, 3 respectively). Baseline PS-specific sIgG-MBC were positively correlated with antibody levels 1 month post-PCV13 ($r=0.559$, $p=0.001$; $r=0.706$, $p<0.05$ for PS14, 3 respectively) and PPV23 ($r=0.796$, $p<0.05$; $r=0.660$, $p<0.05$ for PS14, 3 respectively). Positive correlation was also found between preexisting PS-specific IgM-MBC and sIgG-MBC post-PCV13 ($r=0.559$, $p=0.001$; $r=0.706$, $p<0.05$ for PS14, 3 respectively).

Conclusions

MBC subpopulations had different kinetics following conjugate and polysaccharide pneumococcal vaccine. PPV23 although immunogenic drained MBC pool suggesting a negative effect on PCV13-induced immunological memory which could compromise the protection of HIV-infected subjects and could be biologically significant in patients with low CD4 T-cell count.

Clinical Trial Registration (Please input N/A if not registered)

N/A(in review)

EPOSTER DISCUSSION SESSION 14: BACTERIAL EVALUATION OF COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION F

ESP17-1128

MICROBIOLOGICAL ANALYSIS OF MIDDLE-EAR-FLUID (MEF) AND NASOPHARYNGEAL-CARRIAGE (NC) OF INFANTS WITH ACUTE OTITIS MEDIA (AOM) IN GERMANY, 7TH STUDY YEAR

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Background

In Germany a general recommendation for pneumococcal conjugate vaccination was issued in 2006. Starting with PCV7, we saw the introduction of PCV10 and the replacement of PCV7 by PCV13 in 2009. We analyzed the pathogens recovered from children suffering from AOM with efflux as well as their nasopharyngeal carriage in the most recent study period from Oct.2014-Oct.2015.

Methods

MEF- and NC-swabs were taken from children with spontaneously draining AOM. Serotyping of *Streptococcus pneumoniae* isolates was performed using Neufeld-Quellung reaction.

Results

In the first three study years, 443, 310 and 210 patients could be included. Because of this declining number of reports, the recruiting-basis was increased from 50 to 75 centers, resulting in 439 patient-reports in year4, 354 (year5), 258 (year6) and 214 (year7). In year7 nasopharyngeal swabs were obtained from 199 (93.0%) of the patients.

81 MEF-samples showed relevant growth and the following pathogens were identified: *S.pneumoniae* (15/18.5%), *Streptococcus pyogenes* (34/42.0%), *Staphylococcus aureus* (20/24.7%), *Haemophilus influenzae* (12/14.8%) and *Moraxella catarrhalis* (0/0.0%). NC-rates were: *S.pneumoniae* 54.3%, *M.catarrhalis* 30.7%, *H.influenzae* 42.2%, *S.pyogenes* 20.6% and *S.aureus* 7.5%.

In year7 the most prevalent pneumococcal serotype in MEF was 3, in NC: 3, 11A and 23A. Coverage of PCV13 was 40.0% (MEF) and 20.7% (NC).

Conclusions

The prevalence of *S.pneumoniae* in MEF in the 7th study year was as low as in the four preceding study years. In the 7th study year, serotypes 3 was the only remaining vaccine serotype in AOM, with an unchanged prevalence (25-40%), but decreasing absolute case numbers per year (from 17 to 7) over the whole study period. There was no particular non-vaccine serotype increasing in MEF isolates. Among NC isolates the increase of serotypes 11A and 23A needs further observation.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 21: KAWASAKI DISEASE AND NON-INFECTIOUS CONDITIONS & INTERVENTIONS - STATION E

ESP17-1132

THROMBOCYTOPENIA ON ADMISSION IN CHILDREN WITH KAWASAKI DISEASE (KD) AMONG 57 CENTERS IN LATIN AMERICA: A PROSPECTIVE MULTINATIONAL MULTICENTER STUDY OF THE REKAMLATINA NETWORK

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Background

Although paediatricians are more familiar with thrombocytosis and its importance in KD, early thrombocytopenia can occur and is considered a risk factor for coronary artery lesions (CALs) and acute myocardial infarction (AMI). We describe the epidemiology, clinical aspects, CALs, and outcome of the largest prospective multinational study addressing this issue in children with KD.

Methods

Ongoing prospective descriptive multinational study of patients (pts) with a hospital discharge diagnosis of KD among 57 of the most important pediatric/general referral hospitals in 20 LA countries. Study period: June-1-2014 to December-31-2016. We included children in whom an admission complete blood count (CBC) test showed thrombocytopenia (platelets <150,000/mm³).

Results

Among 718 eligible KD pts, 697(97.1%) had an admission CBC taken, of which 24(3.4%) showed thrombocytopenia. Mean age at admission was 43(8-92) months. 13(54.1%) were male. Mean length of hospitalization was 7.2(4-22) days. Mean days of fever at admission were 6(4-12) days; 33.3% had other non-KD admission diagnosis. Mean platelets count was 99.125(60,000-146,000/mm³). Baseline echocardiogram was performed in all pts, of which >1 abnormality was documented in 7(29.2%) pts: pericardial effusion, 4(16.7%) pts; CALs (dilatations and/or aneurysms), 2 (8.3%) pts; and echogenic vascular walls, 1(4.2%) pt. IVIG was given in 19(79.2%) pts: 1 dose, 15(62.5%); 2 doses, 3(12.5%) and 3 doses, 1(4.2%) pts. Aspirin and steroids were given in 24(100%) and 6(25%) pts, respectively. Incomplete/atypical KD was diagnosed in 31.8% pts. No acute bleeding episodes, AMIs or deaths occurred.

Conclusions

Compared with other few series analyzing thrombocytopenia on hospital admission among KD pts, our rate of CALs was lower but the overall rate of cardiac abnormalities was considerable. KD should be included in the differential diagnosis of children with fever, rash, and thrombocytopenia.

EPOSTER DISCUSSION SESSION 03: ANTIMICROBIAL RESISTANCE AND PHARMACOLOGY - STATION C

ESP17-1152

IMPACT OF PNEUMOCOCCAL CONJUGATE VACCINES ON ANTIMICROBIAL NON-SUSCEPTIBLE PNEUMOCOCCAL ISOLATES CAUSING INVASIVE DISEASE IN CHILDREN: RESULTS FROM SPIDNET MULTICENTRE STUDY

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Background

The *Streptococcus pneumoniae* invasive disease network (SpIDnet) collects surveillance data on antimicrobial non-susceptibility of invasive pneumococcal disease (IPD) cases from 9 European sites. We measured the impact (overall effect) of vaccination programmes with pneumococcal conjugate vaccines (PCV10/13) on the incidence of IPD non-susceptible to penicillin (IPD-PenNS) or erythromycin (IPD-EryNS) in children under five years old.

Methods

We defined antimicrobial non-susceptibility as a minimum inhibitory concentration to benzylpenicillin >0.064mg/L (IPD-PenNS) and to erythromycin >0.25mg/L (IPD-EryNS) (EUCAST clinical breakpoints v7.0). To measure PCV10/13 impact, we calculated incidence rate ratios (IRR) comparing IPD-PenNS or IDP-EryNS incidence in each of the five years after PCV10/13 introduction to the average incidence in the years when PCV7 was used, by site. We calculated pooled IRR and 95% confidence intervals (CI) using random effects meta-analysis and PCV10/13 impact as (1-IRR)*100.

Results

Five years after PCV10/13 introduction, the incidence of all type IPD-PenNS ranged between 0.7-18.3/100,000 and of all type IPD-EryNS between 0.3-21.3/100,000. Compared to PCV7 period, all-type IPD-PenNS incidence decreased by 29% (95%CI: 8; 45), 33% (95%CI: -6; 57), 41% (95%CI: 9; 62), 30% (95%CI: -37; 64) for each year 2011-2014 and increased by 8% (95%CI: -79; 35) in 2015. The incidence of all-type IPD-EryNS decreased by

37% (95%CI: 15; 53), 50% (95%CI: 29; 64), 45% (95%CI: 17; 64), 49% (95%CI: 4; 73), and 38% (95%CI: -10; 65) for each year 2011-2015, respectively.

Conclusions

SpIDnet results suggest a decrease of all-type IPD-PenNS in the first years after PCV10/13 introduction. The observed non-significant increase in IPD-PenNS incidence in the fifth year needs to be confirmed in the following years. Incidence of all-type IPD-EryNS decreased in all years since PCV10/13 introduction.

Acknowledgements: SpIDnet projects are co-funded by study sites and ECDC.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 11: VACCINES: VIRAL IMPACT AND NON-SPECIFIC EFFECTS - STATION C

ESP17-1156

VACCINATION STRATEGY CHOICES FOR UNIVERSAL VARICELLA VACCINATION IN FINLAND.

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Background

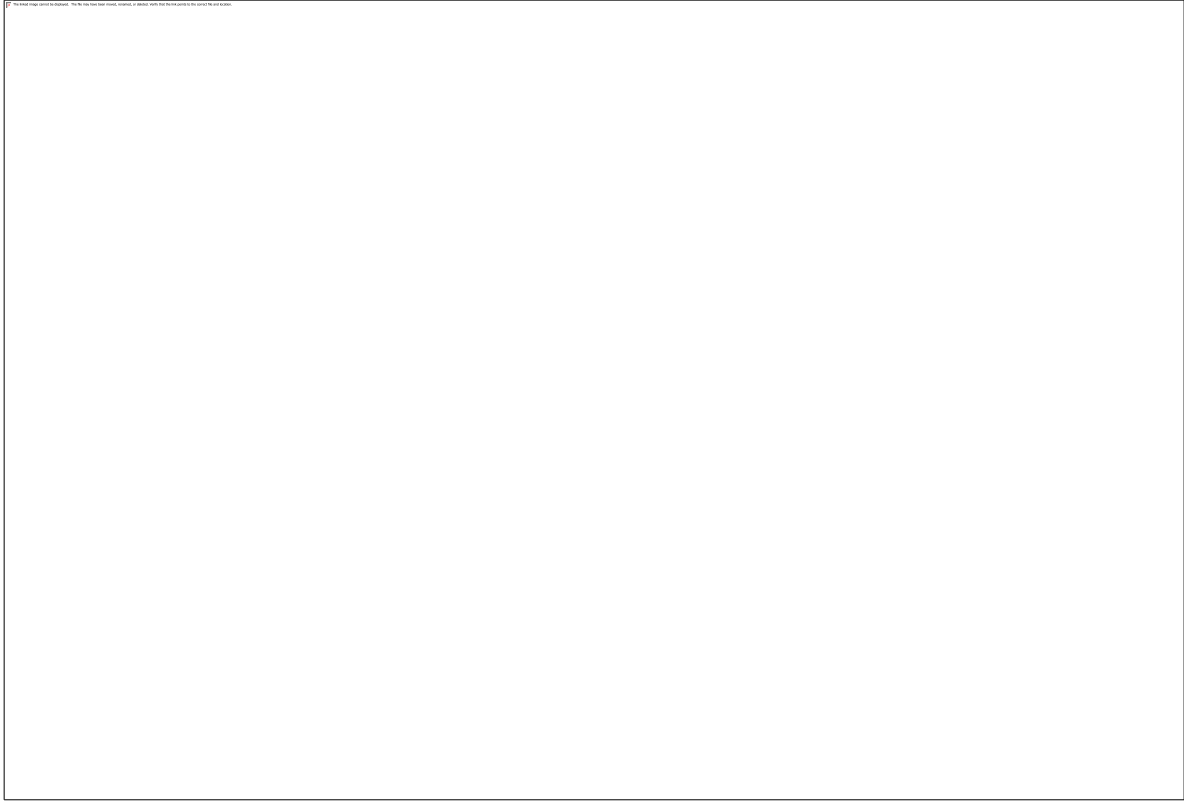
Finland will introduce universal varicella vaccination in 2017. The objective of this study was to evaluate public health and economic implications of various implementation options.

Methods

A dynamic transmission model of varicella and herpes zoster was calibrated to Finnish seroprevalence data and used to estimate natural and breakthrough varicella cases over 25 years. Concomitant administration of varicella and MMR with 1st dose at 12 months (95% coverage) and 2nd dose at 6 years (90% coverage) was assumed. Options for catch-up campaigns were explored, and two vaccines were considered: Vaccine A (Varilrix®, GSK) and Vaccine B (Varivax®, MSD). Primary failure, take, and waning rates of vaccines were sourced from recent publications.

Results

All strategies will rapidly reduce incidence of natural varicella from pre-vaccine levels of 1,275/100,000 (Figure) by 78.9%/63.9%/89.4% (1 dose Vaccine A), 81.5%/74.4%/94.9% (1 dose Vaccine B), 90.7%/98.4%/95.2% (2 dose Vaccine A) and 92.3%/99.0%/96.8% (2 dose Vaccine B) after 1, 5, and 25 years, respectively. Under the 1 dose strategy, the number of susceptibles increases, thereby raising natural and breakthrough varicella rates within ~5 years of programme start; 2 dose strategies avoid this problem. The higher relative risks for breakthrough (RR=2.75) and natural (RR=1.18) varicella for Vaccine A compared to Vaccine B lead to 23,900 additional varicella cases (2% in infants and adults) over 25 years, with non-discounted excess treatment costs of € 676,183 (5 years)/ € 6,335,087 (25 years). To offset this, Vaccine A would need to cost €1.81 less per dose than Vaccine B.



Conclusions

The 5 year interval between 1st and 2nd doses and differences in effectiveness and duration of vaccines leads to a long-term difference in outcomes even for a high coverage 2 dose schedule.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 07: HIV/AIDS - STATION G

ESP17-1161

USE OF COBICISTAT IN ANTIRETROVIRAL COMBINATION THERAPY (ARVC) IN TREATMENT EXPERIENCED HIV PATIENTS ADOLESCENTS.

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Background

Cobicistat, a CYP3A4 inhibitor, increases plasma levels of selected HIV protease and integrase inhibitor. An increased serum creatinine (sCr) without reduction of the glomerular filtration rate (GFR) and an improved lipidic profile have been described. Its once daily administration potentially enhances adherence. Whilst its use in ARVc in treatment naïve HIV infected adolescents was found to be safe and effective, no data exist in treatment experienced adolescents

Methods

On-going observational cohort study, analysing efficacy and safety of ARVc including cobicistat in treatment experienced adolescents (aged<20 years) with sustained virological suppression since March 2015.

Results

11 patients with undetectable viral load (VL) were included (5 females) aged 12-19 years (median age 15) at time of switch to cobicistat based ARVc in order to simplify treatment (see table 1 for previous ARVc). None of the patients presented resistances to any component of the new ARVc. Treatment switch was made to: DRV/COBI + DTG in 6 patients, DRV/COBI in 3 patients, TDF/FTC/RPV + DRV/COBI and TAF/FTC/EVG/COBI in 1 patient each. Median follow up time after starting cobicistat was 60,4 weeks (SD +/- 11,37). 1 out of 3 patients switched to DRV/COBI suffered from vomiting and sickness, resolved after changing to TAF/FTC/EVG/COBI. 5 patients showed poor adherence resulting in detectable VL (table 1). The remaining 6 patients maintained undetectable VL. Whilst CD4+ counts did not change during the study period, triglycerides and cholesterol values improved, with a greater decrease in triglycerides, although not significant ($p=0,25$). The significant increase of sCR ($p=0,04$) was not associated with a decrease in GFR (not shown) .

Conclusions

Cobicistat containing regimens appear to be effective and safe in adolescent patients and should be considered as simplified treatment options.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 19: CONGENITAL VIRAL AND BACTERIAL INFECTIONS - STATION C

ESP17-1169

EPIDEMIOLOGICAL AND CLINICAL DATA IN THE LARGEST SERIES OF CHILDREN BORN TO ZIKA VIRUS INFECTED MOTHERS IN EUROPE. HOW FREQUENT IS MICROCEPHALY?

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Background

Zika virus (ZIKV) epidemic was declared a worldwide public health emergency in February 2016 being associated to microcephaly and other neuro-developmental abnormalities. We describe epidemiological and clinical characteristics of the largest series of children born to ZIKV-infected mothers in Europe.

Methods

Prospective observational cohort of children born to ZIKV-infected mothers from January 2016 to January 2017 attended at Paediatric Infectious Diseases Unit of Hospital Universitari Vall d'Hebron (Barcelona, Spain). Inclusion criteria were children born to probable or confirmed ZIKV-infected mother. Epidemiological, clinical and laboratory data were recorded on a RedCAP® database.

Results

Overall, 27 children were included, 67.0% female. Median[IQR] gestational age (GA) for all children was 39[37.7-40] weeks. No abnormal anthropometric birth-data was observed in all children except one with microcephaly (-3SD for cranial circumference and GA). Mothers were original from Dominican Republic 37.0% (10/27), Honduras 14.8% (4/27), Ecuador 11.1% (3/27), Colombia 11.1% (3/27), Bolivia 11.1% (3/27), El Salvador 7.4% (2/27), Nicaragua 3.7% (1/27), and Spain 3.7% (1/27). One child developed microcephaly prenatally, cerebral imaging at birth showed frontal lobes with simplification of the cortical gyral pattern, multiple parenchymal calcifications in periventricular regions, moderate supratentorial ventriculomegaly, and global thinning of the corpus callosum. The rest of the children was healthy at birth. All children tested negative for ZIKV RT-PCR and IgM serology. Microcephalic child showed positive neutralization ZIKV-IgG antibodies test, but tested negative for ZIKV RT-PCR and ZIKV-IgM antibodies.

Conclusions

This is the largest series of children born to ZIKV-infected mothers in Europe. Definitive diagnosis is difficult in these children and only the loss of maternal antibodies will give us the rate of ZIKV vertical transmission. Long-term follow-up is needed to ascertain children outcomes.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 19: CONGENITAL VIRAL AND BACTERIAL INFECTIONS - STATION C

ESP17-1174

MATERNAL VARICELLA IN THE FIRST 24 WEEKS OF PREGNANCY: VIRAL TRANSMISSION RATE IN AMNIOTIC FLUID AND LONG-TERM FOLLOW-UP AMONG INFECTED SURVIVORS

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Background

Fetal varicella syndrome has been described after maternal varicella under 24 weeks with a low incidence of around 1%. Results on transmission rate by prenatal diagnosis in amniotic fluid (AF) and perinatal outcome and postnatal follow-up among infected cases are scarce.

Methods

In cases of maternal varicella before 24 weeks an amniocentesis was offered for varicella virus (VZV)-DNA detection in AF at least 6 weeks after infection. In positive cases work-up included: prenatal serial ultrasound, targeted postnatal follow-up (clinical and ophthalmoscopic examination) and the Reynolds Intellectual Assessment Scales (RIAS) between 3-7 years of age.

Results

An amniocentesis was performed in 42 pregnant women, 41 with an alive fetus and one with a demised fetus at 14 weeks after maternal varicella at 5 weeks. Fetal infection was confirmed in 6 cases, in 5 alive fetuses and in the fetal demise, giving a transmission rate of 14.3% (8.3% up to 14 weeks and 22.2% thereafter). Postmortem examination did not find abnormalities in the dead fetus. Among the 5 infected survivors, prenatal ultrasound and immediate postnatal evaluation showed normal findings. However, one infant showed macular bilateral retinochoroiditis at follow-up, and in another a peripheral monoparesis of one foot was diagnosed at 3 years of age. In both cases maternal varicella had occurred at 14 and 16 weeks, respectively. Normal RIAS scores were observed in all infected infants.

Conclusions

Maternal varicella before 24 weeks showed an *in utero* transmission of 8% under 14 weeks and 22% thereafter. Multiorganic congenital syndrome was not observed among infected fetuses, although there were a fetal demise and two infants with sequelae attributable to the intrauterine infection. Long-term follow-up of such infants is warranted.

EPOSTER DISCUSSION SESSION 13: PUBLIC HEALTH: BACTERIAL INFECTIONS AND CLINICAL EPIDEMIOLOGY - STATION E

ESP17-1188

PILOT SEASON OF PERTINENT, A NOVEL SENTINEL SYSTEM TO MEASURE THE BURDEN OF PERTUSSIS IN HOSPITALISED INFANTS IN EU/EEA

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¹⁹European Centre for Disease Prevention and Control, Vaccine-preventable Diseases Programme, Stockholm, Sweden

Background

To increase the sensitivity and data completeness of pertussis surveillance in the European Union and European Economic Area level (EU/EEA), the European Centre for Disease Prevention and Control set up PERTINENT (Pertussis in Infants European Network) in 2015. This active surveillance network includes 41 hospitals from 6 EU/EEA countries. It aims at measuring disease burden and pertussis vaccine effectiveness (VE) among hospitalised infants aged <1 year.

Methods

We developed a generic surveillance protocol including laboratory guidelines. We visited sites to standardise the protocol implementation. Cases were hospitalised infants testing positive for *Bordetella pertussis* by PCR or culture. Study-sites collected demographic, epidemiological, clinical and laboratory data, pertussis vaccination status and a likely source of infection.

Results

Of the 690 infants enrolled in 2016, 140 (20%) were confirmed cases, all of them by PCR. One hundred six (76%) cases were aged 0-3 months. Among 124 cases (89%) with type of specimen available, 104 had an aspirate and 20 a swab. Siblings were the most likely source of infection for 33 (40%) of the 83 cases with available

information. Of the 116 (83%) cases with vaccination status documented 43 belonged to the target group for vaccination, 20 of them received at least one dose of pertussis-containing vaccine at least 14 days prior to symptoms onset. Among 31 (22%) severe cases, 20 were admitted to ICU. No deaths were reported.

Conclusions

Data quality and completeness achieved in PERTINENT is encouraging and should further improve pending additional monitoring and training. Identification of hospitals' catchment area will allow computing incidence. A larger sample size will enable identification of risk factors for severe disease and VE calculation.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 03: ANTIMICROBIAL RESISTANCE AND PHARMACOLOGY - STATION C

ESP17-1191

PHARMACOKINETIC PROFILE OF AMIKACIN IN PATIENTS UNDER ONE-YEAR-OLD

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Background

Amikacin has a narrow therapeutic range. Children under 1 year-of age have a high pharmacokinetic (PK) variability that affect its serum concentrations. The objective of this study was to describe the PK of amikacin in this age group using the therapeutic monitoring system.

Methods

Retrospective study (Jan-15 to Jan-16) in patients <1 yo treated with amikacin intravenous (15mg/kg/day.) Blood samples were taken: peak (C_{peak}) at 30 minutes after the end of the infusion and 6 hours (C₆) after initiation of amikacin infusion. PK parameters as elimination rate constant (K_e), half-life (t_{1/2}), volume of distribution (V_d) and clearance (Cl) were calculated by fitting the data to the 1-compartment model, assuming adjustment to linear regression. Prism 7.02 was used for statistics. Results were expressed as medians and interquartile ranges (IQR).

Results

33 patients were analyzed. The mean age was 4.9 months, 57.6% were male and the main infection was respiratory (33,3%). C_{peak}= 21,9 ± 8,2 mg/L, C₆= 4,2 mg/L [IQR 3-7,2], K_e= 0,362 ± 0,147 h⁻¹, t_{1/2}= 1,9h [1,6-2,5], V_d= 0,5 [0,4-0,6] L/kg and Cl= 0,916 L/hr [0,71-0,14]. Therapeutic levels were achieved by 54,6% of patients, in which 60,9% an agent was identified. No significant differences of PK parameters were observed in patients under 3 or 6 months or hospitalized in a critical patient unit.

Conclusions

Amikacin has a particular PK profile in this paediatric population. Due to the low percentage of patients accomplishing therapeutic range, it is necessary to guide amikacin treatment with plasma levels.

EPOSTER DISCUSSION SESSION 07: HIV/AIDS - STATION G

ESP17-1192

GUT MICROBIOTA COMPOSITION IN HIV INFECTED CHILDREN

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Title of Case(s)

Gut Microbiota composition in HIV Infected children

Background

HIV infection is associated with a chronic inflammatory state as represented by increased circulating markers of T cell activation (CD38 and HLA-DR expression). Additionally, HIV infection is associated with increased plasma markers for microbial translocation/monocyte activation (LPS and soluble CD14 [sCD14]) and epithelial barrier damage (e.g., intestinal fatty acid-binding protein). Immune activation and gut barrier disruption are highest in acute infection and fall with chronic infection, but ART decreases them further. Recent studies showed that these plasma markers of inflammation remain higher in treated, virally suppressed HIV patients or spontaneous viremic suppression compared with HIV-negative controls. However, some studies have demonstrated resolution of microbial translocation with long-term ART. Studies of Bifidobacterium and Lactobacillus probiotics have shown some improvement in CD4 count with supplementation. The yeast (Saccharomyces)- and bacterial (Bifidobacterium and Lactobacillus)-based probiotics have shown promise in reducing some inflammatory markers. A probiotic/prebiotic (Lactobacillus, Bifidobacterium, Streptococcus plus inulin) mixture was shown to improve gut CD4 reconstitution in an SIV model. There is no information about gut microbiota population in HIV Infected children.

Case Presentation Summary

We analyzed the gut microbiota composition of 50 HIV Infected children, by metagenomic methods of 16S and compared these results with immunoinflammatory status and timing of ARV treatment (early treated versus later treated).

Learning Points/Discussion

The results of this analysis could define the future possibility to treat also HIV infected children with probiotics/prebiotics to create a benefit in terms of gut CD4 reconstitution.

EPOSTER DISCUSSION SESSION 23: ADVANCES IN DIAGNOSIS OF INFECTION - STATION G

ESP17-1201

BACTERIAL DETECTION IN BLOOD USING IRIDICA IN NEONATES WITH SUSPECTED EARLY ONSET INFECTION: CLINICAL CORRELATIONS

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Background

IRIDICA BAC BSI assay (Abbott Molecular) uses PCR for gene amplification and allows rapid identification of micro-organisms by molecular mass profiling within 6-8 hours. Our study assessed the relationship between clinical features, routine laboratory parameters including blood culture and identification of micro-organisms by IRIDICA in infants with suspected early-onset infection.

Methods

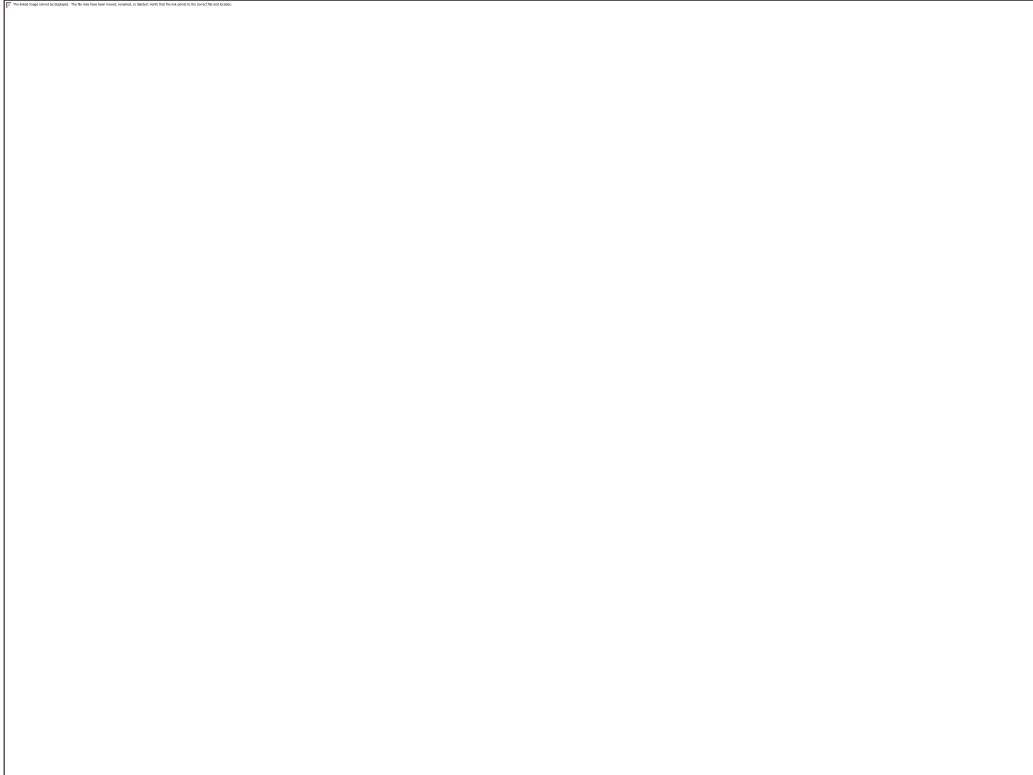
Neonates with suspected early-onset infection were recruited prospectively from January 2016 and parental consent obtained. The study was approved by NHS National Research Ethics Service. An electronic database was used to document demographic and clinical details. Blood samples were taken at the time of suspected infection for both blood culture inoculation (BacT/ALERT®system) and IRIDICA analysis (0.5ml).

Results

46 infants were studied with median gestational age and birth weight of 39.5(37-40.7) weeks and 3.1(2.7-3.5) kg. 38(83%) had one or more perinatal risk factors for early-onset infection. The most common risk factors/symptoms were premature rupture of membranes (65%) and respiratory distress within 4 hours of birth (37%).

1 infant had both bacterial DNA detected on IRIDICA and bacterial growth on blood culture (Group B Streptococcus) and 9 had positive DNA detection but negative blood culture. The DNA detected by IRIDICA included Propionibacter(5), Streptococcus spp(3), Sneathia(1) and fungi(1). All infants with no bacterial DNA detected on IRIDICA had a negative blood culture.

Infants with positive bacterial identification in blood with IRIDICA had significantly higher C-Reactive Protein (CRP) values both initially (<18 hours) and after 18-24 hours(Table 1).



Conclusions

The IRIDICA assay offers fast identification of micro-organisms with a high negative predictive value which may be useful in excluding sepsis. The finding of raised inflammatory markers in infants with bacterial DNA detected in blood indicates a pathological response. The clinical significance is yet to be determined.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 04: BROAD-SPECTRUM ANTIBIOTIC USE AND STEWARDSHIP PROGRAMS - STATION D

ESP17-1205

CONCORDANCE BETWEEN DDD AND PREVALENCE OF MEROPENEM USE IN CHILDREN AND NEONATES

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Background

The WHO anatomical therapeutic chemical (ATC)/defined daily dose (DDD) methodology is a standardized method of comparing antimicrobial use. The ATC/DDD is defined as the average maintenance daily dose of a drug used in a 70 kg adult, ignoring the considerable differences in body weight of neonates and children. The aim of this study was to determine the concordance between the prevalence of meropenem use in paediatric and neonatal population and the DDDs calculated for the same population.

Methods

A prospective meropenem consumption study was conducted from October 2015 to October 2016 in a third level Paediatric University Hospital. The prevalence of meropenem was reported weekly in four clinical units: Neonatal and Paediatric Intensive Care unit (NICU and PICU), Paediatric Medical and Paediatric Surgical Ward. The prevalence of meropenem was calculated as the number of children treated with meropenem/total number of patients. Meropenem DDD was calculated quarterly in these four units. The DDD was expressed as the number of DDD/100 bed days. The correlation was determined statistically using the Pearson Correlation Coefficient (R).

Results

The correlation between DDD and prevalence of antibiotic varies significantly depending on the clinical unit under study (Table 1). In those whose patients have homogeneous weights such as neonatology, the correlation is higher (R = 0.952). In units such as the PICU with a very heterogeneous population the correlation is low (R = 0.332).

Table 1: Prevalence of meropenem use in the NICU, PICU, Paediatric Medical and Surgical War

Conclusions

In the paediatric and neonatal population it is convenient to use consumption indicators that are not affected by the weight of the patients.

EPOSTER DISCUSSION SESSION 01: TUBERCULOSIS - STATION A

ESP17-1233

THE IMPACT OF PREVIOUS BCG VACCINATION IN ENHANCING THE EFFECTIVENESS OF TUBERCULOSIS DRUGS TO CONTROL MYCOBACTERIAL GROWTH EX-VIVO

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Background

Current effort to effectively control tuberculosis (TB) is hindered by lengthy treatment and the emergence of drug resistance. Combining vaccination with drug therapy will enhance host immune responses and improve the effectiveness of current treatment. Several pre-clinical animal studies suggest the benefit of Bacillus Calmette–Guerin (BCG) vaccination in adjunct to treatment. A proof-of-principle study is needed to identify optimum regimens prior to clinical investigation in children and adults.

Methods

We implemented an *ex-vivo* mycobacterial growth inhibition assay (MGIA) to assess the ability of isoniazid (INH) and rifampicin (RIF) in inhibiting the growth of mycobacteria when co-cultured with peripheral blood mononuclear cells (PBMCs). PBMCs were obtained from historically BCG-vaccinated and naïve participants (n=100), and were co-cultured for 4 days with *Mycobacterium bovis* BCG as an immune target.

Results

BCG-vaccinated participants were superiorly capable of inhibiting mycobacterial growth *ex-vivo* compared to the naïve ($p < 0.0001$). BCG-vaccinated females were better able to control mycobacterial growth than males ($p < 0.05$), which could explain the epidemiological abundance of TB cases in male worldwide. BCG vaccination enhanced the ability of INH to control mycobacterial growth at the drug concentrations of 0.01 and 1 $\mu\text{g/ml}$ ($p < 0.05$), and RIF at the concentration of 0.01 $\mu\text{g/ml}$ ($p < 0.005$). BCG-induced inhibition of mycobacterial growth was associated with increased IFN- γ and IP-10 production in the presence of drugs ($p < 0.05$), with correlations observed towards the increase of TNF- α and GM-CSF and the reduction of IL-10 in the absence of drugs ($p < 0.05$).

Conclusions

This study provided preliminary evidences regarding the benefit of BCG in enhancing TB drugs effectiveness *ex-vivo*. Clinical studies are warranted in children and adults to further elucidate the benefit of BCG in adjunct to TB treatment.

Clinical Trial Registration (Please input N/A if not registered)

EPOSTER DISCUSSION SESSION 09: HOST-PATHOGEN INTERACTION - STATION A

ESP17-1235

IMPROVING DETECTION OF PNEUMOCOCCUS IN NASAL CARRIAGE STUDIES IN PRE-SCHOOL CHILDREN

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Background

The impact of conjugate and potentially 3rd generation protein antigen pneumococcal vaccines depends to a great extent upon their effects on carriage and transmission in young children. Improved methods to study colonisation are needed.

Methods

We compared the performance of culture, direct lytA PCR and 24h lawn culture followed by PCR in nasal swab samples taken into and stored frozen in STGG broth from two groups of healthy toddlers attending daycare in Coimbra, Portugal in 2011 and 2012. We also did microarray serotyping on the DNA extracts from the lawn cultures.

Results

Rates of detection of pneumococcus by conventional culture (Cx) and followed by testing of isolates from distinct colonies and by direct PCR were similar (60.1% and 66.1%, respectively) although Cx-PCR+ 36/516 (7%) and Cx+PCR- 9/516 (1.7%) samples were seen. PCR on the products of lawn culture was positive in 60/157 (38%) of direct PCR negative samples. The log₂ fold increase in lytA DNA (equating to number of binary divisions in culture) comparing direct & lawn PCR+ samples was mean 16.7, median 17.0 and interquartile range 14.6 - 19.0. However serotype was not predictive of the size of this increase.

Conclusions

We propose that an optimal way to analyse pneumococcal carriage swab samples is using both direct and lawn culture PCR. This permits evaluation of carriage density, maximises sensitivity of detection overall and identifies which samples contain viable organisms. Our results also confirm that relative abundance of mixed serotypes in microarray detection assays done using DNA extracts from lawn cultures are not confounded by differences between rates of growth of different serotypes.

Work supported by an investigator-led project grant from Pfizer.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 05: VACCINE IMMUNOLOGY - STATION E

ESP17-1236

BIVALENT RLP2086 ELICITS BACTERICIDAL ANTIBODIES AGAINST NON-SEROGROUP B MENINGOCOCCI

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Background

There are 5 major disease-causing meningococcal serogroups, A, B, C, Y, and W, and a sixth serogroup, X, is emerging in Africa. Quadrivalent capsular polysaccharide vaccines (MCV4) prevent disease caused by serogroups A, C, Y, and W. The recently approved vaccine Trumenba®, used to protect against serogroup B, consists of two recombinant lipidated factor H binding protein (fHbp) variants. Non-serogroup B strains are known to express fHbp. This proof of concept study aims to investigate whether antibodies elicited by Trumenba® can potentially protect against non-serogroup B meningococcal strains.

Methods

Contemporary non-serogroup B disease-causing meningococcal strains included isolates collected from Europe, Africa and the US. The selection of hSBA strains was based upon fHbp variant prevalence, level of fHbp surface expression, identification of human complement sources and hSBA technical compatibility. The immunological response of individuals receiving 3 doses of Trumenba (at 0, 2 and 6 months) was assessed in hSBAs for the selected strains. Control sera were obtained from individuals receiving 1 dose of MCV4

Results

A total of six strains were selected for assessment in hSBAs, one strain for each of serogroups A, C, Y and X and two for serogroup W. After three doses of Trumenba, >83% of individuals demonstrated a bactericidal response against the serogroup C, W, Y and X strains, and 23% against the serogroup A strain.

Conclusions

Antibodies elicited by Trumenba demonstrated protective hSBA responses against non-serogroup B invasive disease-isolates.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 16: OTHER COMMUNITY ACQUIRED INVASIVE BACTERIAL INFECTIONS - STATION H

ESP17-1239

FEBRILE URINARY TRACT INFECTIONS: IS THE DURATION OF FEVER AFTER TREATMENT INITIATION ASSOCIATED WITH RENAL SCARRING?

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Background

Although the association of delay in treatment initiation for febrile urinary tract infections (UTI) in children with the development of renal scars has been widely studied, the association of renal scars with the duration of fever after treatment initiation has not. The aim of the present study is to evaluate the relationship of the duration of fever after the initiation of treatment (FAT) of febrile urinary tract infections with renal scarring based on dimercaptosuccinic acid scintigraphy (DMSA) findings.

Methods

The inpatient records of 156 children [median age: 2.4 months (11 days – 24 months)] with a first episode of febrile UTI during a three-year period, were analyzed. DMSA findings, clinical and laboratory parameters were evaluated.

Results

Thirty five (22.4%) children had renal scars on the DMSA scanning 6 months after one episode of urinary tract infection. Nineteen children (12.18%) had mild scars, 9(5.77%) had moderate and 1 child (0.64%) had severe scars on the DMSA. The likelihood of renal scars was significantly increased when FAT was ≥ 48 h ($p=0.028$). Moreover the severity of renal scars was also increased when FAT was ≥ 48 h both when scars were classified as mild, moderate and severe separately and also when they were classified as mild and moderate/severe ($p=0.013$ and $p=0.023$ respectively).

Conclusions

Duration of fever ≥ 48 hours after initiation of treatment of febrile urinary tract infections in children younger than 2 years old is a significant predictive factor of the development of permanent and severe renal scars.

EPOSTER DISCUSSION SESSION 01: TUBERCULOSIS - STATION A

ESP17-1244

RADIOLOGICAL FINDINGS IN CHILDREN BELOW 6 YEARS OF AGE FOLLOWING A RECENT TUBERCULOSIS OUTBREAK

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Background

Chest radiography (CXR) is one of the cornerstones of TB diagnostics, but presents low sensitivity and specificity in paediatrics. Thoracic Computerized Tomography (TCT) adds sensitivity to CXR, but in recent TB contacts it may be difficult to differentiate between TB infection (TBI) or TB disease (TBD).

Our objective is to describe CXR and TCT findings in children younger than 6 years examined after the exposure to a teacher with cavitory TB.

Methods

Following our protocols, children with a positive TST/IGRA and those with symptoms consistent with TB underwent a CXR. Additionally, a CTC was performed in children with doubtful CXR or in those with suggestive symptoms but normal CXR. We describe the CXR and TCT findings, and compare the clinical presentation and radiology according to final diagnosis.

Results

Seventy seven children were evaluated, with a median age of 5.1 years [3.74-5.63], and 62.3% were males. TST/IGRAs were positive in 67/77 (87.01%). Out of 77 CXR performed, 28 were normal, 38 were consistent with TB, and 11 were doubtful. At follow up, 19 children (24.7%) were considered uninfected, 24 were diagnosed of TBI (31.2%), and 34 of TBD (20%), 7 of which were bacteriologically confirmed. The TCT was normal in 3/6 symptomatic children with normal CXR, and in 6/11 children with doubtful CXR. Soft tissue density alteration and air space opacification were the most common findings in children with TBD (Table1).



Conclusions

Our study highlights the difficulties in the radiological diagnosis of TB in children. In this outbreak, TCT was highly specific and allowed to rule out active TBD, but lacked positive predictive value. There is an imperative need to develop better tools for diagnosing TB in children.

EPOSTER DISCUSSION SESSION 12: PUBLIC HEALTH: VIRAL INFECTIONS - STATION D

ESP17-1248

THE SPECTRUM OF CONGENITAL ZIKA VIRUS SYNDROME IN BRAZILIAN CHILDREN: COHORT ZIKA JUNDIAI (PRELIMINARY RESULTS)

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Background

Background: There is mounting evidence to support the hypothesis that Zika virus (ZIKV) infection during pregnancy is associated with congenital malformations including microcephaly. **Objectives:** To determine the incidence of ZIKV infection in a cohort of pregnant women as well as the incidence of congenital ZIKV infection and/or congenital Zika syndrome in their newborns.

Methods

Methods: Preliminary results from a prospective cohort study at the University Hospital of the Faculty of Medicine of Jundiaí, São Paulo, Brazil (March 2016 – January 2017). Samples of blood, urine, breast milk, saliva and cerebrospinal fluid were tested by real-time PCR (RT-PCR) for ZIKV and maternal serum was tested for Chikungunya (CHKV) IgG ELISA.

Results

Results: The sample includes 613 pregnant women with high-risk pregnancies and 415 babies. Median maternal age was 23 years (Min=13, max=46). Symptoms consistent with ZIKV infection during pregnancy included: myalgia (15.1%), viral exanthem (3.9%) and arthralgia (2.4%). Maternal ZIKV RT-PCR positivity during pregnancy=7.4%; CHKV IgG positivity=13.29%. Mean head circumference in newborns was 30.6cm (SD=1.2cm) and 42/415 (6.8%) met the definition for microcephaly. Mean birthweight was 2460g (SD=493g). ZIKV RT-PCR positivity among newborns=10.7% (3/28). The majority (66.6%) of babies born with microcephaly had adolescent mothers.

Conclusions

Conclusion: The proportion of mothers presenting with signs and symptoms consistent with ZIKV infection during pregnancy was low. The number of babies born with microcephaly was relatively high. All the newborns with microcephaly also had a low birthweight and the majority had adolescent mothers. These preliminary results of a

cohort study looking into the effects of ZIKv infection during pregnancy are compelling. We await further results of this ongoing study to better understand the long-term impact of this emergent disease.

EPOSTER DISCUSSION SESSION 20: OTHER CONGENITAL AND PERINATAL INFECTIONS - STATION D

ESP17-1249

EARLY NEONATAL MORTALITY AND BACTEREMIA AMONG KENYAN NEWBORNS IN HEALTH FACILITIES

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Background

We determined incidence and risk factors for early neonatal mortality and bacteremia among Kenyan infants.

Methods

A prospective cohort study was conducted in two government health facilities in rural western Kenya. Newborns were eligible if ≤ 96 hours of age with clinical signs of probable severe bacterial infection (pSBI) from WHO Integrated Management of Childhood Illness guidelines, or had intrapartum risk factors for severe infection. Bacterial blood culture was conducted at enrollment. Neonates were followed for 7 days.

Results

Among 380 newborns enrolled, cumulative incidence of mortality within 7 days was 5.8% (95% CI:3.7%-8.6%). Prevalence of bacteremia with a definite or probable pathogen was 1.6%. No newborns with positive culture died. Mortality risk factors included low birthweight (< 2.5 kg) [relative risk (RR)=2.9, 95%CI:1.2-7.2], macrosomia (> 4 kg) [RR=4.6, 95%CI:1.0-19.9], and facility referral/transfer [RR=3.0, 95%CI:1.3-6.7]. Breastfeeding [RR=0.4, 95%CI:0.2-0.9] and cord cleansing [RR=0.3, 95%CI:0.1-0.9] were associated with lower mortality. Intrapartum factors associated with mortality included prolonged rupture of membrane [RR=3.4, 95%CI:1.5-7.7], uterine/abdominal tenderness [RR 5.0, 95%CI:2.3-11.0], maternal fever [RR=4.2, 95%CI:1.9-9.5], chorioamnionitis [RR 3.1, 95%CI:1.3-7.1], obstructed labor [RR=2.7, 95%CI:1.2-6.1], meconium staining [RR=2.4, 95%CI:1.0-5.3], maternal tachycardia [RR=3.3, 95%CI:1.4-7.5], and fetal tachycardia [RR=3.6, 95%CI:1.6-7.9]. Presence of any intrapartum risk factor was associated with almost 8-fold mortality risk when compared with presence of only neonatal pSBI signs [RR=7.8, 95%CI:1.1-57.0]. Ninety-five percent of newborns who died had an intrapartum risk factor and a pSBI clinical sign. The mortality risk with 2+ pSBI signs was 6 times that with 0 or 1 sign [RR=6.0, 95%CI:2.1-17.4].

Conclusions

Intrapartum factors and pSBI signs identify highest-risk newborns for early treatment. Blood culture may be uninformative in clinical management among newborns with high suspicion or risk of bacteremia in resource-constrained health facilities.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 19: CONGENITAL VIRAL AND BACTERIAL INFECTIONS - STATION C

ESP17-1250

CYTOMEGALOVIRUS CONGENITAL INFECTION DIAGNOSED BEYOND THE NEONATAL PERIOD: HOW CAN WE DO BETTER?

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Background

Congenital cytomegalovirus infection (cCMV) is still diagnosed beyond the neonatal period, representing missed opportunities to prevent sensorineural hearing loss (SNHL) by the early administration of antiviral treatment. We describe the characteristics of these patients to identify areas of improvement in our diagnostic approach.

Methods

A multicenter, observational study was performed using the Spanish Congenital Cytomegalovirus Infection Database (REDICCMV; <http://www.cmvcongenito.es>). Patients diagnosed with cCMV beyond the neonatal period by dried blood spots PCR were included.

Results

From 402 neonates with cCMV, 35 (9%) were diagnosed after the newborn period (median age at diagnosis: 244 days [IQR: 158-358]). According to current guidelines, cCMV screening should have been performed in 13/35 (37%) patients: 6 had fetal ultrasound abnormalities compatible with cCMV, 4 were born to mothers who seroconverted during pregnancy and 3 had microcephaly at birth. Among the remaining 22 patients, cCMV screening could have been recommended in 15 infants (68%): 3 small for gestational age (SGA), 12 who failed to pass newborn hearing screening (2 also SGA) and 2 preterm. A total of 20/35 (57%) patients received antiviral treatment at a median age of 221 days [IQR:123.8-285.5] (median treatment length: 119.5 days [IQR: 92.8-183.3]). Among treated patients, 16/20 (80%) had SNHL at diagnosis. Hearing deterioration at 1 year was similar among treated and non-treated infants: 5/20 (25%) vs. 3/15 (20%), $p=0.76$.

Conclusions

Following current recommendations, at least one third of the cases in our cohort should have been diagnosed at birth. Routine screening of selected newborns would allow the identification of most patients within the neonatal period. Early diagnosis is critical because late antiviral treatment in our cohort did not prevent hearing deterioration.

EPOSTER DISCUSSION SESSION 18: COMMUNITY ACQUIRED LIFE-THREATENING BACTERIAL INFECTIONS - STATION B

ESP17-1254

SIGNIFICANT DECLINES IN CHILDHOOD PNEUMOCOCCAL MENINGITIS RATES FOLLOWING ROUTINE CONJUGATE VACCINATION IN ENGLAND AND WALES, 2000/01-2015/16.

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Background

In the UK, the 7-valent pneumococcal conjugate vaccine (PCV) in 2006 and its replacement with a 13-valent PCV (PCV13) since 2010 were both associated with significant declines in invasive pneumococcal disease (IPD) across all age-groups. Here, we describe the epidemiology and outcomes of childhood pneumococcal meningitis in England and Wales over the past 16 years.

Methods

Public Health England conducts enhanced IPD surveillance and provides a national reference service for serotyping pneumococcal isolates in England and Wales.

Results

During 2000/01-2015/16 (16 years), there were 1,429 cases of pneumococcal meningitis in children aged <5 years. The incidence of pneumococcal meningitis declined by 70% from a pre-PCV baseline of ~4.0/100,000 prior to PCV7 introduction (2000/01-2005/06) to 1.2/100,000 in 2015/16. This was mainly due to a 99% reduction in cases due to PCV7 serotypes after PCV7 introduction and an 83% reduction due to the additional PCV13 serotypes after PCV13 introduction, and despite a 3-fold increase in cases due to non-PCV13 serotypes. In 2015/16, there were 44 pneumococcal meningitis cases in <5 year-olds. Of the 42 serotyped isolates, 90% (n=38) were due to 13 different non-PCV13 serotypes, but 12F (n=8, 18%), 8 (n=7, 16%) and 10A (n=6, 14%) were responsible for nearly half. Three of the four PCV13-type meningitis cases were diagnosed in <2 month-olds. Three children died (3/44, 6.8%), all due to non-PCV13 serotypes.

Conclusions

In England and Wales, there have been significant declines in childhood pneumococcal meningitis rates following the introduction of both PCV7 and PCV13. The current serotypes associated with pneumococcal meningitis are entirely different to those encountered in the pre-PCV era. We are currently following-up all children with pneumococcal meningitis to assess disease severity in cases due the replacing serotypes.

EPOSTER DISCUSSION SESSION 04: BROAD-SPECTRUM ANTIBIOTIC USE AND STEWARDSHIP PROGRAMS - STATION D

ESP17-1258

IMPLEMENTING AN ANTIMICROBIAL STEWARDSHIP PROGRAM IN A TERTIARY UNIVERSITY PEDIATRIC HOSPITAL IN SPAIN

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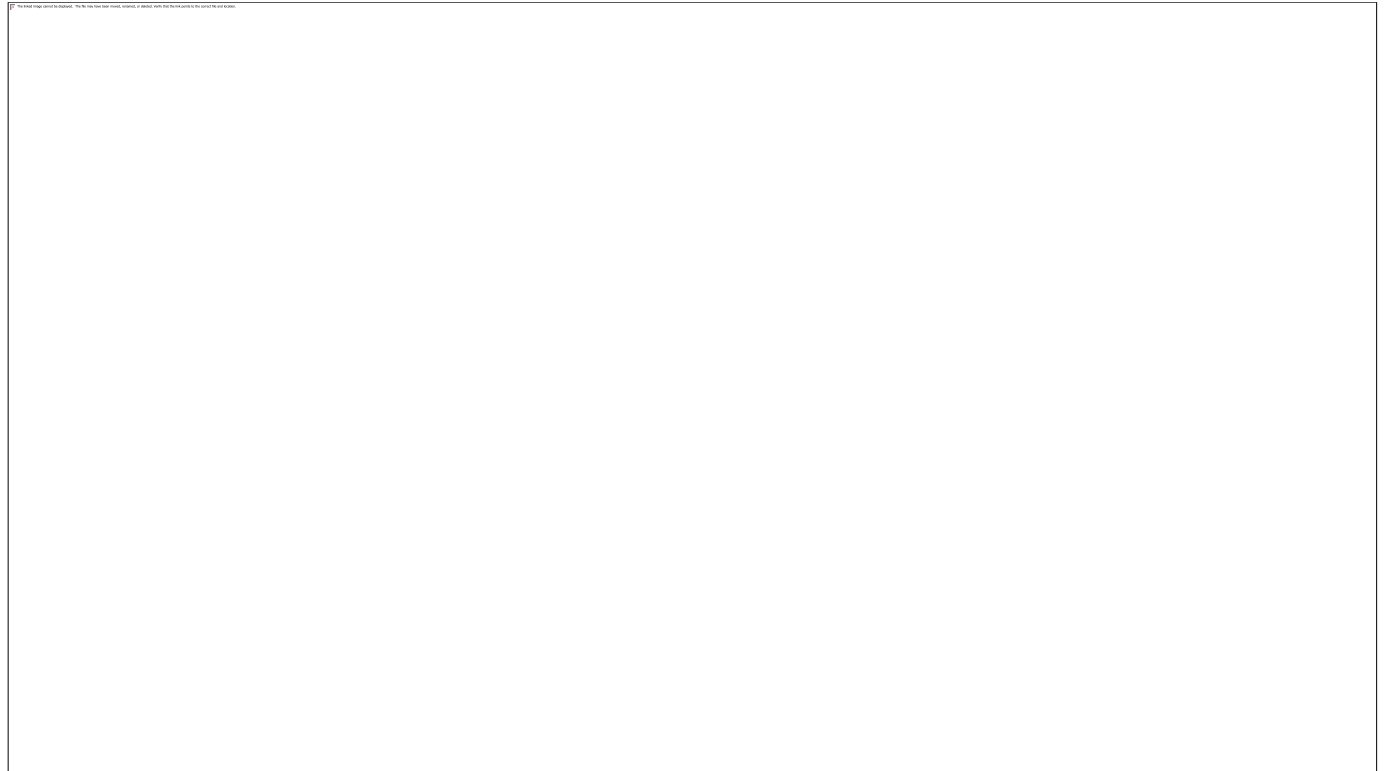
Background

In the last decade Antimicrobial Stewardship Programs (ASP) have shown a reduction in antibiotic use, bacterial resistance, infections associated with such organisms and reduced costs. ASP was introduced in our pediatric service in January 2016. We evaluated this program 6 months after implementation.

Methods

Patients receiving antifungals or broad spectrum antibiotics were included in the program using the pharmacy electronic tool. Medical and microbiological charts were reviewed three times a week by a pediatric infectious disease specialist. Interview with the physician took place if recommendation for treatment was considered. Data were introduced in RedCap database. Days of treatment (DOT) and drug starts (DS) were analyzed comparing the first semester of 2014, 2015 and 2016.

Results



262 charts were reviewed; 99 recommendations were made (38%) and they were accepted in 82% of the cases. 50.5% of patients were male with a median age of 57 months, 70,7% presented comorbidities, and 46,5% central lines. A 46% reduction in DOT/1000 admission were observed comparing 2014 to 2016. By drug, reduction was noticed in meropenem 20%, cefotaxime 42%, vancomycin 62%, piperaciline-tazobactam 70% and teicoplanine 23% respectively. An increase of Amphotericine-B and ceftazidime DOT was noticed in 20 and 30%, Drug start remain stable for all the antimicrobials. DOT reduction and stable DS is interpreted as an increasing in early evaluation of the adequacy of large spectrum therapies who were often interrupted.

Conclusions

Implementation of pediatric ASP led to an overall reduction of DOT, especially of antimicrobials with the broadest spectrum. In this study we used many antibiotics and used measurements that are indicated in pediatric population.

EPOSTER DISCUSSION SESSION 03: ANTIMICROBIAL RESISTANCE AND PHARMACOLOGY - STATION C

ESP17-1263

DO WE STILL NEED THE TROUGH LEVEL FOR THERAPEUTIC DRUG MONITORING (TDM) OF AMIKACIN?

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Background

Amikacin in one daily dose is frequently used in PICU associated with other antibiotics. TDM of trough amikacin levels (<0.8 mg/L) is suggested for safety analysis. Nevertheless, only one plasma level does not provide sufficient information about PK/PD required for aminoglycosides ($C_{max}/MIC= 8-10$). It is well known that PICU patients have altered pharmacokinetics (PK), with a higher clearance and volume of distribution (V_d) of hydrophilic drugs as aminoglycosides. Our objective was to assess the earlier sampling for monitoring amikacin plasma concentration in critically ill patients.

Methods

Prospective and descriptive study amikacin TDM (15 mg/Kg/dose) during 2 years (Jan-15 to Dic-2016) in pediatric critically ill patients. First monitoring was considered. Patients in renal replacement therapies were excluded. Peak (1h post-infusion) and a proposed C_6 (6 hours post infusion) blood samples after 0.5h infusion were collected and analyzed using 1-compartment linear model with zero-order input according to literature to calculate PK parameters. Assuming a linear fashion, trough plasma concentration was calculated. Prism 7.02 was used for statistics.

Results

108 patients were included. Median peak concentration was 22.6 mg/L [IQR 17.8-29] and C_6 was 4.6 mg/L [IQR 3.4-7.5]. In 29.6% of patients a pathogen was identified, but only in 6 cases, the $C_{max}/MIC= 8-10$ was accomplished. Median half-life of 2h [IQR1.6-2.8] showed that at 12h after the dose, amikacin concentration calculated was zero in all patients.

Conclusions

Higher and frequent doses could be necessary in PICU patients. Short half-life reflects a rapid elimination of amikacin, leading with no effective concentration at least the half of the day. A C_6 sampling could be more appropriate than trough to monitoring amikacin.(Fondecyt n°11150935)

EPOSTER DISCUSSION SESSION 19: CONGENITAL VIRAL AND BACTERIAL INFECTIONS - STATION C

ESP17-1270

CYTOMEGALOVIRUS CHORIORETINITIS IN CHILDREN WITH CONGENITAL INFECTION: A CASE SERIES FROM A MULTICENTER NATIONAL COHORT

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⁷*REDICCMV group, REDICCMV group, Spain, Spain*

Background

Chorioretinitis is a relatively uncommon and rarely reported complication in symptomatic infants with congenital cytomegalovirus infection (cCMV).

Methods

Observational case series of patients with cCMV and chorioretinitis from the Spanish Congenital Cytomegalovirus Infection Database (REDICCMV; <http://www.cmvcongenito.es>), a national multicentre cohort.

Results

From 402 patients with cCMV, 9 had chorioretinitis (2.2%, [CI 95%: 1.2-4.2%] one was lost to follow-up): 2 were preterm newborns (gestational age: 36 and 30 weeks), 1 was born to an HIV-infected mother, 3 were small for gestational age and 1 presented microcephaly at birth. A total of 7/8 (87.5%) had sensorineural hearing loss (SNHL) and 6/8 (75%) had neurodevelopmental delay. Neuroimaging was abnormal in 7/8 (87.5%) patients. Chorioretinitis diagnosis was made beyond the neonatal period in 3 patients: 1 at 3 months of age (previous funduscopy was normal); in the other 2, cCMV was retrospectively diagnosed at 7 and 16 months of age. Five patients (62.5%) had bilateral lesions. Central macular scar was observed in 8/16 eyes (50%), peripheral retinal scar in 1/16 (6.25%), central retinal haemorrhages in 2/16 (12.5%) and diffuse retinal haemorrhages in 2/16 (12.5%). Six patients received antiviral treatment (median treatment length: 198 days [IQR:45-326]). During follow-up, retinal haemorrhages resolved, and scars presented no progression. Only 1 patient had confirmed residual visual impairment, 3 had refractive errors, 4 had strabismus and 2 had no impairment.

Conclusions

In our series, chorioretinitis was uncommon in cCMV infants, and almost universally associated with SNHL and neurodevelopmental delay. Central macular scar was the predominant lesion. In the treatment era, improvement or lack of progression seem to be the usual outcome in cCMV-associated chorioretinitis.

EPOSTER DISCUSSION SESSION 15: OTHER COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION G

ESP17-1271

SHORT-COURSE ZINC SUPPLEMENTATION FOR PREVENTION OF PNEUMONIA

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Background

Pneumonia is a leading cause of morbidity and mortality in children younger than 5 years of age. Most deaths occur during infancy and in developing and low-income countries. The aim of this study was to find the association between short course prophylactic zinc supplementation and reduction in incidence of pneumonia.

Methods

We conducted a double-blind, randomized, and controlled trial involving 282 children aged 6 to 36 months from the sub-district of Khezr, in the district of Hamadan province in the west of Iran. They were divided to 4 groups i.e. A, B, C, D, receiving zinc supplement (20mg/5ml elemental zinc as ZnSO₄), placebo, multivitamin and zinc sulfate plus multivitamin respectively. The supplement was administered once daily with breakfast or lunch for 2 weeks.

Plasma zinc concentration were analyzed by the RANDOX 60 (zinc colorimetric Method Manual) and with supplementary kit Zn 2607.

An episode of pneumonia was defined in several ways: 1) reported cough or difficult breathing; respiratory rate above the WHO-defined age-specific values (>50/min in 6 to 12 month olds) and either documented fever of >101°F or chest in drawing, 2) a diagnosis of pneumonia based on a chest radiography. The incidence of pneumonia was recorded during a 3 months follow up.

Results

The mean children's age was 18 months at baseline. Among 278 children that their plasma zinc concentrations were measured, 53.6% had zinc deficiency.

During 3 months after intervention, incidence of pneumonia was significantly higher in the placebo group as compared to other groups ($p < 0.05$).

Conclusions

According to our findings the short course zinc supplementation may be effective in prevention of pneumonia.

Clinical Trial Registration (Please input N/A if not registered)

The study protocol was approved by the committee on Human Rights Research Involving Human Subjects, Hamadan University of Medical Sciences.

EPOSTER DISCUSSION SESSION 02: TROPICAL INFECTIONS - STATION B

ESP17-1273

INFECTIOUS DISEASES (IDS) AMONG REFUGEE AND IMMIGRANT CHILDREN IN ATHENS. IS THERE ANYTHING TO WORRY ABOUT?

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Background

More than 50.000 refugees are currently living in Greece. Attica, where the capital of Athens is located, is a temporary refuge for 9.935 people so far. Refugee and immigrant children may carry a significant ID burden as a result of disease prevalence in their country of origin, exposures during migration and living conditions such as poor nutrition and disruption of health care and immunization programs. Since data on IDs among these children are limited, we examined the types and the severity of infectious diseases among refugee and immigrant children, who visited our Pediatric Emergency Department (ED)

Methods

From March 2016 till December 2016, a total of 1.154 refugee and immigrant children (0-16 years of age) presented to our ED to receive care, 65% of them (750) had signs and symptoms of active infection and 183 children required hospitalization for disease monitoring. In this observational study, we report the infectious diseases among hospitalized and non-hospitalized children.

Results

The main countries of origin were Syria and Iraq with a small number of children coming from Afghanistan, Lebanon and Libya. The commonest infections in non-hospitalized patients were viral upper respiratory tract infection, viral gastroenteritis and scabies. In hospitalized children, bronchiolitis and viral induced wheeze were the main medical conditions (71) followed by severe dehydration after viral gastroenteritis (57), varicella (38), urine infection (8), hepatitis A virus infection (6) and cutaneous leishmaniasis (3). All children recovered well and were discharged from hospital.

Conclusions

In this observational study, we assessed the IDs among refugee and immigrant children, both hospitalized and non-hospitalized ones. The majority of them presented in our ED with non-severe infectious diseases.

EPOSTER DISCUSSION SESSION 18: COMMUNITY ACQUIRED LIFE-THREATENING BACTERIAL INFECTIONS - STATION B

ESP17-1275

INVASIVE BACTERIAL DISEASE IN CHILDREN WITH FUNCTIONAL OR ANATOMIC ASPLENIA

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Background

A high incidence of invasive bacterial disease (IBD) has been described in patients with functional or anatomic asplenia (FAA). The use of new vaccines and antibiotic prophylaxis may have changed this reality. We aimed to characterize IBD episodes in children with FAA.

Methods

Multicentre retrospective study including children with FAA followed at three portuguese hospitals (2000-2016). IBD was defined by bacteria isolation from normally sterile sites. Review of the clinical file: demographic, clinical, microbiological and prophylaxis data.

Results

We identified 299 children with FAA: 269 with sickle-cell disease (SCD), 38 splenectomised (8 with SCD). We identified 28 episodes of IBD in 24 children, all with SCD: median age 6,6 years (10 <5 year-old). Main clinical diagnosis: osteomyelitis (8), bacteraemia (8), sepsis (4), septic shock (3), pneumonia (2), meningitis (2), spondylodiscitis (1). Bacteria identified: *Salmonella* spp (10), *S. pneumoniae* (5), *K. pneumoniae* (4), *S. aureus* (2), *E. coli* (2), *S. marcescens* (2), *P.aeruginosa* (1), *S. epidermidis* (1), *S. hominis* (1). At time of IBD 9 children were under amoxicillin prophylaxis - 7 infected with penicillin-sensitive bacteria. Adequate vaccination: Hib and Meningococcus-C 20/20; Pneumococcus 5/10 < 5-year-old and 8/12 > 5 years. There was no mortality.

Conclusions

DIB occurred only in SCD, affecting 8,9% of these children, being the majority ≥ 5 year-old. The agents were similar to previous studies, with no cases of *H. influenzae* and *N. meningitidis*. We highlight that most children under antibiotic prophylaxis had IBD with sensitive bacteria, raising the questions of compliance and dose regimen. A national prospective study is justified, in order to issue guidelines for vaccine and antibiotic prophylaxis appropriate to the type of asplenia and the portuguese reality.

EPOSTER DISCUSSION SESSION 15: OTHER COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION G

ESP17-1284

VALIDATION OF THE BTS SEVERITY CRITERIA FOR PEDIATRIC COMMUNITY-ACQUIRED PNEUMONIA

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Background

The British Thoracic Society (BTS) guideline for pediatric community-acquired pneumonia (CAP) outlines severity criteria, which include hypoxia, fever, tachypnea, retractions, nasal flaring, cyanosis, grunting, dehydration, tachycardia and capillary refill ≥ 2 seconds. The ability of these criteria to predict severe CAP has not been examined. The BTS guideline does not define a threshold number of criteria necessary for a patient to be considered severe. The objective of this study was to examine the predictive performance of the BTS severity criteria that would categorize a child as having severe CAP.

Methods

This was a retrospective cohort study of children 3 months-18 years of age diagnosed with CAP in an urban, pediatric emergency department (ED) from 9/2014-8/2015. Children with chronic medical conditions, ED visits within 14 days of enrollment, and outside ED transfers were excluded. The main outcome was hospital admission. Test characteristics, stratified by $<$ or ≥ 1 year of age as outlined by the BTS guideline, were calculated for the outcome.

Results

Of 518 eligible children, 293 (56.6%) were discharged from the ED, 199 (38.4%) were hospitalized, and 26 of those that were hospitalized (5%) were admitted to the ICU. Of those hospitalized, 23% (n=52) were hospitalized for <24 hours. BTS criteria were generally specific but not sensitive for hospitalization (Table). Not feeding in children <1 year of age was the only criteria with a sensitivity for hospitalization > 0.6 . The absence of nasal flaring in children ≥ 1 year of age was the only criteria with a negative predictive value >0.6 .

Conclusions

The BTS CAP severity criteria have only fair ability to predict disposition and the weight of specific criteria in determining severity may differ by age.

EPOSTER DISCUSSION SESSION 16: OTHER COMMUNITY ACQUIRED INVASIVE BACTERIAL INFECTIONS - STATION H

ESP17-1291

SENSITIVITY OF MICROBIOLOGICAL TECHNIQUES IN OSTEOARTICULAR INFECTIONS: BONE PUNCTURES

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Background

Diagnosis of bone and joint infections is important in order to initiate early empirical treatment. The objectives of this review are to analyse the sensitivity of microbiological techniques and to study the improvement of diagnosis after increasing the use of bone cultures.

Methods

We carried out a retrospective review of medical histories of children younger than 18 years old admitted to a tertiary hospital who had been diagnosed with bone infection or septic arthritis between 1998 and 2008, and a prospective study of patients with the same characteristics between 2009 and 2016, where bone punctures were performed more frequently. The sensitivity in the two groups was then compared.

Results

There were a total of 128 patients: 78 osteomyelitis, 36 septic arthritis and 14 diagnosed with both. In 2 patients no microbiologic technique was performed. 126 blood cultures were analysed as well as 37 cultures of bone punctures and 43 samples of synovial liquid. In 52,3% of the cases a pathogenic microorganism was identified. The culture of bone punctures was the technique with the highest sensitivity 56,7%, followed by blood culture 37,3% and culture of synovial liquid 25,5%. Culture of bone puncture in the first period was performed in 35,7% of all patients and, in the second one, in 44%, obtaining a microbiological diagnostic in 52,3% and 60 % cases, respectively.

Conclusions

An early bone puncture and the use of biology molecular techniques could improve the microbiological diagnostic of osteoarticular infections. Our results support that bone punctures are more likely to be positive than blood cultures and thus performing them sistematically will improve microbiological diagnostic. Despite being an invasive procedure they did not cause any complications.

EPOSTER DISCUSSION SESSION 10: VACCINATION PROGRAMMES INCLUDING PNEUMOCOCCAL IMPACT - STATION B

ESP17-1292

SYSTEMATIC REVIEW OF PNEUMOCOCCAL CONJUGATE VACCINE (PCV) IMMUNOGENICITY AND IMPACT ON CARRIAGE AND DISEASE

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Background and Objective

The World Health Organization recommends all countries include PCV in their routine immunization schedule. At present PCV10 (Synflorix) and PCV13 (Prevenar) are prequalified, replacing PCV7. The optimal schedule and relative advantages of the two available vaccines remain unclear.

Methods

We undertook a systematic review of clinical trials and observational studies in routine use settings on PCV impact on carriage, pneumonia, invasive disease, mortality and immune response in the published literature from 1994-2015; plus ad-hoc additions through January 2017. Analyses summarized the impact of PCV on each outcome (for vaccine-type and serotypes 3, 6A, and 19A where relevant). Analyses were stratified by product and previous PCV-7 use, and considered age, dosing schedule, time since introduction, and catch-up program.

Learning Points Discussion

Of 12,703 articles screened, 168 were included in analyses.

EPOSTER DISCUSSION SESSION 24: INFECTIONS IN IMMUNOCOMPROMISED CHILDREN - STATION H

ESP17-1293

MANNANOSE BINDING LECTIN'S ROLE IN THE RISK OF MORE FREQUENT EPISODES OF FEBRILE NEUTROPENIA IN CHILDREN TREATED FOR ACUTE LYMPHOCYTIC LEUKEMIA

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Background

Despite identical treatment protocols during childhood acute lymphocytic leukemia (ALL) treatment, some suffer from more frequent episodes of febrile neutropenia. The reason for this remains unknown. Constitutional expression of mannose binding lectin (MBL) has been correlated to infection susceptibility in a wide range of infections. However, the literature is showing conflicting results for the association between genetic variation in the MBL gene (MBL2) and infections in children with cancer.

Methods

Children diagnosed with ALL at Astrid Lindgren Children's hospital, Stockholm during the years 2004-2008 were enrolled in the study. Three Single nucleotide polymorphisms (SNPs) in MBL2 were analyzed using TaqMan assays. The frequency of febrile neutropenia was retrospectively collected from medical records during the 2.5 years of treatment for ALL. Kruskal-Wallis test was used for group comparisons.

Results

Forty-three children were enrolled in the analyses. The median number of episodes of febrile neutropenia were 2 (range 0-10). The study patients were divided into groups based on number of episodes; febrile neutropenia 0-5 episodes (n=37) and 6-10 episodes (n=6). Genotyping showed that one patient was homozygous and 14 were heterozygous for one or more of the three SNPs investigated in MBL2. There were no statistical significant differences in frequency of febrile neutropenia when comparing those carrying deleterious SNPs and those that do not.

Conclusions

In this small cohort, there were no correlation between polymorphisms in MBL2 and risk for febrile neutropenia. Therefore, the study has been extended with another cohort of around 70 children also treated for ALL during 2008-2014 and extended gene analysis has been added. Primary results are expected during spring 2017.

EPOSTER DISCUSSION SESSION 15: OTHER COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION G

ESP17-1314

HOSPITALIZATIONS DUE TO ACUTE RESPIRATORY TRACT INFECTIONS (ARTI) CAUSED BY HUMAN METAPNEUMOVIRUS (hMPV) AT COSTA RICA'S NATIONAL CHILDREN'S HOSPITAL: A PROSPECTIVE DESCRIPTIVE STUDY

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Background

In many developed countries, hMPV is one of the 3 leading pathogens causing ARTI requiring hospital admission in infants and young children. However, in Central American (CA) and Caribbean developing countries the lack of viral testing in many hospitals leads to unknown number estimates in many centers. We describe the first prospective study of hMPV-associated ARTI leading to hospitalizations in CR and Central American children.

Methods

Prospective descriptive study of patients (pts) <13 yrs of age admitted at our institution between Sep-1-2015 and Jan-15-2017, due to an ARTI episode produced by laboratory-confirmed hMPV (conventional immunofluorescence assays (IFAs) and/or PCR). Respiratory samples included nasopharyngeal, tracheal aspirates and BAL. We excluded nosocomial infections.

Results

113 pts were analyzed. 68 (60.2%) pts were boys. Mean age of admission was 18 (1-109) months. Most pts were previously healthy; however, underlying risk factors included: history of wheezing or asthma (39.8%), prematurity (19.4%), low birth weight (11.5%), and cardiac disease (7.9%). The most common symptoms were rhinorrhea (78.7%), fever (74.3%), and respiratory distress (68.1%). 88.4% pts had abnormal chest radiographs; the most common findings were infiltrates (37.1%), air trapping (31.8%) and consolidations (19.4%). 34 (30%) pts were started on intravenous antibiotics in the emergency department while waiting viral testing. PICU admission was required in 30.1% pts. Most common complications included respiratory failure (15.9%), septic shock (7%) and atelectasis (7%). Oxygen dependence after the current episode was documented in 6 (5.3%) pts; no deaths occurred.

Conclusions

Most hMPV-associated ARTI leading to hospitalization occurred in previously healthy children. A significant proportion of pts received unnecessary antibiotics while awaiting viral laboratory confirmation.

EPOSTER DISCUSSION SESSION 14: BACTERIAL EVALUATION OF COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION F

ESP17-1316

CARRIAGE OF PNEUMOCOCCAL SEROTYPES IN COMMUNITY CHILDREN AND CHILDREN WITH PNEUMONIA IN NEPAL: PRELIMINARY RESULTS BEFORE AND IMMEDIATELY FOLLOWING INTRODUCTION OF PNEUMOCOCCAL CONJUGATE VACCINATION (PCV10)

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Background

Monitoring changes in serotype-specific pneumococcal nasopharyngeal (NP) carriage in healthy children and those with pneumonia, is a proxy method to inform the impact of pneumococcal conjugate vaccines (PCV) on the pneumococcal pneumonia burden. Nepal introduced PCV10 into the infant immunisation schedule in August 2015, at 6 weeks, 10 weeks and 9 months of age, with limited implementation of "catch-up" in infants >10 weeks of age.

Methods

Carriage specimens were collected from two sources: 1) urban community children age 6-24 months during 2014-2016, matched for season, and 2) all children age <14 years hospitalised for pneumonia at Patan Hospital from March 2014 onwards. Samples from urban community children in 2014 and 2015 were prior to PCV10 implementation (prevaccination). In 2016, 50% of community children sampled had received ≥ 2 doses of PCV10. Pneumococci were identified by culture and serotyped by the Quellung reaction.

Results

Among healthy children during 2014-2016, respectively, we collected 1149 specimens (69% positive for pneumococcus), 595 specimens (56% positive), and 1151 specimens (62% positive). PCV10 serotype carriage decreased from 20% to 12% (pre vs. postvaccination, $p < 0.001$). Carriage of serotype 6A significantly decreased (5% to 2%, $p = 0.004$), and of 19A remained at 3%. Of 935 pneumonia admissions, 613 (66%) were aged 6-24 months including 137 in 2014 (42% positive for pneumococcus) 171 in 2015 (37% positive) and 305 in 2016 (26% positive). PCV10 serotype carriage decreased from 15% to 11% ($p = 0.004$). There was an insignificant decrease in serotype 6A and insignificant increase in serotype 19A carriage.

Conclusions

Among children aged <2 years, we noted decreases in NP carriage of PCV10 serotypes for community children and those hospitalised with pneumonia following implementation of PCV10 in infants.

EPOSTER DISCUSSION SESSION 05: VACCINE IMMUNOLOGY - STATION E

ESP17-1321

MATERNAL IMMUNITY ENHANCES SYSTEMIC RECALL IMMUNE RESPONSES UPON ORAL IMMUNIZATION

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Background

Whereas maternal immunity protects newborns against infectious pathogens, these antibodies can interfere with the active immune response against vaccines. In humans maternal antibodies are actively transported over the placenta. This is not the case in most animals (e.g. pigs) where the newborn takes up these antibodies in the intestine the first day after birth from colostrum. As a result their uptake can be steered allowing to study their impact on immunization strategies. Oral immunization of F4-seronegative pigs with F4 fimbriae of enterotoxigenic *E. coli* (ETEC) can induce a protective intestinal immune response evidenced by intestinal IgA. However, successful oral immunization of pigs with maternal immunity against F4 ETEC has not been demonstrated yet.

Methods

Oral immunization of 3- to 4-week-old pigs with high F4-specific maternal immunity in comparison with pigs intramuscularly immunised or F4-seronegative pigs. F4-specific serum IgG and IgA were measured by ELISA and B-cell responses by ELIspot assays on peripheral blood mononuclear cells.

Results

Whereas the intramuscularly induced immune response in pigs with maternal antibodies could be measured with both F4-specific ELISA and ELIspot assays on peripheral blood mononuclear cells, active immune responses in the orally immunized pigs with maternal antibodies could only be detected by the ELIspot assay performed on IgA⁺ B-cell populations, enriched by magnetic activated cell sorting. Interestingly, the orally immunized pigs with maternal antibodies displayed the same primary response, but a more pronounced secondary response than pigs without maternal antibodies.

Conclusions

These results demonstrate that piglets with F4-specific maternal antibodies can be immunized orally with F4 fimbriae and that the presence of these maternal antibodies seems to enhance the secondary response rather than to suppress it.

Clinical Trial Registration (Please input N/A if not registered)

EC2010/042

EPOSTER DISCUSSION SESSION 18: COMMUNITY ACQUIRED LIFE-THREATENING BACTERIAL INFECTIONS - STATION B

ESP17-1331

ADAMTS-1 EXPRESSION IS ASSOCIATED WITH MENINGOCOCCAL SEPSIS MORTALITY

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Background

The inflammatory host response in meningococcal sepsis induces excessive diffuse intravascular coagulation and downregulation of fibrinolysis. Genetic polymorphisms are associated with severity of meningococcal sepsis. Based on genetic data, we studied ADAMTS-1 and ADAMTS-18 protein levels in pediatric meningococcal sepsis, and studied the association with mortality.

Methods

We measured ADAMTS-1 and ADAMTS-18 levels in a retrospective cohort of 40 children with meningococcal sepsis, who were enrolled in Rotterdam based meningococcal studies from 1988 to 2005. Blood samples were taken on admission, at 24 hours, and at 1 month.

Results

Median ADAMTS-1 levels at admission, at 24 hours and at 1 month were 1.56 ng/ml (lowest level of detection). Median ADAMTS-18 levels were 17.72 ng/ml, 22.40 ng/ml and 21.77 ng/ml, respectively (not significant). Non-survivors had higher ADAMTS-1 levels compared to survivors at admission (1.99 ng/ml [IQR 1.56-3.13] vs 1.56

ng/ml [1.56-1.65], $p < 0.01$) and at 24 hours after admission (1.83 ng/ml [1.56-2.97] vs 1.56 ng/ml [1.56-1.56], $p < 0.05$). Non-survivors and survivors did not differ in ADAMTS-18 levels.

Conclusions

ADAMTS-1 is associated with death in meningococcal sepsis patients, with higher ADAMTS-1 levels in non-survivors than in survivors. ADAMTS-18 levels are not associated with survival. Future studies in a larger cohort should study the prognostic value of ADAMTS-1 and ADAMTS-18.

Clinical Trial Registration (Please input N/A if not registered)

N/A

EPOSTER DISCUSSION SESSION 06: SEVERE BACTERIAL INFECTIONS - STATION F

ESP17-1332

INVASIVE MENINGOCOCCAL DISEASE IN ONE YEAR OLDS ELIGIBLE FOR THREE DOSES OF THE NOVEL, MULTICOMPONENT GROUP B MENINGOCOCCAL VACCINE (4CMENB) IN ENGLAND

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Background

A vaccine against group B meningococcal (MenB) disease (4CMenB) was added to the infant immunisation programme in England from 1 September 2015 and is offered at 2, 4 and 12 months of age. The first cohort became eligible for the 12-month booster on 01 May 2016.

Methods

Public Health England conducts enhanced national IMD surveillance in England. Infants born since 01 May 2015 and diagnosed with IMD after 12 months of age, between 01 May 2016 and 31 Dec 2016, were compared to cases in the equivalent cohorts for the previous four years.

Results

There were 6 MenB cases in the surveillance cohort compared with an average of 18 cases in the previous four years. The median age at diagnosis was 63 weeks (range 54-66 weeks). Five of the six cases had received two doses of 4CMenB and one developed disease three months after their third dose. Half of the cases presented with meningitis (n=3) and the other half with septicaemia (n=3), two children were admitted to ICU but none died.

Conclusions

In England, IMD cases in children eligible for the 12-month 4CMenB booster were 56% lower than predicted compared to pre-vaccine years. On-going enhanced surveillance will continue to follow-up cases over the winter period with a more complete evaluation of the impact of the programme by May 2017.

EPOSTER DISCUSSION SESSION 04: BROAD-SPECTRUM ANTIBIOTIC USE AND STEWARDSHIP PROGRAMS - STATION D

ESP17-1340

AN ANTIMICROBIAL STEWARDSHIP PROGRAMME IN A UK PAEDIATRIC HOSPITAL

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Background

The development of antimicrobials is one of the most important achievements in medicine. Currently 30-50% of children admitted to hospital are on antimicrobials. Antimicrobial stewardship programmes serve to effectively monitor and improve the use of antimicrobials in an era of increasing antimicrobial resistance.

Methods

Between August 2016 and January 2017, a paediatric antimicrobial stewardship programme (PASP) was implemented in the 160 bedded Bristol Children's Hospital. Paediatric infection disease doctors, antimicrobial pharmacists and microbiologists formed the PASP team. The PASP ward rounds occurred one to three times a week. Data was collected on all children antibiotics on 2 general paediatric and 1 surgical wards. The data collected included: age and weight of child, type, dose, route, allergies, co-morbidities, start and stop date and advice. Suggested recommendations were written in the clinical notes.

Results

During the antimicrobial stewardship days 865 in patients were surveyed. Of those 294 (34%) were on antimicrobials and (50%) had underlying conditions. There were 448 antimicrobial prescriptions, 3 (<1%) children were on 4 antimicrobials, 47 (11%) on 3 and 48 (11%) on 2. Of 399 prescriptions with complete data, 69 (17%) were for prophylaxis, 26 (38%) surgical and 43 (62%) medical. The stewardship team recommended changes in 156 (39%) prescriptions including stopping antimicrobials in 103 prescriptions (26%).

Conclusions

PASP improves antimicrobial prescribing and quality of care for in-patients in paediatrics. The programme can identify institutional trends to be addressed with guidelines. Expanding the PASP to other wards can benefit from the lesson learnt with the initial implementation. Continuous education during PASP round has kept clinicians' attention on better antimicrobial prescribing. Better evidence for antimicrobial prescribing in paediatric is however urgently needed.

EPOSTER DISCUSSION SESSION 14: BACTERIAL EVALUATION OF COMMUNITY-ACQUIRED RESPIRATORY TRACT INFECTIONS - STATION F

ESP17-1350

REEMERGENCE OF PERTUSSIS

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Background

Despite very high rates of vaccination, pertussis is a reemerging infection in Portugal. Our aims were to analyse cases diagnosed in an emergency service (ES) in central Portugal and to evaluate demographic and clinical characteristics.

Methods

Retrospective study of cases of *Bordetella pertussis* infection confirmed by PCR in nasopharyngeal secretions in a paediatric ES (0-17 years), from January 2005 to December 2016.

Results

In the last 12 years, 168 cases have been identified: 162 *B. pertussis* /6 *B. parapertussis*. The highest number of cases was seen in 2016 (44), 2005 (30), 2012 (29) and 2013 (25). The majority occurred in the first year of life (54%; 31% 0-2 months, 12% 2-4 months) and 14% were adolescents. Apnea was recorded in 8 cases, all aged ≤4 months. Symptomatic family members were reported in 55% (mostly adults) and symptomatic school contacts in 10% (75% adolescents). Hospitalisation occurred in 66 cases (40%), the majority aged ≤6 months (89%). The main reasons for admission were cyanosis (26) and /or very young age (27). The median duration of hospitalisation was 4 days (1-47). Ten children aged between 3 weeks and 3 months were admitted to the paediatric intensive care unit. There were no deaths.

Conclusions

There was a high number of cases, predominantly in infants less than 4 months, that needed hospitalisation. These data reinforce the importance of vaccination in pregnant women, successfully implemented in some countries and since 2017 included in the Portuguese NIP.

EPOSTER DISCUSSION SESSION 16: OTHER COMMUNITY ACQUIRED INVASIVE BACTERIAL INFECTIONS - STATION H

ESP17-1353

RISK FACTORS ASSOCIATED WITH COMPLICATIONS IN PEDIATRIC PATIENTS WITH ACUTE MASTOIDITIS

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Background

Mastoiditis is an important complication in children with acute otitis media (AOM). Aim: Describe characteristics of children with mastoiditis and to analyze possible risk factors associated to severity.

Methods

Retrospective study evaluating patients with mastoiditis admitted to a tertiary hospital in Madrid between 2000-2015. Different parameters of severity such as complications, undergoing late surgery, or need for re-operation or readmission, were analyzed.

Results

One hundred and seventy-two patients were evaluated (60% male); median age 1.7 years [IQR:]. A microbiological isolate was achieved in 36,6% of them, especially *S. pneumoniae* (40%) and *S. pyogenes* (17%).

A total of 23% of the patients developed complications, being retroauricular abscess the most frequent (65%). Having been previously diagnosed with AOM (63 vs 37%; p=0.037) and received antibiotics prior to admission were associated with complications. Conversely, PCR level >5 mg/dl was associated with lower rate of complications. In addition, children with complications, had more microbiological isolation, received longer antibiotic therapy and underwent surgery more frequently (see table). Microbiological isolate (OR: 7.3 [IC 95% 3-17]) and PCR <5 mg/dl (OR: 0.37 [IC 95% 0,15-0.92]) remained independent factors in a multivariate analysis.

Mastoidectomy was performed in 19% of patients, especially in children without previous spontaneous suppuration (25% vs 8%; p=0,003). Most of the readmitted patients had received surgery previously (92 vs 59%;

p=0.034, frequently late on admission (80 vs 43%, p=0.01).



Conclusions

In this study, a great rate of complications among children with mastoiditis was observed, requiring more surgery and prolonged hospital stay. Having been diagnosed with AOM was a risk factor for complications, whereas low levels of PCR seemed to be somewhat protective. Late mastoidectomy was linked to higher rate of complications and re-admission.

EPOSTER DISCUSSION SESSION 16: OTHER COMMUNITY ACQUIRED INVASIVE BACTERIAL INFECTIONS - STATION H

ESP17-1362

EVALUATION OF THE ETIOLOG AND SEVERITY OF MASTOIDITIS IN CHILDREN ACCORDING TO THE IMPLEMENTATION OF THE 7/13-VALENT PNEUMOCOCCAL CONJUGATE VACCINE IN MADRID REGION

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BACKGROUND

The objective of this study was to analyze possible changes in the etiology and severity of mastoiditis in children after the implementation of the 7/13-valent pneumococcal conjugate vaccine in the immunization program of Madrid Region, and to evaluate possible differences between mastoiditis caused by *S. pneumoniae* and those caused by other microorganisms.

METHODS

An analytical and retrospective study was composed with data obtained from the clinical charts of children with mastoiditis admitted to a tertiary hospital in Madrid, between 2000-2015.

The cohort of children was divided in two groups for analysis purpose: group 1 included children diagnosed with mastoiditis during the period of the vaccine implementation and group 2 children whose diagnosis was made in a period without the implementation of the vaccine. Different variables were analyzed, including surgery, treatment and microorganism isolated. Moreover, in a further analysis, children with *S. pneumoniae* mastoiditis were compared with those with mastoiditis produced by other microorganism.

RESULTS

One hundred and seventy-two patients were evaluated. Mean age of group 1 was lower than in group 2 (1.3 vs 2 years; $p<0.001$). Children from this group had also more earache (64.5% vs 37%; $p<0.001$) and less imaging studies performed (11.3% vs 22%; $p=0.018$).

When children with *S. pneumoniae* mastoiditis were compared with those produced by other microorganisms, the former children were younger (1.15 vs 1.45 years; $p=0.001$), had less ear suppuration (9% vs 31.5%; $p=0.031$), needed more surgical procedures (92.3 vs 73.7%; $p=0.1$) and had longer hospital stay (9.5 vs 8 days; $p=0.062$),

CONCLUSIONS

Children from group 1 (Prevenar 7/13 period) underwent less imaging studies, which may indicate a less severe mastoiditis. Children with mastoiditis caused by *S. pneumoniae* were younger, requiring more surgical interventions and longer duration of hospitalization.

EPOSTER DISCUSSION SESSION 04: BROAD-SPECTRUM ANTIBIOTIC USE AND STEWARDSHIP PROGRAMS - STATION D

ESP17-1371

RISK FACTORS FOR RECURRENT EXTENDED-SPECTRUM B-LACTAMASE PRODUCING ENTEROBACTERIACAE INFECTIONS (ESBL-PEI) IN CHILDREN

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Background

ESBL-PE community and healthcare-associated infections (HCAI) have emerged in the last years. Also, inappropriate empirical therapy and recurrent ESBL-PE infections (ESBL-PEI) are occurring more often. We aim to assess antibiotic ESBL-PE sensibilities and to identify risk factors for recurrence

Methods

Retrospective analysis of data of symptomatic children (< 18 years-old) with a positive ESBL-PE, from usually sterile sites, identified in an emergency department of a tertiary care pediatric hospital in Portugal from 2013 to 2016. Regarding urine samples, only specimens collected by catheterization, ureterostomy or clean-catch midstream, with suggestive urine analysis and more than 10⁵ colony-forming units/mL, in symptomatic children (NICE, Hooton et al.), were included. HCAI were categorized by Friedman proposed criteria.

Results

42 isolates were obtained (41 urines, 1 blood sample) from 41 ESBL-PEI of 28 patients. HCAI and community ESBL-PEI were equally identified (49% and 51%). Nine patients had more than one ESBL-PEI (total of 22 episodes). 60% patients had an associated pathology. 58% had a previous ESBL-PE isolate (colonization or infection) in the last 12 months. *Escherichia coli* was found in 67%. 85% of all isolates were susceptible to nitrofurantoin. Empiric therapy was inappropriate in 73%.

The recurrent ESBL-PEI group had more than one antibiotic cycle in the preceding 12 months (P 0.017). Potential risk factors for recurrent ESBL-PEI were identified as clean intermittent catheterization (CIC), hospitalization in the last 3 months, use of antibiotics in the last 3 months and in the last 30 days (P<0.05). On logistic regression analysis, CIC was identified as an independent risk factor (P 0.029). **Conclusions**

CIC, hospitalization and antibiotherapy in the last 3 months should be considered risk factors for recurrent ESBL-PEI. Empiric treatment protocols should be developed to avoid recurrence.

EPOSTER DISCUSSION SESSION 04: BROAD-SPECTRUM ANTIBIOTIC USE AND STEWARDSHIP PROGRAMS - STATION D

ESP17-1374

REASONS FOR BROAD-SPECTRUM ANTIMICROBIAL USE FOR BACTERIAL ARTI IN THE OUTPATIENT SETTING

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Background

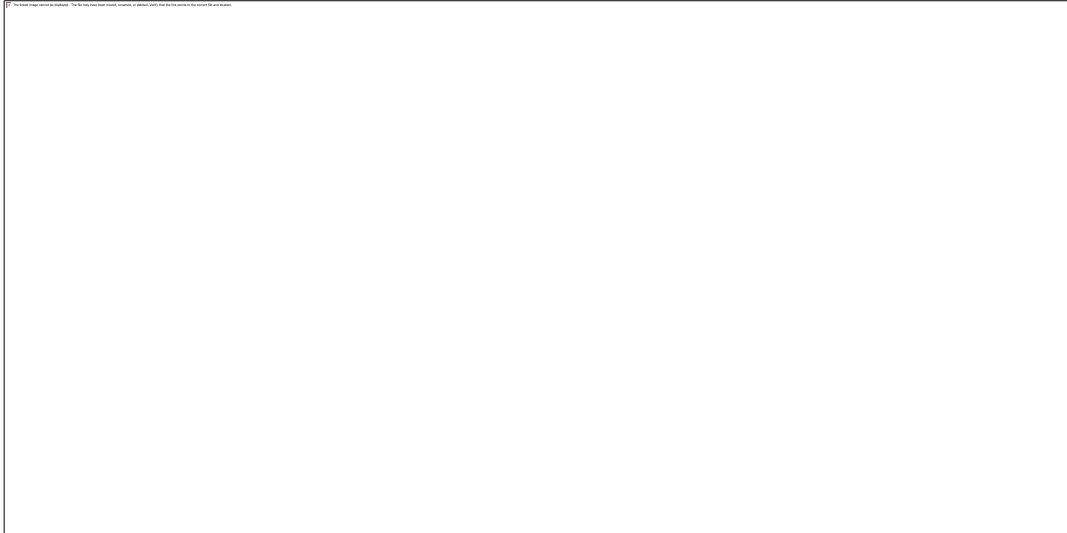
Acute respiratory tract infections (ARTI) are the most common reason for antibiotic prescribing in children. This is particularly true in the outpatient setting, where up to 50% are for broad-spectrum antibiotics. At the Children's Hospital of Philadelphia, broad-spectrum antibiotic use was previously noted to have significant variation across outpatient practices. Provider rationale for the prescribing of broad-spectrum antibiotics has not been clearly defined. Identifying such rationale should inform antimicrobial stewardship interventions.

Methods

The electronic medical record of the CHOP primary care network was utilized to obtain a cohort of children between 6 months and 12 years prescribed an antibiotic for treatment of acute otitis media (AOM), Group A Streptococcal pharyngitis (GAS), or acute sinusitis. Among children receiving broad-spectrum antibiotics, 33 children were randomly selected from each diagnosis. Charts were manually reviewed for documentation on why broad-spectrum antibiotics were prescribed.

Results

Among 30,159 children, broad-spectrum use for AOM, GAS and acute sinusitis was 14%, 12% and 20%, respectively. The most common broad-spectrum antibiotics prescribed were amoxicillin/clavulanate for AOM (5%) and sinusitis (8%), and azithromycin for GAS (7%). A reason for broad-spectrum prescribing was provided for 85% of children in the stratified sample. A total of 60% had a documented drug allergy and 15% had received narrow-spectrum antibiotics in the past 90 days (Figure 1).



Conclusions

A documented reason for broad-spectrum antibiotic use was noted in a large proportion of cases reviewed, most often for antibiotic allergy. The most common broad-spectrum antibiotics prescribed were either second line agents, or recommended as alternative first line agents in the setting of drug allergy. Evaluating the validity of antibiotic allergy labeling might serve as an important target for outpatient antibiotic stewardship efforts.

EPOSTER DISCUSSION SESSION 19: CONGENITAL VIRAL AND BACTERIAL INFECTIONS - STATION C

ESP17-1375

AUDIT OF A NEW CONGENITAL CMV SCREENING PATHWAY IN A LARGE LONDON HOSPITAL: 2014-2016 - DOES IT WORK?

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Background

SCREENING FOR CONGENITAL CMV INFECTION IN A LARGE LONDON HOSPITAL 2014-2016: DOES IT WORK?

Cytomegalovirus is the leading non-genetic cause of congenital abnormalities in the developed world; the UK does not have a congenital CMV screening program. Early diagnosis allows for early intervention, including treatment, to potentially prevent progression of sensorineural hearing loss. There is no routine system for referring babies who fail newborn hearing tests for timely testing for cCMV.

We established and audited a new cCMV screening pathway.

Methods

Since 2014, the newborn hearing screening service from seven London boroughs has worked with the specialist audiology and Paediatric infection services. The pathway aims to ensure babies who fail newborn hearing test are screened for cCMV within 3-weeks of age with a saliva sample taken by the specialist audiologist within the hospital setting. Babies identified as secreting CMV in saliva are referred for specialist infection management before 28 days of life including potential use of oral valganciclovir.

Results

Over 24 months, 177 babies who failed the newborn hearing screening and the automated otoacoustic emission (AOAE) and the automated auditory brainstem response (AABR) tests have been tested for CMV on saliva samples. 9 babies were found to have cCMV. All were investigated – cranial imaging, plasma viral load, haematology and liver profile. 6 babies met criteria for treatment and received oral valganciclovir for 6 months, with regular blood and clinical monitoring. All remain under audiology evaluation for progression of hearing loss.

Conclusions

A pathway for timely newborn hearing screening and testing for cCMV has proven to be a reasonable screening strategy in a London hospital in the absence of an established national cCMV screening program. This cohort may inform a prospective cCMV European disease registry.

EPOSTER DISCUSSION SESSION 08: INFECTION CONTROL AND AMBULATORY USE OF ANTIMICROBIALS - STATION H

ESP17-1377

DECREASING ANTIBIOTIC USE FOR INFECTIONS IN CHILDREN IN CANADA

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Background

Background: For the longest time antibiotics were overused in the pediatric population, particularly the macrolides. We undertook this study to see if prescribing practices have changed since our last evaluation in 2003.

Methods

Methods: We used population-based data from British Columbia's prescription database to determine antibiotic prescribing patterns for outpatient prescriptions over an eleven year period. Antibiotic prescription rates per 1000 children per year were evaluated for children 0-19 years of age and by physician diagnosis.

Results

Results: From 2004 to 2014, the overall BC prescription rate in children <19 years old decreased by 25% from 608 to 448 per 1000 children. The decrease in the rate of antibiotic consumption (prescriptions per 1000 population) over time was seen across all antibiotic classes, including the use of trimethoprim-sulfamethoxazole (40.9 to 14.7; 64%), macrolides (128.5 to 78.4; 39%), fluoroquinolones (9.4 to 6.6; 31%), cephalosporins (80.3 to 56.6; 30%), tetracyclines (35.4 to 27.0; 24%), and penicillins (306 to 250; 18%). Within each of those classes of antibiotics, individual antibiotic usage decreased except for amoxicillin/clavulanate which increased by (15.4 to 18.9; 22%) and clindamycin (6.9 to 7.4; 7%). The only class of antibiotics where usage increased with time was "other antibiotics" which had an overall increase of 89% due to significant increases in nitrofurantoin (4.2 to 10.9; 161%) and fosfomycin (0 to 0.2; 450%).

Conclusions

Conclusion: In contrast to our previous study, we saw a decline in antibiotic consumption in children over an eleven year period.

EPOSTER DISCUSSION SESSION 08: INFECTION CONTROL AND AMBULATORY USE OF ANTIMICROBIALS - STATION H

ESP17-1378

ANTIBIOTIC USE FOR COMMON INFECTIONS IN CHILDREN IN CANADA

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Background

Background: Infections are common in children and antibiotic use is an important component of treatment. However, overuse of antibiotics leads to antimicrobial resistance. We undertook this study to see what the prescribing practices are for respiratory tract infections (RTI), urinary tract infections (UTI) and skin and soft tissue infections (SSTI) in children.

Methods

Methods: We used population-based linked health data from British Columbia to determine antibiotic prescribing patterns for outpatient prescriptions over an eleven year period. Antibiotic prescription rates per 1000 children per year were evaluated for children 0-19 years of age by physician diagnosis, using ICD9 billing codes.

Results

Results: From 2004 to 2014, the overall BC prescription rate in children ≤ 19 years old decreased by 25% from 608 to 448 per 1000 children. Reductions in antibiotic use over time for treatment of otitis media (89.2 to 59.1; 33%), upper RTI (131.6 to 89.5; 32%), bronchitis (41.9 to 30.3; 28%), sinusitis (14.7 to 10.7; 28%), and SSTI (22.3 to 20.3; 9%) contribute to this decrease. Antibiotic use for pneumonia (8.9 to 10.7; 21%) and urinary tract infection (19.4 to 20.8; 7%) increased over time.

Conclusions

Conclusion: We saw a decline in antibiotic consumption in children for indications which do not require antibiotics such as upper RTI and bronchitis.

EPOSTER DISCUSSION SESSION 16: OTHER COMMUNITY ACQUIRED INVASIVE BACTERIAL INFECTIONS - STATION H

ESP17-1382

RISK FACTORS ASSOCIATED TO WORSE OUTCOME IN CHILDREN WITH OSTEOARTICULAR INFECTIONS

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Background

Osteoarticular infections(OAI) cause important morbidity in children. Aim: Evaluate possible risk factors associated with worse outcome in children with OAI.

Methods

Medical records of children with OAI treated according to a multidisciplinary protocol in a hospital in Madrid (2008-2015), were evaluated. Different variables, such as demographics, symptomatology, diagnostic tests and treatment, were analyzed and their association with worse outcome evaluated (defined as longer hospital stay, complications or sequelae). SA and OM were evaluated separately.

Results

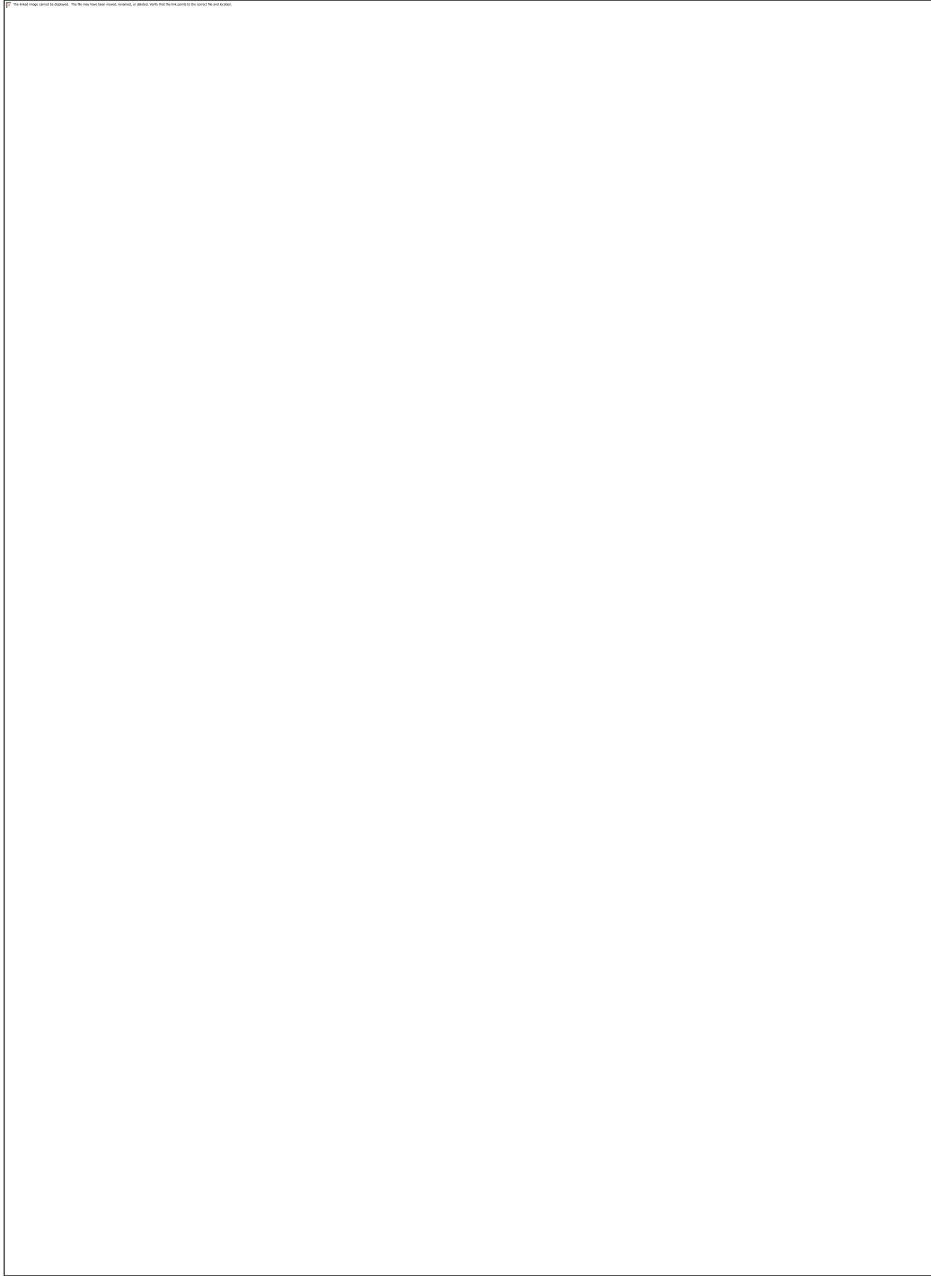
Main results are shown in table.

One hundred and sixteen children were evaluated. Forty-two children had septic arthritis (SA) and 74 osteomyelitis (OM; 10 with SA(OM-SA)). Median age was 16 months [RIQ:9-71]; 64% males. Complications and sequelae were developed in 13.7 and 12.1%, respectively, and median hospital stay was 10 [7-14] days (no differences between SA and OM).

Most important risk factors associated with sequelae for OM were OM-SA (OR:11.9[2.5-55];p=0.003), positive microbiological isolate (OR:10.2[2-52.8];p=0.017) and development of complications (OR:6.4[1.4-29.4];p=0.025), whereas for SA were age (4 vs 13 months;p=0.005), CRP (16 vs 4.2 mg/dl;p=0.029) and abnormal x-ray (OR:10.1[2.3-44.9];p=0.041). Hip involvement was associated with sequelae but without reaching significant difference (100 vs 44.7%;p=0.17).

Risk factors associated with complications were OM-SA (50 vs 7.8%;p=0.003) for OM, and days of symptoms prior to admission (1 vs 2.5; p=0.056) for SA. Children with positive cultures or hip involvement had longer hospital stay.

In the multivariate analysis the most significant independent factor associated to severe infection was OM-SA (OR: 4.5[2-500];p=0.014 for sequelae and OR:21.7[2.6-166.7];p=0.004 for complications).



Conclusions

In this study, children with OM with OM-SA or positive culture, and children with SA and longer duration of symptoms before admission, higher inflammatory parameters or abnormal x-ray, developed more often severe infection.

EPOSTER DISCUSSION SESSION 07: HIV/AIDS - STATION G

ESP17-1393

COMBINED ANTIRETROVIRAL PROPHYLAXIS IN NEWBORNS AT RISK OF PERINATAL HIV-INFECTION

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Background

Mother to child transmission (MTCT) of HIV-1 has dramatically decreased. Cases of MTCT continue to occur, largely due to missed opportunities. Combined antiretroviral prophylaxis (CAP) is indicated for newborns at high-risk of MTCT. Nevertheless the safety and effectiveness of this strategy has not been completely elucidated

Objectives

To describe the proportion of newborns at risk of MTCT who receive CAP, as well as its safety, effectiveness and trend over time

Methods

Data from the Madrid cohort of mother-infant pairs, a large observational cohort study of HIV-positive mothers and their neonates, in 9 public hospitals in Madrid were evaluated. Two periods were compared: A (2000-7) and B (2008-2015). Criteria for using CAP included late mother diagnosis or suboptimal suppression of HIV. All infants were followed since birth and had known HIV infection status. Haematological and other side effects were monitored during follow-up

Results

From a total of 1330 mother-infant pairs prospectively followed, 210 newborns (15.8%) received CAP (> 1 antiretroviral) at birth for 4-6 weeks: 135 received triple CAP (AZT+3TC+ nevirapine), and 73 dual (29 AZT+NVP 29; 46 AZT+3TC). CAP was well tolerated. Anemia (-2SD) occurred in 14.2% 6 weeks. Among those with CAP no differences were observed between periods in mother CD4, proportion of detectable viral load near delivery (84 vs 81%), prematurity (32.6 vs 31.3%) delivery (C-section 62 vs 61%). In period A, 95/822 newborns received CAP (11.5%) compared to 115/508 (22.6%) in Period B (p<0.01). There was a trend for a lower transmission rate in period B (2/115;1.7%) vs.period A (6/95, 6.3%) (p:0.085)

Conclusions

CAP has increased over time in our cohort of mother-infant pairs. CAP appears to be safe and might be effective in newborns at high risk of perinatal HIV-infection

MTP Oral Abstracts

MEET THE PROFESSOR 1: SEVERE PERTUSSIS

ESP17-0070

SEVERE PERTUSSIS: A CALL TO ACTION AGAINST A PREVENTABLE FATAL INFECTION

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Title of Case(s)

Severe pertussis: A call to action against a preventable fatal infection

Background

Nearly all deaths from pertussis are reported in infants less than 6 months of age, and effective protection of this vulnerable group by direct immunization has been problematic. Strategies including “cocooning” have been adopted. We describe a series of infants with severe pertussis and their clinical characteristics.

Case Presentation Summary

Clinical records of patients with pertussis infection admitted to KK Hospital, Singapore, between 1 October 2011 to 31 October 2016, were reviewed. Seven of 110 (6%) infants with pertussis infection who required invasive ventilation or demised were identified. The median age of these 7 infants was 6 weeks (range 3 to 9 weeks), and 86% (n=6) were females. None of these infants received any pertussis vaccination. All infants were in contact with persons coughing prior to falling ill. Six of 7 patients had leukocytosis for age during hospitalization. One patient developed a leukemoid reaction with blast cells and another received a plasma exchange for treatment of leukocytosis. Two patients required ECMO support and eventually demised.

Comparing infants with pertussis infection who did not require invasive ventilation, those who required invasive ventilation or demised were more likely to have acute life threatening events (ALTE) (p=0.001), lymphocytosis (p=0.027), have leucocytosis $\geq 50 \times 10^9/L$ (p<0.001), and have consolidation on CXR (p<0.001). On multivariate analysis, only ALTE and leucocytosis $\geq 50 \times 10^9/L$ were significant.

Learning Points/Discussion

1. Pertussis can cause substantial morbidity and mortality in young infants.
2. Cocooning strategy will help prevent transmission of this potentially fatal infection.
3. Leucocytosis is a marker of severe pertussis infection. WBC can be trended in patients with pertussis to guide monitoring and management.
4. Leucodepletion strategies can be considered in critically ill infants with pertussis.

MEET THE PROFESSOR 11: SPECIAL CASES OF TUBERCULOSIS

ESP17-0181

PARADOXICAL REACTION IN TUBERCULOUS MENINGITIS

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Title of Case(s)

TUBERCULOMA OF THE CENTRAL NERVOUS SYSTEM AS FIRST MANIFESTATION OF PARADOXICAL REACTION TO TUBERCULOSTATIC THERAPY (PRAT) IN TUBERCULOUS MENINGITIS (TBM)

Background

PRAT is a symptomatic deterioration after starting treatment. It's due to a hypersensitivity reaction between host and *Mycobacterium*. More frequent in lung infection, it must be suspected in tuberculosis meningitis (TBM) when a worsening of variable degree occurs in next two months

Case Presentation Summary

15 month-old boy with upper lobe pneumonia treated with antibiotics without improvement. Recent travel to Bangladesh two months before. Admission in ICU fifteen days after by intracranial hypertension secondary to hydrocephalus requiring ventriculoperitoneal shunt. PPD negative, despite with tuberculostatic therapy with four drugs and corticosteroids were started. Positive IGRA test although serial cerebrospinal fluid (CSF) studies and cultures of different sites were repeatedly negatives. Discharge 25 days after with improvement and positive PPD. 50 days later he suffered new admission by left facial palsy in context of otitis. MRI showed left pontocerebellar injury consistent with tuberculoma. CSF test: 225 leukocytes (99% monocytes), glucose 27 mgr%, proteins 47 mgr%. Brainstem Auditory Evoked Potentials (BAEP): whole left hearing loss. Since no isolation of bacteria a multiresistant drug tuberculosis (MRD-TB) was thought versus PRAT, also considered. So 3 new drugs, -ethionamide, levofloxacin and amikacin- joined to methylprednisolone were added to treatment. Steroids were removed in 1 month and those 3 drugs were suspended in the following two months. Facial paresis disappeared in 20 days, normal MRI in 7 months. Total hearing recovery (BAEP in 10 months).

Learning Points/Discussion

1/ Tuberculoma is an uncommon sign in TBM.

2/ PRAT will be suspected if no correlation between clinical symptoms and radiological severity. Differential diagnosis with MRD-TB.

3/ Complete clinical recovery must happen to confirm PRAT

MEET THE PROFESSOR 14: EMERGING DISEASES: OLD ENEMIES, NEW CHALLENGES

ESP17-0191

ACUTE CEREBELLITIS AS A COMPLICATION OF SEVERE DENGUE FEVER IN A YOUNG ADOLESCENT CHILD

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Title of Case(s)

ACUTE CEREBELLITIS AS A COMPLICATION OF SEVERE DENGUE FEVER IN A YOUNG ADOLESCENT CHILD

Background

Dengue fever is a common arboviral infection in the tropics; resulting in significant morbidity and, occasional mortality. many unusual manifestations have been reported with dengue, and there are many reports of neurological manifestations. These include aseptic meningitis, encephalitis, myelitis, intracranial haemorrhage and mono/polyneuropathies. Cerebellar involvement in dengue infection is not clearly defined. We report a child who presented with a cerebellar syndrome as a complication of severe dengue fever adding to the expanding list of unusual complications of dengue infection.

Case Presentation Summary

A 11 year old previously healthy adolescent boy was admitted in the emergency department of our hospital with complaints of fever, vomiting and headache for 5 days and two episodes of abnormal body movements few hours prior to admission. On examination child was unconscious with an EMV score of 10. He had a poorly palpable peripheral pulses with a CFT of 4 seconds. In emergency child again had several episodes of convulsions. Patient had to be intubated and started on ventilator support. Investigations done revealed a platelet count of 84000/dl, Hematocrit of 43, WBC count of 3200/dl, SGOT -170, SGPT-80, Creatinine-0.6 mg/dl. Dengue serology came out to be positive. Patient was extubated after 5 days. Post extubation child showed signs of cerebellar involvement in form of nystagmus and ataxic gait. MRI brain done was suggestive of cerebellitis. Patient was given IV dexamethasone. Patient started improving and was discharged after 12 days of hospital stay.

Learning Points/Discussion

Children with severe dengue fever may develop neurological complications and cerebellar involvement is a rare but reversible problem. and several episodes of convulsions.

MEET THE PROFESSOR 14: EMERGING DISEASES: OLD ENEMIES, NEW CHALLENGES

ESP17-0202

LEMIERRE'S SYNDROME: AN ALMOST FORGOTTEN CLINICAL ENTITY

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Title of Case(s)

LEMIERRE'S SYNDROME: AN ALMOST FORGOTTEN CLINICAL ENTITY

Background

Lemierre syndrome (LS) is a severe disease characterized by pharyngitis, septic thrombosis of the internal jugular vein, and distant septic metastasis, mainly caused by *Fusobacterium necrophorum*. We reviewed our experience with LS in a tertiary children's hospital during a 10-year period (2007-16).

Case Presentation Summary

Patient 1: A 14-month-old boy presented with fever, right retroauricular swelling, hypotension and tachycardia. Initial treatment with cefotaxime was ineffective. Cranial CT scan showed mastoiditis and jugular vein thrombosis. *F. necrophorum* was isolated from otic exudate culture. Treatment was modified to imipenem with good evolution. **Patient 2:** A 4-year-old girl with history of penicillin allergy was admitted with fever, left retroauricular swelling and persistent otorrhea. Cranial CT scan showed mastoiditis with evidence of jugular vein thrombosis. She was treated with intravenous levofloxacin with clinical worsening. Blood culture grew *F. necrophorum*. Chest CT scan showed right lung abscesses. Treatment was changed to meropenem with clinical improvement, but she experienced permanent conductive hearing loss. **Patient 3:** A 2.5-year-old girl presented with fever, otorrhea, eyelid and malar inflammation and altered level of consciousness. CT scan showed mastoiditis, cavernous sinus and jugular vein thrombosis. She was successfully treated with meropenem and metronidazole, heparin and dexamethasone. Culture of otic exudate grew *Massilia timonae*. **Patient 4:** A 15-year-old boy was admitted with odynophagia, fever and latero-cervical swelling. Cervical CT scan showed a latero-cervical abscess and jugular vein thrombosis. The abscess was drained and he was treated with meropenem and heparin with clinical improvement. *F. necrophorum* was detected by PCR and culture.

Learning Points/Discussion

LS is an uncommon but potentially dangerous disease in children. In our series, the main primary site of infection was otogenic. Septic emboli may be absent.

MEET THE PROFESSOR 12: HIV IN ADOLESCENTS

ESP17-0278

DOT IN HIV INFECTION – AN OPTION FOR NON COMPLIANT TEENAGERS?

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Title of Case(s)

DOT in HIV infection – an option for non compliant teenagers?

Background

During adolescence, HIV infected teenagers experience a critical period of acceptance/denial of their condition, often associated with a misunderstanding of the long term implications of their disease. Non compliance to antiretroviral therapy (ART) is frequent, particularly in those with unfavorable familiar and social environment. Directly observed therapy (DOT) is a strategy that ensures compliance, based on a third party and has been used successfully in other infections like tuberculosis. It may be a good strategy in HIV infection in selected cases for limited periods of time.

Case Presentation Summary

The authors present six cases of HIV infected teenagers from mother-to-child transmission, with multiple treatment failures associated with bad adherence . Several strategies to improve compliance were adopted, selected on a case by case basis, with multidisciplinary interventions, focused on social and family support. Familiar and social intervention, psychological support and pill swallowing training, were the first uphold strategies to improve compliance to ART. DOT was applied in selective refractory cases through community mediated domiciliary intervention. In all cases viral suppression was achieved.

Learning Points/Discussion

In these cases DOT proved to be an effective strategy to achieve viral suppression in MTC HIV infected adolescents non compliant to antiretroviral therapy.

MEET THE PROFESSOR 15: IMAGING IN CNS INFECTIOUS DISEASES

ESP17-0348

ENCEPHALITIS BY CO-INFECTION WITH A/H3N2 INFLUENZA VIRUS AND HERPES SIMPLEX VIRUS 1 IN A TEENAGER GIRL

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Title of Case(s)

ENCEPHALITIS BY CO-INFECTION WITH A/H3N2 INFLUENZA VIRUS AND HERPES SIMPLEX VIRUS 1 IN A TEENAGER GIRL

Background

Influenza and herpes viruses are known etiologic agents of encephalitis in children, but rare cases of co-infection have been reported. Magnetic resonance imaging (MRI) can sustain double etiology.

Case Presentation Summary

Clinical, paraclinical, virologic and imaging data were collected from a previously healthy 17-years-old girl admitted with acute encephalitis and influenza in tertiary facility in Bucharest, January 2017. The patient was admitted with fever, vomiting, confusion, urinary incontinence, stiff neck and seizures, which started 2 days before; lumbar puncture revealed pleocytosis and mild increase of proteins in the cerebrospinal fluid (CSF). MRI showed a classic appearance of herpes encephalitis with bilateral, but asymmetric hyperintensity involving the insular cortex and some hyperintense lesions in the right thalamus, which are a rare finding for herpes encephalitis, but can suggest an additional etiology, including influenza encephalitis (Figure). An Rt-PCR for influenza virus was positive in a nasal swab, but negative in CSF. Viral isolation in MDCK cell cultures and subtyping detected influenza A/H3N2 virus in the nasal swab. A PCR for Herpes Simplex Virus type 1 DNA was positive in the CSF. The evolution was favorable with Oseltamivir and Acyclovir treatment.

Learning Points/Discussion

As detection of influenza A virus RNA is infrequently achieved in CSF, neuroimaging might support controversial diagnosis, especially during viral co-infections and guide the treatment.

MEET THE PROFESSOR 14: EMERGING DISEASES: OLD ENEMIES, NEW CHALLENGES

ESP17-0391

A CHILD WITH MULTIPLE SPLENIC ABSCESSSES DUE TO BRUCELLOSIS IN NORTH INDIA

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Title of Case(s)

"A child with multiple splenic abscesses due to Brucellosis in north India"

Background

Human brucellosis, a zoonosis, is caused by organism of the genus *Brucella* and is a major public health problem worldwide. It is a multisystem disease and is known for its complications as it has a wide spectrum of clinical manifestations. Splenic abscess is a rare but serious complication of brucellosis, more so of chronic brucellosis. There are very few reported cases of Splenic abscess and in Pediatric population only 3 cases have been reported so far.

Case Presentation Summary

Case characteristics: We report a case of multiple large splenic abscesses in a 10 year old previously healthy girl due to *Brucellosis*, she also had a history of consumption of unpasteurized cow's milk. **Intervention:** She was treated non invasively with a combination of Oral Doxycycline and Rifampicin for 6 weeks. She became asymptomatic on third day of treatment and resolution of abscess on repeat Ultrasound done after 1 month of treatment.

Learning Points/Discussion

Message: For brucellosis high index of suspicion should be kept in a child with prolonged fever and presence of risk factors.

Ultrasound abdomen should be done to rule out abscess.

Splenic abscess can be treated non invasively with complete recovery.

MEET THE PROFESSOR 5: CASES IN TROPICAL INFECTIONS

ESP17-0436

SKYROCKETING LEUCOCYTE COUNT IN A YOUNG CHILD WITH SEVERE MALARIA

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Title of Case(s)

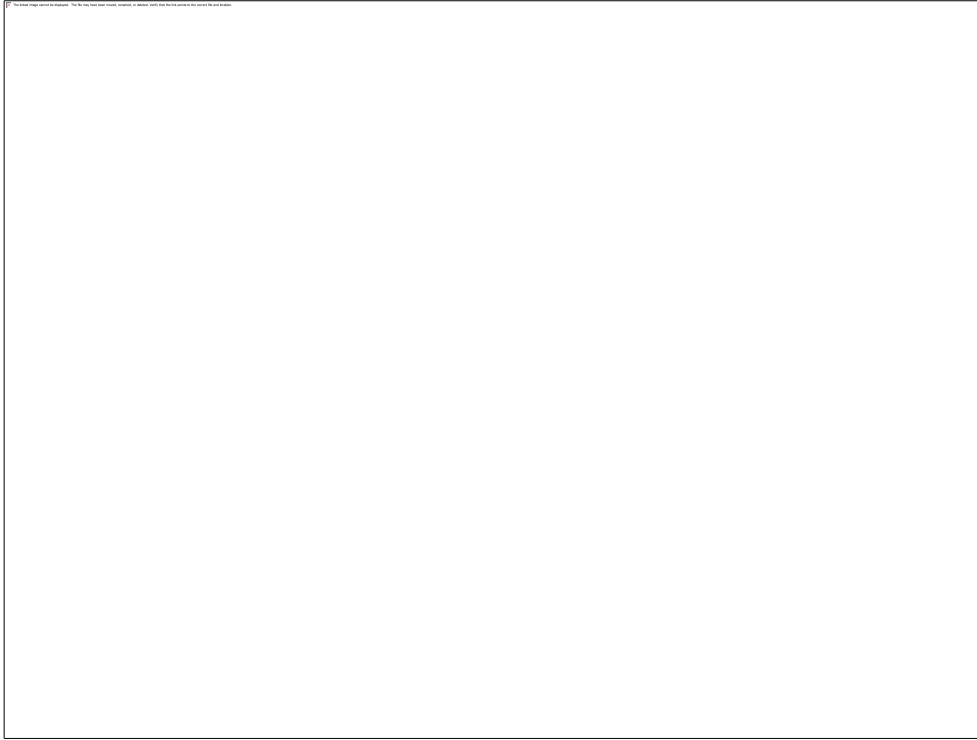
Skyrocketing leucocyte count in a young child with severe malaria

Background

Leukoerythroblastosis is characterized by the presence in the peripheral blood of immature red cells and immature white cells of the myeloid series. Leukoerythroblastosis is a non-specific response of the marrow related to different processes, including infectious diseases. We present a leukoerythroblastic reaction in the context of a severe malaria episode.

Case Presentation Summary

This 24 month old female mozambican patient was seen at Manhiça's District Hospital with a 3-day long history of fever and generalized tonic-clonic seizures. On examination, the child showed unimpaired consciousness with prostration and pallor. Peripheral blood smear was positive for *P. falciparum*. HIV test and hemoculture at admission were negative. Initial tests showed a hemoglobin level of 5.5g/dL and a white blood cell (WBC) count of $33.73 \times 10^3/\mu\text{L}$. Treatment including artesunate, ceftriaxone and blood transfusion was initiated with a good initial response. However, 48 hours after admission the patient's clinical status worsened showing an escalating WBC count that peaked $138,5 \times 10^3$ leucocytes/ μL , according to the automated coulter haemogram counter. A peripheral blood film obtained on that date confirmed an elevated WBC count (manually calculated at around 28×10^3 leucocytes/ μL) and showed a leukoerythroblastic proliferation (Figure 1). Malignancy was discarded. She also presented a worsening of hemoglobine levels, requiring two additional blood transfusions. Urine culture withdrawn at 120 hours grew a multi-resistant *Enterobacter cloacae*. Antibiotic treatment was switched to ciprofloxacin. After this, patient improved with temperature, hemoglobine and WBC count normalization.



Learning Points/Discussion

Leukoerythroblastosis may be related to different infectious diseases, including malaria.

Proper treatment of the underlying condition may resolve leukoerythroblastosis.

Elevated WBC counts, as counted by automated coulter systems, may falsely overestimate the real extent of the bone marrow response to certain infections

MEET THE PROFESSOR 5: CASES IN TROPICAL INFECTIONS

ESP17-0457

CHIKUNGUNYA FEVER AS A TRIGGER FOR SYSTEMIC LUPUS ERYTHEMATOSUS?

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Title of Case(s)

CHIKUNGUNYA FEVER AS A TRIGGER FOR SYSTEMIC LUPUS ERYTHEMATOSUS?

Background

Systemic lupus erythematosus (SLE) is a multisystemic autoimmune disease of multifactorial etiology. Several infectious agents have been suggested to play a role in the pathophysiology of SLE via its effects on the immune system.

Chikungunya fever (CHIKF) is an infection caused by an arthropod-borne alphavirus transmitted by the *Aedes* mosquito. Mexico has endemic areas of Dengue and Chikungunya (CHIKV). This case report is intended to suggest that CHIKV may be a trigger for developing SLE.

Case Presentation Summary

A 13-year-old female from Oaxaca, Mexico, with a family history of rheumatoid arthritis; presented with a four day history of persistent fever, polyarthralgias, erythematous macular rash on lower extremities. She received symptomatic treatment with NSAIDs but after 3 days developed photosensitivity, malar rash and mild anemia.

SLE was confirmed by serology testing positive for antinuclear antibodies (1:5120), anti-dsDNA, antibody to Sm nuclear antigen, anticardiolipin antibody, anti-beta 2-glycoprotein I and low C3 and C4 complement levels. CHIKV testing was positive by IgM micro-capture ELISA of 10.41 (positive ≥ 2.0) performed at the National Institute of Epidemiological Diagnosis and Reference.

She was initially treated with IV methylprednisolone, and then placed on maintenance prednisone (1 mg/kg/day) and hydroxychloroquine (4 mg/kg/day). Four weeks later, azathioprine (75 mg/day) was added due to arthralgias. She is currently experiencing only sporadic episodes of malar rash and photosensitivity on low-dose prednisone, azathioprine and hydroxychloroquine.

Learning Points/Discussion

There are multiple mechanisms through which viruses can trigger autoimmune disorders, including molecular mimicry, polyclonal stimulation and epitope diffusion. Multiple viruses have been postulated to trigger SLE, but to our knowledge, this is the first case suggesting CHIKV as a trigger for SLE.

MEET THE PROFESSOR 7: ENT INFECTIONS: MANAGEMENT OF COMPLICATIONS

ESP17-0509

RARE COMPLICATIONS OF INFLUENZA A (H1N1); HEMOLYTIC UREMIC SYNDROME, MYOCARDITIS, AND ENCEPHALOPATHY CASES OF THREE CHILDREN

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Title of Case(s)

Rare Complications of Influenza A (H1N1); Hemolytic Uremic Syndrome, Myocarditis, and Encephalopathy

Background

Influenza is generally a self-limited infection, however severe complications can be observed. To increase awareness about these complications, so manage it promptly and aid its favorable outcomes; we report three cases of influenza A (H1N1) infection with serious complications.

Case Presentation Summary

Case 1. A 3 year-old girl was admitted with respiratory distress. She had anemia, reticulocytosis, thrombocytopenia, renal failure, pleural effusion. Acute renal failure due to hemolytic uremic syndrome was diagnosed. She developed chronic renal failure and still on peritoneal dialysis.

Case 2. A 5 year old-girl admitted with flu-like symptoms, diarrhea and vomiting. She was dehydrated, hypotensive, her cardiac enzymes was elevated, ECG revealed acute heart failure. She was diagnosed myocarditis and cardiogenic shock, admitted to PICU for respiratory and cardiac support. But cardio-pulmonary arrest developed, even extra-corporeal membrane oxygenation (ECMO) treatment, she died in 3th day of admission.

Case 3. A 21 month-old boy was admitted with flu-like symptoms, fever and decreased level of consciousness. He responded to painful stimuli with flexion and meaningless sounds (GCS 6), Magnetic resonance imaging (MR) of brain demonstrated finding of an acute necrotizing encephalopathy. On his discharge, he was alert and had no apparent neurologic sequelae.

All three cases were previously healthy, nasopharyngeal swabs confirmed influenza A (H1N1) by polymerase chain reaction (PCR), oseltamovir treatment was initiated. But only second case responded well to antiviral treatment.

Learning Points/Discussion

Influenza has not always a self-limited mild course. Physical examination and accurate assessment of clinical finding is critical for the early diagnosis of the disease, the initiation of antiviral treatment and prevention of its life-treating serious complications.

MEET THE PROFESSOR 2: OUTPATIENT PARENTERAL ANTIMICROBIAL THERAPY

ESP17-0624

NEONATAL PAEDIATRIC OUTPATIENT PARENTERAL ANTIBIOTIC THERAPY (P-OPAT): THE FIRST UK-BASED CENTRE - THE FIRST 6 MONTHS

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Background

Our p-OPAT service is the first UK-based team to accept neonates with early onset sepsis (EOS). They are managed in accordance with National Institute of Health and Care Excellence (NICE) guidelines, which advocate longer courses of antibiotics, and prolongs hospital stays. Neonates have to meet agreed eligibility criteria, enabling completion of intravenous (IV) antibiotic courses at home, whilst ensuring the same quality of care is received as if an inpatient. This study reviews the first 6 month service.

Methods

All neonatal cases discharged from the post-natal ward on neonatal p-OPAT from 1st August 2016 – 31st January 2017 (first 6-months of neonatal p-OPAT) were reviewed. Each case was benchmarked against the British Society for Antimicrobial Chemotherapy (BSAC) p-OPAT good practice recommendations, which included: p-OPAT eligibility, antimicrobial selection/drug delivery in compliance with antimicrobial stewardship principles, p-OPAT outcomes, adverse line and drug events.

Results

From 1st August 2016 – 31st January 2017, 19 neonates were discharged. 18 (95%) defined as OPAT success, 1 (5%) deemed indeterminate as readmitted due to excessive weight loss unrelated to EOS or antibiotic therapy. The 19 neonates discharged were 2 – 9 days old, requiring 1 – 5 days IV antibiotics at home. Seven (37%) neonates required one recannulation, but continued p-OPAT therapy thereafter. No jaundice, sepsis or antibiotic-related complications occurred. 49 neonatal/maternal inpatient hospital bed days were saved.

Conclusions

It is possible to successfully complete the EOS pathway (as per NICE guidelines) in a neonatal p-OPAT setting in accordance with BSAC good practice p-OPAT recommendations. Thus meeting patient care demands, and balancing service needs for hospital beds. A one year audit including parent/carer survey is planned.

This model of care could and should be considered by other tertiary and district hospitals.

MEET THE PROFESSOR 6: INVASIVE FUNGAL INFECTION IN IMMUNOCOMPROMISED CHILDREN

ESP17-0747

GASTROINTESTINAL MUCORMYCOSIS MIMICKING ACUTE APPENDICITIS AFTER AUTOLOGOUS BONE MARROW TRANSPLANTATION (AU-BMT)

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Title of Case(s)

GASTROINTESTINAL MUCORMYCOSIS MIMICKING ACUTE APPENDICITIS AFTER AUTOLOGOUS BONE MARROW TRANSPLANTATION (AU-BMT)

Background

Mucormycosis is a life threatening infection among patients with malignancy. Rhinocerebral or pulmonary involvement is typical. Gastrointestinal involvement is rare and often fatal.

Case Presentation Summary

An 11 years old male with high risk medulloblastoma underwent surgical resection and craniospinal irradiation and proceeded to 4 courses of high dose chemotherapy with Au-BMT. He developed immune reaction to cisplatin /cytoxan combination that treated with very short course of steroids during chemotherapy . He had fluconazole for antifungal prophylaxis. On day +6 of last transplantation he developed abdominal right lower quadrant pain without fever. Ultrasonography demonstrated typhlitis and suspected inflamed appendix. Piperacillin/tazobactam and symptomatic treatment were started. Two days later while his leukocyte count was rising, he developed fever and pain worsened. On CT scan signs of appendicitis and right subdiaphragmatic liver abscess was demonstrated. He underwent appendectomy and drainage of liver abscess. Direct smear and cultures came negative for bacteria, and pathology demonstrated "acute appendicitis". The patient did not improve and a repeat CT scan still demonstrated a large liver abscess and pleural effusion. He had a second surgery. Specimens taken from the liver abscess and diaphragm grew *Lichtheimia ramosa*. A retrospective staining of appendix tissue was concomitant with mucormycosis. The child underwent additional surgery with wide resection of all suspicious places and received liposomal amphotericin B along with echinocandin and later oral posaconazole. Totally he was treated for 6 months. A year later there is no recurrence of his cancer or fungal infection.

Learning Points/Discussion

Invasive mucor infection can mimic appendicitis, and should be considered in the setting of BMT and neutropenia. Aggressive antifungal treatment with repeated surgery are needed for success of treatment.

MEET THE PROFESSOR 12: HIV IN ADOLESCENTS

ESP17-0778

BETWEEN CHILDHOOD AND ADULTHOOD – A CASE OF 16-YEAR OLD HIV-PATIENT

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Title of Case(s)

BETWEEN CHILDHOOD AND ADULTHOOD – A CASE OF 16-YEAR OLD HIV-PATIENT.

Background

According to current Polish data, there are over 21,000 people living with HIV in Poland, including about 150 children. Adolescence is a special period between childhood and adult life, often due to problems in communication with adults. In the absence of adequate education and care, many undesirable situations may appear.

Case Presentation Summary

A 15.5-year old boy, without significant past diseases, was admitted to our hospital for complete diagnosis of HIV infection. He was hospitalized a month before due to recurrent fever, weakness, abdominal pain, weight loss and mental disorders. Laboratory and imaging tests revealed no significant abnormalities, except for anaemia. Screening test for HIV was performed and it was positive, then confirmed in WB. On admission to our department, the boy was in poor condition: wasting syndrome (BMI 14,3 kg/m²), generalized lymphadenopathy, hepatosplenomegaly, there were also skin lesions (erosions) on the genitals. The patient denied any sexual contacts and intravenous drugs. The status of mother was unknown. HIV viral load in PCR was over 57,000 copies, there was a deep immunosuppression – 133 CD4+ (7%), C3 according to CDC classification. The mother's HIV test was negative. Further diagnostics revealed VDRL positive and then syphilis was confirmed. At this point the patient disclosed homosexual contact with an adult men. Despite many interventions, including psychologist session, the boy did not revealed the partner.

Learning Points/Discussion

Adolescents require special care and education on the threshold of adulthood. Sexual contacts, drugs and parties are inseparably connected with this period in life and the role of parents and teachers is to prepare for adulthood properly, with the presentation of all dangerous and irreversible situations, such as sexually transmitted diseases.

MEET THE PROFESSOR 14: EMERGING DISEASES: OLD ENEMIES, NEW CHALLENGES

ESP17-0830

LEPTOSPIROSIS – EMERGING DISEASE IN PORTUGAL?

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Background

Leptospirosis is more prevalent in developing countries. In rural areas, hot and humid regions of tropical climate but not in Europe. The clinical course varies from self-limited or subclinical cases to potentially life-threatening forms.

Methods

A retrospective study between January 2006 and December 2016 was conducted. Demographic, complications data and outcome were analysed.

Results

A total of 18 hospitalizations with 61.1% in 2016, with a median age of 12 years. Most 11/18 resided in Lisbon near the river areas, 5/18 in rural areas, 7/18 had a recent travel history to Alentejo, Algarve, North of Africa and North America and 15/18 had been in contact with animals including dogs, cats, goats and sheep. The clinic presentation was fever (15), myalgia (10), rash (7) and headache (6). The diagnosis was made by urine specific PCR (72%), fresh urine microscopy (33.3%) and serum serology-MAT (11%). Complications occurred in 11/18 (61%) cases: hepatitis (4), renal failure (3), coagulopathy (2), hyperbilirubinemia (2), hepatic failure (2), seizures (2), hemophagocytic syndrome (1), neuroretinitis (1), pancreatitis (1) and encephalitis (1). Three patients required intensive unit care. One patient needed liver transplantation and a patient with encephalitis died. The mean hospitalization was 15 days. All cases were reported to the Public Health Department.

Conclusions

Leptospirosis is a notifiable disease that should be associated with major public health actions in the control of animal disease and in improving the social conditions of the population. The increased of the incidence in the last year and of the majority residing in the river areas of Greater Lisbon could be related to the increased constructions that are taking place in the city with possible entrainment and contamination of the waters.

MEET THE PROFESSOR 3: CONGENITAL TOXOPLASMOSIS: CAN WE DO ANY BETTER?

ESP17-0848

CONGENITAL TOXOPLASMOSIS: LATE COMPLICATIONS IN TREATED CHILDREN

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Title of Case(s)

Congenital Toxoplasmosis: Late complications in treated children

Background

In congenital toxoplasmosis (CT), intracranial signs occur less frequently than ocular. Recurrent chorioretinitis is the most common sequelae. However, studies have demonstrated that intracranial neurons and astrocytes can harbour bradyzoites with proliferating parasites and thus imply the potential for neurological progression.

Case Presentation Summary

24 months of postnatal CT screening in Ireland detected 15 cases (incidence 1 in 10,000), predominantly asymptomatic (87%). Overall 40% had signs; 20% severe, 80% non-severe CT.

Two immunocompetent children treated for 1 year with antiprotozoals had late intraocular recurrence. One with a unilateral peripheral inactive chorioretinal scar experienced 2 episodes vision-threatening chorioretinitis in year 3. During month 4 of 6 months retreatment, a 2-minute seizure (eye rolling, unresponsiveness, generalised twitching) associated with fever occurred. Septic screen, intracranial imaging were normal. Diagnosis: seizure with fever and no defined focus. No seizure or intraocular episodes recurred, child currently age 10.

One severe CT (right central blindness, ventricular dilatation, multiple calcifications) demonstrated regression of intracranial signs with only 1 calcific focus remnant after 12 months treatment. Normal neurodevelopmental progress and above average intelligence were documented in school. Aged 11.5 years left visual disturbance occurred with chorioretinitis confirmed. Antiprotozoals plus steroids prescribed with lesion quiescence and unaffected vision demonstrated. Steroids were tapered, antiprotozoals continued for 3 months. During week 5 of treatment, an afebrile tonic clonic seizure occurred. Septic screen, electroencephalography were unremarkable; intracranial imaging demonstrated the old calcific focus. Presumptive diagnosis: primary epilepsy; oxcarbazepine prescribed. No further episodes occurred.

Learning Points/Discussion

In non-severe and severe CT, even with apparently successful treatment in infancy, children remain at risk for intraocular reactivation and late seizure onset.

Intracranial *T.gondii* reactivation must be considered as a cause of seizures manifesting during periods of intraocular recurrences.

MEET THE PROFESSOR 8: SEVERE S. AUREUS INFECTIONS: IS IT A MATTER OF RESISTANCE OR TOXINS?

ESP17-0877

PURPURA FULMINANS DUE TO METHICILLIN SUSCEPTIBLE S. AUREUS INVASIVE DISEASE WITH PANTON-VALENTINE LEUKOCIDIN(PVL) EXPRESSION

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Title of Case(s)

Purpura fulminans due to methicillin susceptible *S. aureus* invasive disease with Panton-Valentine leukocidin(PVL) expression

Background

Purpura fulminans is frequently reported with meningococemia or streptococcal disease, but less frequently with *S. aureus* (SA). It's a rare and life-threatening condition that requires aggressive treatment. We present a pediatric case with purpura fulminans (PF) secondary to methicillin susceptible SA (MSSA)

Case Presentation Summary

A 12 year old previously healthy boy with acute onset of fever and left knee pain after mild trauma was admitted. On physical examination he was ill appearing with bilateral crackles and inflammatory signs of the left knee. MRI confirmed osteomyelitis in the proximal tibia. After admission the patient rapidly progressed to shock and multiorgan failure. Treatment with vancomycin and cefazolin was initiated. Subsequently his clinical condition worsened, requiring dialysis, High frequency ventilatory mode and vasoactive support. Blistering and signs of distal necrosis of the four limbs developed. Chest X-Ray revealed bilateral infiltrates with left pleural effusion. Doppler US of the limbs revealed thrombosis of the right radial artery and left femoral and popliteal veins. The PVL molecular test was positive. He received clindamycin, daptomycin and intravenous immunoglobulin (IVIG) with clinical improvement, and 3 weeks later amputation of necrotic areas of hands and feet was performed. He received a total of 6 months of antibiotic therapy due to chronic osteomyelitis that required multiple surgical procedures

Learning Points/Discussion

PF due to SA is associated with super-antigen production (PVL, TSST-1, SEB, SEC). Aggressive treatment should include empiric antimicrobial therapy for both MRSA and MSSA, immunomodulatory therapy with plasmapheresis, IVIG or monoclonal antibodies, anticoagulation, clindamycin or linezolid to inhibit toxin production and surgical control to reduce morbidity and mortality

MEET THE PROFESSOR 3: CONGENITAL TOXOPLASMOSIS: CAN WE DO ANY BETTER?

ESP17-0921

CONGENITAL TOXOPLASMOSIS – POSTNATAL DIAGNOSIS AND FOLLOW-UP

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Background

Congenital toxoplasmosis (CT) occurs when there is a primary infection during pregnancy and transplacental transmission of the parasite from mother to fetus. The incidence is about 1-3 per 10.000 birth. CT is a preventable disease with possible severe consequences to the affected child. In the postnatal period, the gold standard to establish a diagnosis of CT is the persistence of *Toxoplasma* IgG by 12 months of age.

Methods

Retrospective study of all children born in our hospital between 2008 and 2015 and referred for suspect congenital toxoplasmosis. The aim of the study was to define the clinical and serological characteristics of children confirmed as having CT, in order to optimize diagnostic work-up and treatment.

Results

We identified 37 suspected cases of CT, but only 5,4% proved to be infected. Seroconversion occurred mostly on the 1st trimester (51,4%). Amniocentesis was performed in 35,1% of pregnant women and Polymerase chain reaction (PCR) for *Toxoplasma gondii* DNA detection in amniotic fluid was negative in all of them. Only 51,4% of women were treated with spiramycin. All children were asymptomatic at birth except for one, that presented with chorioretinitis. About 70,3% of infants started treatment immediately after birth: 42,3% spiramycin and 57,7% pyrimethamine and sulfadiazine. Median treatment duration was 1,7 months and interruption was determined by PCR results. All infants had a negative PCR for *T. gondii* in peripheral blood and no children tested positive for toxoplasma specific IgM. In one case IgG tested positive after the first year of life and treatment was re-introduced. No neurologic, neurocognitive or neurosensorial impairments were detected.

Conclusions

Given the particular characteristics of *Toxoplasma gondii* infection, to confirm or exclude CT in newborns, several serological and parasitological tests are required.

MEET THE PROFESSOR 11: SPECIAL CASES OF TUBERCULOSIS

ESP17-0923

CLINICAL CASES OF CHILDREN WITH HIV/TB CO-INFECTION WHO HAD CONTACTS WITH DRUG-RESISTANT TUBERCULOSIS

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Title of Case(s)

CLINICAL CASES OF CHILDREN WITH HIV/TB CO-INFECTION WHO HAD CONTACTS WITH MDR-AND XDR- TB

Background

The TB epidemic in Ukraine is characterized by widespread drug resistant (DR) tuberculosis (TB), with high TB treatment failure and mortality. DR-TB diagnostic and management in HIV- positive children is more challenging than in adults, as the paucibacillary disease and extrapulmonary TB(EPTB) localization in children not allowed to collect sputum for bacteriologic confirmation and drug susceptibility testing (DST).

Case Presentation Summary

Among 39 children with HIV/TB co-infection who received treatment in tertiary hospital "Clinic for treatment children with HIV/AIDS" in 2016, 6 patients had close contacts with confirmed MDR-TB and XDR-TB. Among them, 33% -female and 67%- male, with the average age -6 (ranging 2-12) years old. 66% had a pulmonary TB (PTB), 50% EPTB (1 case of TB-spondylitis and PTB, 1 - lymph nodes, subcutaneous tissue TB and 1 - thoracic lymph nodes TB) with 67% TB relapse in all cohort. Among patients with PTB, 50% have a positive MTB culture, DST was available in both cases and almost identical with close contacts resistance was found. In 50% cases TST was done and was positive. In 50% patients a severe immune suppression with CD count less than 100 cells/ml was presented. Only 2 patients were on ART before TB diagnosis was confirmed. One patient was successfully cured as a drug susceptible TB (although, treatment followed 13 months and contained MFX).

Learning Points/Discussion

Considering the fact that children are rarely MTB exposed, close contact resistance should be strongly estimated in order to prescribe the adequate treatment. TST should not be ignored, especially in resource limited settings. ART in HIV –positive children should be initiated as soon as HIV status are known.

MEET THE PROFESSOR 8: SEVERE S. AUREUS INFECTIONS: IS IT A MATTER OF RESISTANCE OR TOXINS?

ESP17-1058

EPIDEMIOLOGICAL AND CLINICAL DIFFERENCES BETWEEN METHICILLIN RESISTANT AND METHICILLIN- SENSITIVE STAPHYLOCOCCUS AUREUS INFECTIONS ACCORDING TO PVL GENES IN CHILDREN

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Background

Staphylococcus aureus is responsible for an impressive variety of diseases ranging from minor skin and soft tissue infections to major, pneumonia, empyema, osteomyelitis, and septic arthritis. Pantón-Valentin leukocidin (PVL) is a two-component leukocidin and lytic to human neutrophils. PVL has been associated with invasive *S. aureus* soft tissue and pneumonic infections.

Methods

A total of 99 *S. aureus* clinical isolates were analysed using standard microbiological methods. PCR was performed to detect the PVL gene among both methicillin –resistant (MRSA) and methicillin- sensitive (MSSA) isolates. Sociodemographic variables, antibiotic susceptibility, additional risk factors were recorded.

Results



A total of 99 patients (67 male) with a median age of 36 (min-max 4 days-263 months) months were included.

Among isolates 84 (84.8%) were MSSA and 15 (15.1%) were MRSA. The distribution of site infections were 53 (53.5%) soft tissue infection, 37 (37.4%) blood-stream infection, 9 (9.1%) other site infections. Of the 99 isolates 11 (11.2%) were positive for the PVL gene of which only one isolate was MRSA. Eight of 53 (15.1%) soft tissue infection isolates, 2 of 37 (5.4%) blood related infection isolates were positive for the PVL gene ($p=0.355$). None of the PVL gene positive isolates were resistant to clindamycin, ciprofloxacin, trimethoprim-sulfamethoxazole or linezolid. Only one PVL gene positive isolate (9%) was resistant to erythromycin. None of the PVL gene positive isolates were multidrug resistant..

Conclusions

The prevalence of PVL in methicillin-resistant *S. aureus* (MRSA) is well documented while less data are available on PVL prevalence in MSSA isolates compared with MRSA isolates. Our analysis suggests that MSSA with PVL genes are more common than MRSA with PVL genes and mainly cause skin and soft tissue infections that do not require long hospitalization.

MEET THE PROFESSOR 2: OUTPATIENT PARENTERAL ANTIMICROBIAL THERAPY

ESP17-1078

LEMIERRE'S SYNDROME: A COMPLEX PROBLEM WITH A SIMPLE SOLUTION

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Title of Case(s)

LEMIERRE'S SYNDROME: A COMPLEX PROBLEM WITH A SIMPLE SOLUTION

Background

Lemierre's Syndrome (LS) is an oropharyngeal infection with secondary septic thrombophlebitis of head and neck veins, complicated by dissemination of septic emboli to pulmonary and systemic sites. It is typically caused by *Fusobacterium necrophorum*, but other pathogens have been implicated. The invasive nature of the infection requires extended courses of intravenous antibiotic therapy, prolonged stays in hospital and negative impact on family/social life.

Case Presentation Summary

This case series is of 7 children who were diagnosed with LS, in a large London Children's Hospital, between September 2014- December 2016. 6 children were < 2 years (ratio of 5 males to 1 female), 1 case -14 year old female. All patients were previously well and fully immunised. All had CT or MRI findings of mastoiditis and venous sinus thrombosis. *Fusobacterium necrophorum* was identified in 5 cases, 1 case- *Staphylococcus Aureus*, 1 case-Group A *Streptococcus*. 5 cases were managed with p-OPAT and completed 6-8 weeks antibiotic therapy at home via a peripherally inserted central catheter (PICC). 1 case was switched to oral therapy prior to discharge, 1 case transferred to the local hospital. All children received anticoagulation for 3-6 months. Care was coordinated by the p-OPAT service with ENT/Haematology input. All p-OPAT outcomes were a success. Parent/patient experience questionnaire rated excellent. 144 hospital bed days saved.

Learning Points/Discussion

Lemierre's Syndrome requires an effective multidisciplinary team approach. If combined with robust clinical services, such as p-OPAT, it can be delivered successfully and safely in an outpatient setting.

Thus it is possible to ensure a positive patient and family experience, and a reduction in hospital bed days, whilst maintaining good clinical outcome.

Complex patients should always be considered for p-OPAT

MEET THE PROFESSOR 16: COMMUNITY ACQUIRED DIARRHEA IN INFANTS

ESP17-1130

ASSESSING THE ONGOING IMPACT OF ROTAVIRUS VACCINATION IN THE UK

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Background

The United Kingdom added rotavirus vaccine (Rotarix GlaxoSmithKline) to the national immunisation schedule in July 2013. We reported significant reductions in rates of disease after the first year of vaccination with a smaller fall in the second year. We have continued active surveillance to report the epidemiological trends for three years after vaccine introduction.

Methods

During the 2012-2016 rotavirus seasons, children presenting to our regional paediatric emergency department with gastroenteritis symptoms (>2 loose stools and/or >1 episode of vomiting in the last 24 hours) had stool virology analysis (real-time PCR), severity assessment and clinical outcome recorded.

Results

The number of rotavirus positive samples continued to fall in 2016. Adjusting for an overall rise in rates of attendance the number of gastroenteritis attendances, admissions and bed days occupied fell compared to 2015 ($p<0.05$) but was not significantly different from 2014 (table 1). We also detected a possible rise in the number of cases of intussusception which requires further evaluation.

		Pre vaccine		Post vaccine (adj % change)		
		2012	2013	2014	2015	2016
01 Jan – 31 Jun						
Total ED attendances		16709	15816	16134	18305	20157
All cause gastroenteritis	Attendances	1464	1239	706 (-47%)	863 (-43%)	852 (-49%)
	Admissions	297	288	137 (-53%)	204 (-38%)	174 (-52%)
	Bed days occupied	506	450	148 (-69%)	217 (-54%)	168 (-65%)
	Percentage attendance samples RV+ve	54	65	36	30	10

Conclusions

In the third year of rotavirus vaccination in the UK, there have been sustained reductions in numbers of hospital attendance and admissions returning to the levels seen in the first year after introduction. This may represent early evidence of biennial cycling as seen in the USA.

MEET THE PROFESSOR 12: HIV IN ADOLESCENTS

ESP17-1223

SEXUAL HABITS AND A DRUG USE IN YOUNG POPULATION: DIFFERENCES BETWEEN HIV POSITIVE YOUNG ADULTS VERTICALLY INFECTED AND THEIR HIV-NEGATIVE PEERS

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Background

Our study aimed to measure specific behaviours like drug use and sexual habits in vertically HIV-infected young adults (HPY) compared to their HIV-negative peers (HNY).

Methods

Paired case-control study matched by education level (high, medium, low), sex and age ($\pm 3y$). HPY were randomly selected from CoRISpe database (Cohort of the Spanish Paediatric HIV Network) and HNY were recruited online. Sexual habits and drug use were assessed using an anonymous questionnaire adapted from the Spanish Institute of Statistics.

Results

Fifty-four subjects were included (27 HPY and 27 HNY), median age: 22.5y (16-34), 70.4% females in both groups. Significant differences were observed in terms of tobacco smoking (70.8% HPY vs 51.9% HNY; $p < 0.05$). Nevertheless, alcohol consumption was similar in both groups (13.6% HPY vs 25.9% HNY drunk once a week; $p > 0.5$). The proportion of subjects that had consumed drugs at least once in their lives was no different: 40.7% HPY vs 48.1% HNY for cannabis, 3.7% both cocaine, 0% HPY vs 7.7% HNY meth-based drugs and 0% both heroine (all $p > 0.5$). Considering sexual behaviour, mean age at first intercourse was 16.5 $\pm 2y$ vs. 16.7 $\pm 2y$ ($p > 0.5$). There were no significant differences in use of preservative in every intercourse (70.8% vs 42.3%, $p > 0.05$) and the total number of partners throughout was similar ($p > 0.5$). Most subjects preferred heterosexual relationships (95.8% HPY vs 80.8% HNY; $p > 0.5$).

Conclusions

Smoking is a common habit among the young adult-HIV-infected population and cannabis consumption raises concern in both groups of subjects. A high proportion of patients do not use preservative in every intercourse, which is a worrying fact among the HIV-infected population. Awareness-raising campaigns should not be disregarded and more efforts should be done in the clinics to prevent these behaviours.

MEET THE PROFESSOR 13: OPTIMAL APPROACH OF MENINGOCOCCAL DISEASE

ESP17-1315

DIFFERENCES BETWEEN PUBLIC HEALTH GUIDELINES FOR VACCINATION AGAINST N.MENINGITIDIS SEROGROUP B ACROSS WESTERN COUNTRIES

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Background and Objective

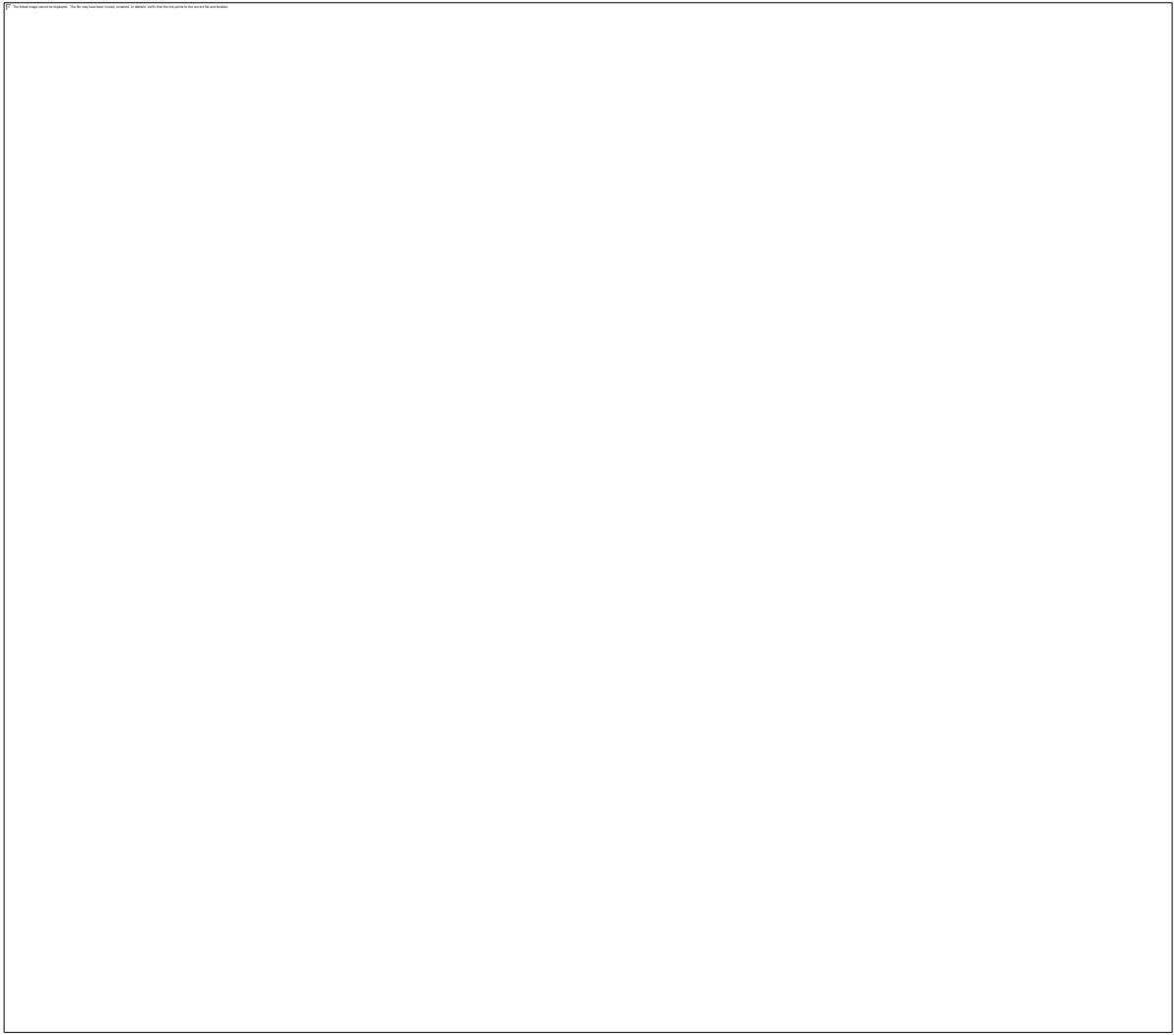
More than three years have elapsed since a novel vaccine against meningococcus B is available, and the Public Health Services of western countries have implemented guidelines for its use. Policies derived from those documents could imply mass vaccination or selective administration of the product. We tried to spot the differences in those guidelines in order to define which entities could be considered for vaccination in some countries but not in others, or whether a certain situation was not even considered in any protocol.

Methods

The Public Health Guidelines of several European countries and the US were reviewed and compared.

Learning Points Discussion

Recommendations for vaccinating patients with complement deficiencies, asplenia, and close contacts in institutions are universally present in all guidelines. Microbiologist exposed to lab accidents are also mentioned in the majority of the reviewed documents. Patients with HIV are considered for selective immunization by the STIKO (the German Commission for Immunization); a higher risk of suffering the disease (OR: 3.57-7.14) was stated. Household contacts in Germany can expect to be immunized against the disease, in UK two members of the same family must be afflicted by the disease before considering vaccine administration. Patients with Down Syndrome are specifically mentioned as proper candidates for vaccination in Ireland. This country was also the only nation including either bone marrow or solid transplant recipients as susceptible of being immunized against meningococcus B. Several situations are blatantly ignored in most guidelines, like the existence of previous familiar aggregation of meningitis (only mentioned in the UK), the existence of CSF leakage, and specific immune defects other than complement deficiency but with increased risk of infection by capsulated bacteria.



MEET THE PROFESSOR 15: IMAGING IN CNS INFECTIOUS DISEASES

ESP17-1351

DIAGNOSIS AND MANAGEMENT OF BRAIN ABSCESS

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Title of Case(s)

DIAGNOSIS AND MANAGEMENT OF BRAIN ABSCESS

Background

Despite being an infrequent infection, brain abscess it presents great morbidity and mortality. We must know the manifestations and therapeutical approach of its complications.

Case Presentation Summary

A 2-year-old boy presented in emergency department with 11 days of febrile syndrome with drowsiness and poor feeding. His past medical, surgical, and social histories were unremarkable. On examination he had a maculopapular rash and a white coating on the left tonsil. An urgent blood sample was obtained, showing leukocytosis and CRP increase. Because of drowsiness a lumbar puncture was made suggesting viral meningitis. Waiting for the culture of CSF treatment with cefotaxime and acyclovir was begun but due to progressive confusion a TC was done. The image showed a left temporal hypodense lesion and left cerebellar hemisphere involvement, a collection in middle fossa with hypodense sigmoid sinus, and also acute otomastoiditis was evidenced. A *Streptococcus pyogenes* grew in the blood culture and pharyngeal exudate. Antibiotic therapy was switched to penicilin and metronidazole. Sigmoid sinus hypodensity may be due to thrombosis so NMR angiography was performed confirming thrombosis of the sigmoid sinus and right lateral sinus. Treatment with heparin was given for 3 months. After 6 weeks of antibiotic intravenous treatment and surgery drainage, the collection was resolved and the clinical improvement was complete

Learning Points/Discussion

The brain abscess begins as cerebritis and evolves to a collection of pus surrounded by a capsule. The most common origin is direct or indirect cranial infection from the middle ear or paranasal sinuses. The microorganism depends on the focus. The lumbar puncture is not indicated by risk of herniation and the culture isolates are infrequent. CT with contrast is the gold standard. Treatment includes surgical drainage of the primary focus and intravenous antibiotic therapy.

MEET THE PROFESSOR 13: OPTIMAL APPROACH OF MENINGOCOCCAL DISEASE

ESP17-1368

ARE HOST GENETICS LINKED TO COAGULOPATHY AND SEVERITY OF MENINGOCOCCAL DISEASE?

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⁹FP7- GA#279185, <http://www.euclids-project.eu>, London, United Kingdom

Background

Severity of meningococcal disease is associated with coagulopathy that can lead to disseminated intravascular coagulation, tissue ischaemia and necrosis and result in amputations, skin grafts or death. Several studies have investigated single-nucleotide polymorphisms (SNPs) in association with meningococcal sepsis. However, evidence on most associations is low. Therefore, we aim to explore further if host genetics are linked to coagulopathy and disease severity in meningococcal disease.

Methods

This study was performed within EUCLIDS, a European multicentre study investigating life-threatening bacterial infections of childhood. A candidate gene approach based on literature research revealed 76 genes related to coagulation. We used a Nimblegen assay for library generation and sequenced whole genes (including introns and 2kb of the 3' and 5' regions). 245 paediatric patients (220 from the Austrian Network, 25 from the UK) with different severity phenotypes were included, 35 of them were death cases and 34 patients had skin grafts or amputations.

Results

Among the most significant phenotype-genotype associations, death was associated with a SNP in F13A1 ($p=0.0004$) and in ADAMTS18 ($p=0.0006$). F13A1 encodes for subunit A of coagulation factor XIII that is known to stabilize clot formation. ADAMTS18 is a plasma metalloprotease that is interacting with Thrombin.

Conclusions

This study suggested several coagulation genes that may play an essential role in coagulopathy during acute invasive meningococcal disease. For further validation, genotyping of additional samples and measurements of protein levels are planned ahead.

Acknowledgement:

This work was partially supported by FP7 under EUCLIDS GA 279185 and partially by Grant No. 8842, 10112 and 12710 of the Oesterreichische Nationalbank (Austria).

Clinical Trial Registration (Please input N/A if not registered)

MEET THE PROFESSOR 6: INVASIVE FUNGAL INFECTION IN IMMUNOCOMPROMISED CHILDREN

ESP17-1388

INVASIVE FUSARIUM INFECTION IN A PEDIATRIC PATIENT WITH ACUTE MYELOID LEUKEMIA SUCCESSFULLY TREATED WITH COMBINATION OF ANTIFUNGAL AGENTS AND GRANULOCYTE TRANSFUSIONS

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Title of Case(s)

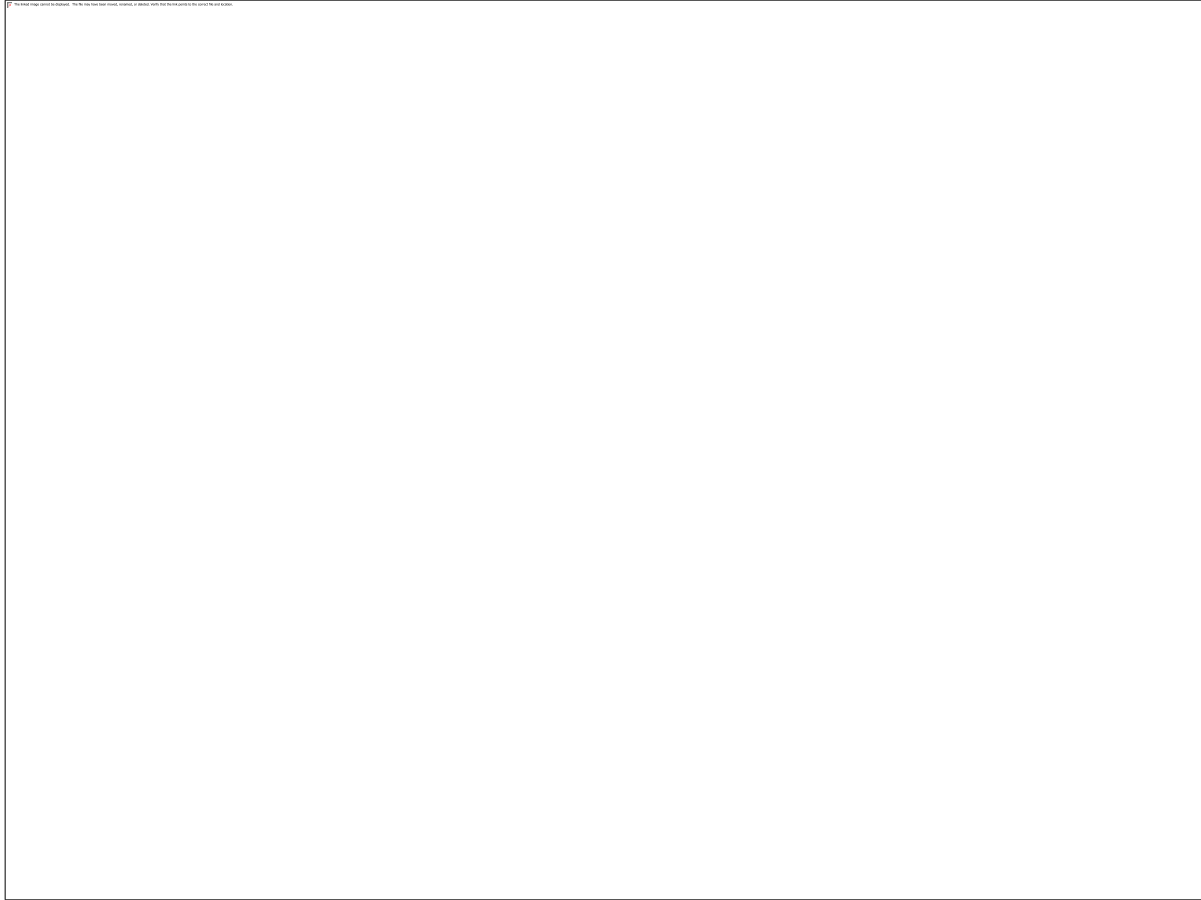
Invasive *Fusarium* infection in a pediatric patient with acute myeloid leukemia successfully treated with combination of antifungal agents and granulocyte transfusions

Background

Fusarium spp. are only second to *Aspergillus* as a cause of IFI due to moulds in hematological malignancies, and the cure of fusariosis remains a challenge for both clinicians and microbiologists. We report here a case of disseminated *F. solani* infection in a acute myeloid leukemia (AML) patient who was successfully treated with liposomal amphotericin B and voriconazole combination therapy and discharged from hospital.

Case Presentation Summary

A 10-year-old AML-M2 male patient was treated with meropenem, vancomycin, amikacin. due to neutropenic fever. After 73 days of neutropenia he developed macular and nodular skin lesions randomly scattered over the body. Liposomal amphotericin B was added to voriconazole as the second antifungal treatment. Skin biopsy was done, a mould was isolated from culture. The isolated strain was morphologically identified as *Fusarium* spp. Molecular identification of the strain confirmed the identification of *Fusarium solani*. Minimum inhibitory concentrations (μg)



/ml) were 4, >8, >16, and 8 for amphotericin B, itraconazole, posaconazole, and voriconazole, respectively. Thorax computed tomography revealed bilateral nodular opacities in ground glass density compatible with lung fungal infection. Liposomal amphotericin B and voriconazole was stopped at the 34th and 73th day, respectively. After 6 months of duration of oral voriconazole treatment, voriconazole was stopped, no recurrence of fusariosis was seen although chemotherapy regimens were continued to be given.

Learning Points/Discussion

Considering the clinical condition of patients affected by disseminated fusariosis, combination treatment of voriconazole and lipid-based amphotericin B might be considered as first option therapy. *Fusarium* spp. should also be kept in mind as a likely pathogen in immunocompromised patients with profound neutropenia.

E-Poster Viewing Abstracts

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-0010

APPROPRIATENESS TO SPANISH CONSENSUS DOCUMENT ON THE DIAGNOSIS AND TREATMENT OF ACUTE TONSILLOPHARYNGITIS IN A GENERAL HOSPITAL

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Background

Acute tonsillopharyngitis (ATP) is one of the most common childhood diseases. The diagnosis and therapeutic management is simple. Further, a consensus document exists in Spain since 2011. The aim of this study is to analyse the appropriateness to consensus in a general hospital, where an author of the consensus document is working.

Methods

A descriptive, cross-sectional, single-center and local study was conducted from January to December 2015. All children ≤ 14 years diagnosed as ATP in Paediatric Emergency Room were included. Clinical records and complementary tools were retrospectively studied.

Results

A total of 176 ATP were analysed (52.3% girls). Clinical assessment was always performed by McIsaac score. After conducting culture or a rapid antigen-detection test, 46.5% of children received antibiotics. Selection of antimicrobials and prescribed doses were 100% adjusted to consensus. Dose ranges and duration of treatment were $>85\%$ appropriated. Only 2 of 17 pediatricians working on the hospital were responsible of inappropriate prescriptions.

Conclusions

Appropriateness is higher than reported in other studies. Rational use of antibiotics could be improved through continuous and regular training by experts in pediatric infectious diseases. In addition, it is suggested to analyse inappropriate prescribers to select pediatricians that should receive specific training. In Spain, it is of primordial importance to adapt the prescribing of antibiotics to the scientific evidence.

22A. EDUCATION: OTHER

ESP17-0011

NOSOCOMIAL FEVER PHOBIA: AN INFECTIOUS FEAR

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Background

In 1980, Schmitt was the first to coin the term “fever phobia” to describe parents’ unrealistic fears about fever. More than 35 years later, this unfounded fear remains. A survey is conducted in Spain to the workers of four public hospitals. Knowledge about fever in children is analysed.

Methods

A descriptive, cross-sectional and multicenter study was conducted from 15th September 2015 to 15th October 2015. 4830 anonymous surveys were sent by e-mail. A sample size of 450 replies was estimated as sufficient, with a miscalculation <4.4% and a confidence interval of 95% (50% heterogeneity).

Results

Out of 462 responses were received. 75% women, 56% <35 years old, 81% healthcare professionals and 60% parents. Results concerning fever knowledge were: 83% physical methods should be used (not recommended), 60% seizures could be prevented with early treatment of fever (false), 56% fever should always be treated, even if the child is healthy (wrong) and 41% antipyretics should be alternated (incorrect). 86% of the workers recognised that the fever phobia exists. There are significant differences in responses depending on healthcare and non-healthcare professionals, on being parents or not, and even on gender.

Conclusions

A significant percentage of hospital workers, including doctors and pediatricians, are unaware of the existing recommendations on fever in children. This ignorance favors the persistence of fever-phobia, an infectious fear that leads to unnecessary treatments. Adequate transmission of information to families is needed, but every effort will be arduous while healthcare professionals do not believe their own recommendations.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0012

RECOMMENDATIONS FOR THE PREPARATION AND ADMINISTRATION OF ANTITUBERCULOSIS DRUGS IN CHILDREN. MAGISTRAL PROJECT OF THE SPANISH NETWORK FOR THE STUDY OF PAEDIATRIC TUBERCULOSIS (PTBRED)

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Background and Objective

The Spanish Network for the Study of Paediatric Tuberculosis (pTBred) has shown a lack of national consensus on the treatment of tuberculosis in children, partly due to the unavailability of paediatric presentations of antituberculosis drugs. The harmonisation of tuberculosis treatment in children is a priority in Spain.

Methods

A joint action is proposed by a group of Spanish experts in childhood tuberculosis and in the area of Paediatric Pharmacology. To this end, a pTBred-led workgroup of members from five scientific bodies has been created

Learning Points Discussion

Drug pharmaceutical compounding in oral suspensions or oral solutions are recommended as follows: isoniazid 50 mg/mL, pyrazinamide 100 mg/mL, and ethambutol 50 mg/mL. Raw materials, period of validity, and storage conditions are specified in a consensus document. Recommendations for the use of fixed-dose combination drugs are also established. If oral solutions/suspensions or fixed-dose combination drugs are not appropriate, the use of crushed tablets is recommended. Adherence to treatment and optimal dosing of antituberculosis drugs are critical in the control and eradication of TB. A multidisciplinary document provides an opportunity to promote the appropriate treatment of paediatric tuberculosis in Spain, and should become a useful tool for paediatricians and pharmacists.

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-0013

SURVEY OF GENES ENCODING EXTENDED-SPECTRUM B-LACTAMASES AMONG CAUSATIVE AGENTS OF VENTILATOR-ASSOCIATED PNEUMONIA IN PEDIATRICS

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Background

Ventilator-associated pneumonia (VAP) infections occur mainly due to multi-drug-resistant pathogen such as Extended-spectrum β -lactamases (ESBL) producer bacteria .

Methods

In this cross-section study, patients under 18 years old with VAP due to ESBL bacteria were investigated. The antibiotic susceptibility test was performed using the MIC test. Phenotypically detection of ESBL producing bacteria was performed by the DDS test. Presence of ESBL related genes was evaluated by using PCR.

Results

A total of 88 intubated pediatrics, admitted to PICUs/NICUs of 18 governmental hospitals in north of Iran, 31 patients had VAP due to ESBL bacteria. 87% of these patients were male. *Pseudomonas aeruginosa* 83.3%, acinetobacter *baumannii* 12.6% and *Klebsiella pneumoniae* 3.6% were the most isolated agents respectively. Distribution of CTX, VEB and SHV genes in *Pseudomonas aeruginosa* was 43.33%, 13.33%, 86.66% respectively. Prevalence of CTX, VEB and SHV genes in ESBL-producing acinetobacter *baumannii* was 34.5%, 17.2% and 96.6% respectively. Distribution of CTX, VEB, SHV and GES gene in *Klebsiella pneumoniae* was 58.3%, 16.6%, 91.6% and 16.6% respectively. Gentamicin was the most resistance antibiotic and imipenem was the most effective antibiotic for *Pseudomonas aeruginosa* and *Klebsiella pneumoniae*. The most resistance antibiotic and the most effective antibiotic for acinetobacter *baumannii* were Piperacillin tazobactam and colistin respectively.

Conclusions

Emergence of ESBL bacteria causing VAP is increasing in our region. The evaluation of ESBL related genes gives us useful data about epidemiology and risk factors associated with infections caused by these genes. It is necessary to seek a program for regular monitoring of ESBL pathogens in high risk wards.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0015

AN INTERESTING PAEDIATRIC CASE OF PVL POSITIVE METHICILLIN-SENSITIVE STAPHYLOCOCCAL AUREUS CAVERNOUS SINUS THROMBOSIS

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Title of Case(s)

PVL Positive Methicillin Sensitive Staphylococcal Aureus Cavernous Sinus Thrombosis

Background

Cavernous sinus thrombosis is an uncommon diagnosis in paediatrics; with an incidence of 0.4/100,000 children/year. It is likely that the true incidence of cavernous sinus thrombosis is underestimated, which is concerning due to the significant morbidity, including permanent visual loss, venous infarction, coma and mortality.

Case Presentation Summary

A 13-year-old male presented with a 5-day history of headaches, fever, unilateral facial swelling and inability to chew.

On examination the child was pyrexia with extensive facial and orbital tenderness and erythematous swelling, extending from the left forehead to the left temporo-mandibular joint. Neurological and visual examinations were normal. The left tympanic membrane was bulging without perforation. Cardiovascular, respiratory and abdominal examinations were normal. CRP 278 & FBC normal. The patient was commenced on intravenous Ceftriaxone and Metronidazole for presumed peri-orbital cellulitis. Two days later, the patient underwent CT facial bones and orbit, revealing partial left cavernous sinus thrombosis with congested left facial veins and congested sphenoid sinus with air fluid level. PVL-positive methicillin-sensitive Staphylococcal Aureus bacteraemia was confirmed from blood cultures, and treatment switched to intravenous ceftriaxone and oral clindamycin. Anticoagulation loading with dalteparin was commenced prior to warfarin therapy. The patient later underwent surgical sphenoid sinus drainage and made a full recovery.

Learning Points/Discussion

Cavernous sinus thrombosis is under-diagnosed in the paediatric population and has significant morbidity and mortality.

Early antibiotic treatment is crucial even with lack of radiological confirmation to prevent long-term disabilities.

Paediatricians must remain vigilant to cavernous sinus thrombosis as a possible infective diagnosis.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0017

SEVERE HUMAN BOCAVIRUS RESPIRATORY INFECTIONS; TIME TO ACKNOWLEDGE IT!

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Title of Case(s)

Severe Human Bocavirus respiratory infections; time to acknowledge it!

Background

Human Bocavirus (HBoV) was first isolated in 2005 from respiratory secretions in Sweden. HBoV is the fourth commonest virus found in paediatric respiratory samples after Adeno/Rhino and Respiratory Syncytial Virus. True pathogenicity of HBoV as a sole pathogen in respiratory tract infections has been largely obscured by the fact that HBoV is frequently found simultaneously with other respiratory viruses. Evidence is now mounting to show that HBoV is an important cause of invasive lower respiratory tract illness especially in children.

Case Presentation Summary

A 16-month-old girl who was previously healthy and fully vaccinated presented with moderate respiratory distress to a district general hospital and all her initial investigations were non-concerning. She deteriorated rapidly within 24 hours needing intubation and intensive care. The only pathogen grown in her microbiology was of HBoV. She had interesting CXR changes which all normalised within six days such as a rim of air around the lower left heart border indicating a tiny pneumo-mediastinum which also resolved quickly.

Learning Points/Discussion

This pathogen is an uncommon one and most microbiology labs do not look for it in the initial virology screen of respiratory secretions.

The dramatic rate of deterioration and improvement in this child with a very alarming CXR needed less than 6 days stay at hospital and 3 of them were in PICU.

The paediatric community is not well aware of this virus, and this indeed is not included in the virology screening panel of many hospitals hence HBoV could be causing many of the significant respiratory illnesses where no bugs are found in such hospitals that don't look for HBoV.

19A. SCIENCE: TUBERCULOSIS IN CHILDREN

ESP17-0020

EICOSANOID RESPONSES IN TB-EXPOSED CHILDREN IN THE GAMBIA - CORRELATES OF PROTECTION AGAINST TB INFECTION?

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Background

Correlates of protection against tuberculosis remain elusive but are critical to developing vaccines more effective than BCG. TB-exposed children might help identify such correlates, as despite defined exposure, some never show evidence of infection. Eicosanoid inflammatory mediators have been implicated in adult susceptibility to TB disease and pathophysiology of TB meningitis. We therefore hypothesized that innate immune responses relating to these lipid-derived mediators would be implicated in protection against infection in TB-exposed children.

Methods

We recruited pairs of children in The Gambia who had been exposed to TB, where one child was latently infected and the other uninfected. Whole blood samples from these children were used in a 96 hour *in vitro* functional mycobacterial growth assay and a targeted Ultra Performance Liquid Chromatography tandem Mass Spectrometry technique was used to quantify eicosanoid inflammatory mediators in supernatants. A matched statistical modelling approach including age and gender as covariates in the fitted models was used for analysis.

Results

We were able to identify statistically significant differential levels and dynamics of several key eicosanoid mediators in samples from the functional assay when comparing matched pairs of children who had been exposed to TB with discordant infection status. Differences were most pronounced at earlier time-points, and some were also present at baseline. One of the mediators identified had not previously been strongly implicated in host-pathogen interactions with *M. tuberculosis*.

Conclusions

Early host inflammatory responses to mycobacteria correlate with paediatric protection against infection by *M. tuberculosis* in a TB-endemic country. We are in the process of exploring the mechanistic and functional implications of our results. Our findings can inform vaccine design and host-directed adjuvant therapy, as well as offer novel insights into human immunity to TB.

Clinical Trial Registration (Please input N/A if not registered)

N/A

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0021

SURGICAL TREATMENT OF UNDERAGE PATIENT WITH BILATERAL CHRONIC PULMONARY TUBERCULOSIS IN COMBINATION WITH TYPE 1 DIABETES: A CASE REPORT

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Title of Case(s)

Bilateral chronic pulmonary tuberculosis in combination with type 1 diabetes.

Background

In March 2015, a 16-year-old male youth was presented to our clinical centre as planned with a diagnosis of tuberculoma with the collapse of both lungs. Mycobacterium tuberculosis (-), drug resistance (H, S) and type 1 diabetes at the subcompensation stage. He had a dyspnea associated with physical activity and weakness. The patient has been ill since April 2014. He has been treated in first mode without interruption of the therapy. CT of thoracic organs showed positive dynamics.

Case Presentation Summary

Preoperative investigation: CT of thoracic organs: in the upper lobes of the right and left lungs there is fibrosis, pleuropulmonary fusion and tight foci. In S6 of the right lung there is a subpleurally state in many polymorphic foci.

Lung capacity – 85%. Ventilatory capacity is at the low level of normal function. Blood glucose: 6.2 – 17.6 mmol/L.

During the first stage there was **video-assisted thoracoscopy:** resection of pieces of S1-3, a piece of S6 of the right lung. In a month at the second stage the patient was operated: resection of piece of S1-2. The postoperative period appeared without complications. Blood glucose <17.8 mmol/L. **Postoperative investigation:** CT of thoracic organs: right and left lungs straightened, without focal infiltrative changes, free sinus. Lung capacity – 109%. Patient was prescribed with anti TB-drugs, taking into account sensitivity of MTB.

Learning Points/Discussion

During the postoperative period dyspnea has disappeared; was noticed positive dynamics of respiratory functions and improvement of life quality. The results show the high effectiveness and safety of surgical treatment with patients having bilateral chronic pulmonary tuberculosis combined with diabetes in subcompensation stage under conditions of thorough preoperational preparation.

03D. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0023

CAUSATIVE MENINGEAL PATHOGENS AND THEIR RESISTANCE TO THE INITIAL ANTIBIOTIC THERAPY IN PAEDIATRIC BACTERIAL MENINGITIS CASES

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Background

Resistance of meningeal bacterial pathogens to antimicrobials presents a major factor that influences the outcome of bacterial meningitis cases.

The aim of the study was to analyze the resistance of bacterial pathogens to the initial antibiotic therapy in pediatric bacterial meningitis cases. **Methods**

This prospective study enrolled pediatric bacterial meningitis cases in two study periods: 277 treated during years 1997–2002 and 77 children treated during years 2009–2010.

Results

Of the 277 vs 77 children treated for bacterial meningitis (BM), 60 (22 %) vs 33 (43 %) patients developed early neurologic complications, while there were 15 (5.4 %) vs 2 (2.6 %) deaths. The etiology of BM was confirmed in 45 % (124/277) vs 74 % of children (57/77). In both study periods, the majority of pediatric BM cases were caused by three most common meningeal pathogens, *meningococcus*, *H. influenzae type B* and *pneumococcus* (89% vs 79%), while *gram-negative bacilli* caused around 10% of cases (8.9% vs 10.5%). During the first study period, the most common AB used for the initial antibiotic treatment was Penicillin G in 126 cases (45.5%) followed by Ceftriaxone in 115 cases (41.5%). During the second study period, the most common AB used was Ceftriaxone in 71 cases (92%). During the first study period, resistance to the initial antibiotic therapy was found in 4.8%, while in the second study period in 7% of strains. Three most common meningeal pathogens, *meningococcus*, *pneumococcus* and *HIB*, showed 100% sensitivity to the initial therapy with Ceftriaxone. Gram-negative bacilli showed resistance to all antibiotics except carbapenems (27% vs 67%).

Conclusions

The initial therapy with ceftriaxone covered pediatric BM cases caused by three most common pathogens, but did not cover cases caused by gram-negative bacilli.

Clinical Trial Registration (Please input N/A if not registered)

N/A

16A. EDUCATION: PUBLIC HEALTH: MOLECULAR EPIDEMIOLOGY AND OTHER ASPECTS

ESP17-0025

OUTBREAK OF G2P[4] ROTAVIRUS GASTROENTERITIS IN A RETIREMENT COMMUNITY, BRAZIL, 2015: AN IMPORTANT PUBLIC HEALTH RISK?

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Background

Gastroenteritis outbreaks of Group A Rotavirus (RVA) in aged-care facilities can represent an important public health risk. The aim of the present study was to describe a RVA outbreak in a private residential care home in São Paulo, Brazil, using epidemiologic and molecular diagnostic methods.

Methods

A descriptive clinical, epidemiological and environmental investigation was conducted. Stool samples were collected and screened for RVA, Norovirus (NoV), Enteric Adenovirus 40/41 (AdV 40/41) and Astrovirus (AstV) using ELISA, RT-PCR, qRT-PCR, electron microscopy and sequencing methods.

Results

Outbreak occurred during 26th-29th October, 2015; 28 individuals affected (22 residents; 6 staff). The attack rate was 25.9% and 8.5% among residents (median-age: 85.5 years) and staff (median-age: 28 years), respectively. Symptoms were mild and hospitalization was not required. Female staff was identified as the index case. State of hygiene of the nursing home was assessed as suitable. RVA was detected in 87.5% (7/8) and characterized as G2P[4] genotype. Genetic analysis of VP7 and VP4 genes demonstrated that the outbreak involved one single G2P[4] strain, suggesting a common-source infection. The G2P[4] strains detected here grouped within the lineages currently circulating in children worldwide, hinting that institutionalized elderly are susceptible to the same types of rotavirus as kids.

Conclusions

RVA should be considered during outbreaks investigations in residential facilities, and raise the question if the current licensed rotavirus vaccines for children could also be helpful for the elderly. Our investigation also highlights the importance of a tight collaboration between nursing home staff, public health authorities and reference laboratories.

18A. EDUCATION: TROPICAL VIRUSES

ESP17-0026

NOROVIRUS GII.PE GENOTYPE: TRACKING A FOODBORNE OUTBREAK ON A CRUISE SHIP THROUGH MOLECULAR EPIDEMIOLOGY, BRAZIL, 2014

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Background

Norovirus (NoV) are recognized as the most common cause of foodborne outbreaks. In 2014, an outbreak of acute gastroenteritis occurred on a cruise ship in Brazil, and NoV became the suspected etiology. Here, we present the molecular identification of the NoV strains and the use of sequence analysis to determine modes of virus transmission.

Methods

Food (cream cheese, tuna salad, grilled fish, orange mousse and vegetables soup) and clinical samples were analyzed by ELISA, conventional RT-PCR, qRT-PCR and sequencing.

Results

Genogroup GII NoV was identified by ELISA and conventional RT-PCR in fecal samples from 5 of 12 patients tested (41.7%), and in the orange mousse food sample by conventional RT-PCR and qRT-PCR. Two fecal GII NoV samples and the orange mousse GII NoV sample were successfully genotyped as GII.Pe (ORF 1), revealed 98.0-98.8% identities among them., and shared distinct phylogenetically cluster.

Conclusions

Establishing the source of a NoV outbreak can be a challenging task. In this report, the molecular analysis of the partial RdRp NoV gene provided a powerful tool for genotyping (GII.Pe) and tracking of outbreak related samples. The results strongly suggested food-to-human transmission for NoV. In addition, the same fast and simple extraction methods applied to clinical samples could be successfully used for complex food matrices, and have the potential to be introduced in routine laboratories for screening foods for presence of NoV.

22A. EDUCATION: OTHER

ESP17-0027

CASE OF PNEUMOCOCCAL INFECTION IN CHILD WITH INFLUENZA A (H1N1) PDV-09

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Title of Case(s)

CASE OF PNEUMOCOCCAL INFECTION IN CHILD WITH INFLUENZA A (H1N1) pdv-09

Background

Pneumococcal infection is the important problem of public health services all over the world. By data the WHO annually from the diseases caused pneumococcus, 0,7-1 million children till 5 years die.

As an example we result a case of the heavy form of pneumococcal infections: septicopyemia (sharp bilateral pneumonia, a purulent pleurisy on the right, a bilateral purulent medium otitis) developed in child with influenza A (H1N1) pdv-09.

Case Presentation Summary

Patient M., 2 years has arrived in a hospital for 3 days from the disease beginning. Child was ill sharply when the temperature has raised to 40°C which remained for 2 days on febrile level and practically did not react to reception of febrifugal preparations. Next days there was a rare dry persuasive cough which by the end of 2 days has amplified, it became difficult to child to breathe, it in bed occupied the compelled position (sitting).

On the basis of anamnesis, objective examination, results of clinical, laboratory and radiological inspections the following clinical diagnosis has been exposed.

Learning Points/Discussion

Thus, the case of development resulted by us heavy form of pneumococcal infection, that most likely has been connected with activation of own microorganisms in child with influenza A (H₁N₁). Unfortunately, many respiratory virus infections have no specific clinical displays, therefore to be guided it is necessary data about an epidemiological situation in region, and knowledge of bacterial agents who can be cause of complications. In our cases patient admitted hospital in period of increased morbidity of influenza A (H1N1) pdv-09.

06B. SCIENCE: DIAGNOSTIC TOOLS

ESP17-0028

THE SIGNIFICANCE OF THE METHOD OF PCR-DIAGNOSTIC IN THE ETIOLOGICAL DECODING OF ACUTE RESPIRATORY VIRAL INFECTIONS IN CHILDREN

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Background

Acute respiratory virus infection (ARVI) is the most common cause of hospital admission for children. The standard investigational method for viral diagnostic of ARVIs in Belarus is an immunofluorescence (IF) test of nasal swabs specimens. The IF test detects only influenza A and B viruses, parainfluenza, respiratory syncytial virus (RSV) and adenoviruses. However sensitivity and specificity of this method are not high and consist only 10-30%.

Methods

Nasal swabs samples from 607 children hospitalized at Children Infection Diseases Hospital (Minsk) for acute respiratory infection from 2010 till 2014 were studied for the detection of influenza virus A and B, parainfluenza virus 1-4 types, respiratory syncytial virus (RSV), adenovirus, rhinovirus, human coronavirus (hCoV), human bocavirus (hBoV), human metapneumovirus (hMPV) by multiplex PCR. Nasal swabs were taken in 1-3 days of ARI and first day of admission at a hospital.

Results

One or more respiratory viruses were detected in 397 of 607 (65%) cases. Mono-infection was diagnosed in 82% cases and at 12% patients were proved mix-infection. The most often etiological agents of ARVI were Rhinovirus (16%), Parainfluenza virus (24%) and RSV (16%). Influenza A virus was detected in 11%, influenza B – 5%, adenovirus – 5%, hCoV – 2%, hBOV – 4%, hMPV – 5%. Among mix-infection were hBoV+Rhino, hBoV+hMPV, hBoV+Adeno, hBoV+Parainfluenza, Parainfluenza+RSV, Influenza A+RSV, Parainfluenza 2+3 types.

Conclusions

This study demonstrates that main etiological agents of ARVI in the children are not influenza viruses (Rhinovirus, Parainfluenza and RSV).

Clinical Trial Registration (Please input N/A if not registered)

n/a

08C. SCIENCE: HIV/AIDS

ESP17-0030

PERINATAL HIV INFECTION: RISK FACTORS AND EARLY SIGNS

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Background

In the Republic of Belarus for the monitoring period (1987-2015) registered more than 19 thousand people living with HIV. For these period from HIV-positive mothers were born around 3,000 children, the diagnosis of "HIV infection" is confirmed at 8.5% of children.

Methods

The aim of our study was to identify risk factors and early markers of perinatal infection of children born from HIV-positive mothers, based on the study of anamnestic and clinical data. To achieve the goals we have defined the following tasks:

1. study the frequency and conditions for the implementation of perinatal HIV infection
2. study of important risk factors for perinatal transmission of HIV infection
3. analysis of clinical data from children born to HIV-infected mothers.

Results

The study included 80 children born to HIV-infected mothers before the age of 18 months (boys – 45, girls – 35). In the course of dynamic observation for the spectrum tests, 20 children were diagnosed with HIV infection (1 group), 60 children were removed from the register (2 group).

We determined the criteria for the comparison of 2 study groups to examine important conditions and factors of the implementation of HIV in children: HIV infection in the mother, presence of concomitant infections in mothers, and the average weight of children at birth, breast-feeding, antiretroviral prophylaxis, pathological conditions of the neonatal period.

Conclusions

For the prevention of perinatal infection children you need: full coverage of women (particularly those at risk) screening diagnosis of HIV infection; adequate treatment of sexually transmitted infections; timely registration and conducting diagnostic and preventive activities. Pediatricians should remember that the early clinical signs of HIV infection in the child non-specific, which, of course, requires the differential diagnosis of some diseases not only infectious etiology.

Clinical Trial Registration (Please input N/A if not registered)

n/a

09B. EDUCATION: HOST-PATHOGEN INTERACTION

ESP17-0031

EFFECT OF PERINEAL HYGIENE ON RECURRENT URINARY TRACT INFECTIONS IN CHILDREN

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Background

Recurrent urinary tract infection is a common problem in pediatric practice. Theoretical relationship between Perineal hygiene and urosepsis is discussed and demonstrated in literature. The objective of this study is to evaluate the role of different perineal hygiene practices in recurrent urinary tract infections in children.

Methods

45 female patients with recurrent urinary tract infections and age matched 45 controls were evaluated for perineal hygiene practices. All subjects were in the age of 1 to 5 years. Recurrent urinary tract infection was defined as 3 or more episodes of treated urosepsis within last one year period.

Results

Perineal hygiene	UTI +	UTI -	Total
Washing with soap	13	02	15
Washing with water	04	21	25
No washing	28	22	50
Total	45	45	90

Conclusions

There is a statistically significant ($P < 0.05$) difference of UTI occurrence among different perineal hygiene practices. Washing with water seems to be protective whereas washing with soap and water seems to be predisposing. Washing with water probably remove pathogenic microorganisms thereby preventing infections and washing with soap probably remove considerable amount of commensal organisms there by facilitating colonization by pathogens.

22A. EDUCATION: OTHER

ESP17-0032

BACTERIAL MENINGITIS WITH NORMAL CSF PARAMETERS IN FEBRILE INFANT YOUNGER THAN 90 DAYS OLD: A TWO-CASE REPORT

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Title of Case(s)

Bacterial meningitis with normal CSF parameters in febrile infant younger than 90 days old: a two- case reports.

Background

Bacterial meningitis is a medical emergency which warrants an early diagnosis and an aggressive therapy. Abnormal CSF parameters are essential findings in diagnosis of bacterial meningitis. Therefore, normal CSF in the initial lumbar puncture (LP) are usually reassuring to exclude bacterial meningitis. Here, we present 2 cases of culture positive bacterial meningitis with completely normal CSF parameters in both initial and repeated LP.

Case Presentation Summary

Case 1: A 40 days old term baby boy presented to the hospital with fever and poor feeding. A full Sepsis screen was performed including LP and ceftriaxone has been started. Initial CSF examination demonstrated a normal cell count (WBCS 2×10^6 cells/L and RBC 1×10^6 cells/L), CSF protein 0.3 g/L and glucose 4.1 mmol/L; no organisms were observed on Gram stain. Blood and urine culture were both negative, however CSF culture grew enterobacter cloacae. CSF parameters in the repeated LP after 72 hours were all normal and culture was negative.

Case 2: A 75 days old term female infant presented to the hospital with fever and decreased activity. Sepsis was suspected, blood culture sent and she was started on ampicillin and gentamycin. A few hours after admission, she developed focal seizure lasted for 5 minutes. Therefore, Lumbar puncture was performed. Initial CSF parameters were in the normal range but culture grew *group B streptococcus*. Both blood and urine cultures were negative. Repeated LP after 48 hours revealed normal CSF parameters and negative culture.

Learning Points/Discussion

Normal CSF parameters does not always rule out bacterial meningitis especially in febrile infant less than 90 days old and definitive diagnosis needs isolation of bacteria from CSF.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0033

TRENDS IN ADENOVIRUS INFECTIONS IN CHILDREN IN SINGAPORE (2013-2016) AND RISK FACTORS FOR SEVERE DISEASE

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Background

Since an earlier outbreak of human adenovirus (HAdV) in 2013 in Singapore, another increase in HAdV infections in children was observed that peaked in Aug-Sep 2016. This study aims to describe the epidemiology and analyze risk factors for more severe HAdV disease requiring high dependency (HD) or intensive care unit (ICU) care.

Methods

This is a retrospective cohort study of all HAdV-infected children admitted to KK Women's and Children's Hospital (KKH), Singapore through Jan 2013-Sep 2016. Patients with more severe infections requiring admission to HD or ICU were defined as "cases", and those treated in general ward as "controls". The two groups were compared to find possible independent risk factors.

Results

There were 760 children in our study, with 83 (10.9%) cases, and 677 children (89.1%) controls. The median age for controls was 3.2 years and 1.5 years for cases. Males accounted for 58.2% of controls and 60.2% of cases. Multivariate analysis showed that cases, compared to controls, were more likely to be <2 years old (multivariate OR 3.9, 95% CI 2.3-6.6), have pneumonia (multivariate OR 2.7, 95% CI 1.4-5.2) and significant comorbidities (multivariate OR 11.3, 95% CI 6.6-19.3) especially underlying neurological conditions and immunodeficiency. Cases were also more likely to have viraemia and encephalopathy. HAdV genotype 7 was associated with more severe infections (OR 2.0, 95% CI 1.1-3.4). IV cidofovir was administered in 15 patients (all were cases). The mortality rate was 1.6% (12 deaths).

Conclusions

Age <2 years old, significant comorbidities and HAdV genotype 7 were associated with more severe HAdV infections. HAdV-infected children who are <2 years old or have significant comorbidities have to be monitored closely as they have a higher risk of developing severe disease.

01A. EDUCATION: ANTIMICROBIAL STEWARDSHIP

ESP17-0034

EVALUATION OF ANTIBIOTIC RELATED MEDICATION ERRORS IN A TERTIARY CHILDREN HOSPITAL

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Background

The aim of this study was to compare the rate of antibiotic related medication errors (dosing errors, drug-drug interactions, and dose timing errors) in a tertiary pediatric care hospital.

Methods

This study was carried on at Hacettepe University Ihsan Dogramaci Children's Hospital, Ankara-Turkey. It is a tertiary care hospital with 250 acute-care pediatrics beds and 215.000 admissions per year. Micromedex[®] database system was used to evaluate drug-drug interactions and pediatric dosage handbooks were used to evaluate antibiotic dosages and timing errors.

Results

At the time of the study 89 (64.4%) of 138 patients were using antimicrobials. Median age was 42 months (range 1 to 226 months) and 49 (55.1%) patients were male. In terms of diagnosis 2 (2.2%) patients had on prophylactic antibiotic usage, the others had an indication for treatment of underlying diseases. Totally, 88 patients received 177 antibacterial drugs [median, (minimum-maximum); 2 (1-7)]. The most prescribed antimicrobial groups were broad spectrum penicillins (14.9%), glycopeptides (13.4%) and carbapenems (13.4%) (Table 1). Twenty of 89 patients were given antifungal drugs and azole (70%) was the most common. Ninety-eight antibiotics associated possible drug-drug interaction [7 (7.1%) contraindicated, 40 (40.8%) major, 42 (42.9%) moderate, 9 (9.2%) minor] were detected in 35 (39.3%) patients. Seventeen antibiotic related problems such as drug-drug interactions (2), dose timing errors (3) and dosage errors (12) were observed in total of 12 patients.



Conclusions

Clinicians should be aware of that antibiotic related medication errors are more common than expected in clinical practice. Evaluation of patients' antibiotic usage by a clinical pharmacist in terms of drug related problems will be beneficial for the detection of these problems.

20C. SCIENCE: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-0036

ROTAVIRUS GENOTYPING SURVEILLANCE POST VACCINE INTRODUCTION INTO SAUDI NATIONAL IMMUNIZATION PROGRAM

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Background

to investigate the changes in the rotavirus (RV) genotypes during 2 year- period after Rotarix vaccine introduction in Saudi Arabia.

Methods

The cross-sectional study conducted between October 2013, and September 2015, at five Saudi hospitals, 850 hospitalized children < 5 years of age with acute gastroenteritis, a questionnaire used to record the clinical and epidemiological data. Stool samples tested for the presence of rota virus(RV). RV G and P genotyping using VP7- and VP4-specific multiplex semi-nested RT-PCRs performed. main outcome was RV G and P genotyping.

Results

78 (9.2%) were positive for RV with a positivity rate, 11.3% in the first year and 6.8% in the second year. G1 (47.4%) was the predominant G type, followed by G2 (28.2%) and G9 (10.3%). The most common P type was P [8] (69.2%) followed by P [4] (25.6%). The decrease in the prevalence of G1P [8] from 51% to 37.1% was associated with an increase in the prevalence of G2P [4] from 21.6% to 33.3% during the 2-year study period.

Conclusions

This study demonstrated a significant decrease in the prevalence of RV-AGE cases in the first 2-year period after vaccine introduction and a reduction in the circulation of G1P [6]. The coincidental rise and spread of G2P [4] in post-vaccination period poses an additional threat to long-term vaccine efficacy. Continued surveillance studies in different Saudi regions are crucial to document the effectiveness of Rotarix vaccine and evaluate the potential emergence of rare/ novel RV genotypes.

Clinical Trial Registration (Please input N/A if not registered)

N/A

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0037

CLINICAL AND EPIDEMIOLOGICAL CHARACTERISTICS OF MEASLES IN CHILDREN IN SHANGHAI IN 2015

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Background

China is now moving towards measles elimination with the higher vaccination coverage. However, measles outbreak occurred in China in 2015. To understand the clinical and epidemiological characteristics of measles in children during the 2015 outbreak in Shanghai.

Methods

We retrospectively analyzed the clinical and epidemiological data of 442 children with laboratory-confirmed measles in 2015 in Shanghai. Measles was confirmed by serum IgM antibody against measles virus and virus RNA in throat swab at the CDC laboratory. Some of measles virus strains were sequenced for genotyping.

Results

Of 442 patients, 63.6% were males; the median age was 8 months; 84.4% were migrant. 89.4% cases were hospitalized with the median age of 7 months; 11.7% had measles vaccination, 87.8% were unvaccinated and 2 had unknown measles vaccination; 99.7% had fever, 99.7% had rash and 92.2% had koplic spot; 5.6% had malignancy after chemotherapy and post bone marrow transplantation and 20 had measles vaccination; 54.2% had pneumonia, 50.1% had laryngitis, 14.9% had bronchitis. Five vaccinated cases with malignancy died. Sequence analysis of 152 strains showed H1a genotype circulating in 2015.

Conclusions

Migrant children were affected more commonly during the outbreak. The majority of measles cases occurred in unvaccinated children and fatal breakthrough infection occurred in vaccinated children with immunocompromised children. Further efforts is needed to achieve measles elimination.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0038

EPIDEMIOLOGICAL ANALYSIS ON BREAKTHROUGH CASES OF VARICELLA OUTBREAKS IN DISTRICT OF MINHANG, SHANGHAI

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Background

The breakthrough cases rose in varicella outbreaks in recent years, and challenged the one-dose Varicella vaccination policy in China.

Methods

Descriptive epidemiological methods were used to describe the reported data of outbreaks and sporadic cases from 2008 to 2014 in Minhang District, and in accordance with the time, space, distributed among the crowd, to describe and compare epidemiological characteristics of breakthrough cases in varicella outbreaks.

Results

Most of 13 511 varicellas were sporadic, and combined with 154 local outbreaks. The average duration of outbreaks was 45.8 days, and 1 558 varicella cases were reported, of which 660 cases had varicella attenuated live vaccine (VarV) vaccination history. The attack rate of breakthrough cases was 42.36%. The breakthrough cases occurred mainly in the 5-year-old group, accounting for 65.91% and one dose VarV vaccination had good protection for 3-4 years old children. The mean time since vaccination was 6.17 ± 2.26 years (95%CI: 6.06-6.59).

Conclusions

The incidence of breakthrough cases in varicella outbreaks had increased, especially among those with the time since VarV vaccination more than 5 years. The protective effect of one dose VarV immunization program was insufficient for primary and secondary school students, which recommended that primary school students should receive a second dose VarV before enrollment.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0040

HUMAN METAPNEUMOVIRUS INFECTIONS IN HOSPITALIZED CHILDREN AND COMPARISON WITH OTHER RESPIRATORY VIRUSES. 2005-2014 PROSPECTIVE STUDY

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Background

Human metapneumovirus (hMPV) has an important etiological role in respiratory infections in children under five years. Our objectives were to estimate the relative contribution of hMPV to hospitalization in children with acute respiratory infection, to define the clinical and epidemiological features of hMPV single and multiple infections, and to compare hMPV infections with respiratory syncytial virus (RSV), rhinovirus (RV), adenovirus and human bocavirus infections in the same population.

Methods

Prospective study performed in all children less than 14 years of age with a respiratory tract disease admitted to a secondary hospital (September 2005- June 2014). Clinical characteristics of patients were analyzed. Nasopharyngeal aspirate was taken at admission for viral study (PCR for 16 respiratory viruses).

Results

A total of 3906 children were included (75.2% had at least one respiratory virus). The most frequent identified virus was RSV, followed by RV. hMPV was detected in 214 cases (5.5%); 133 (62%) were single infections and the remaining coinfections with other respiratory viruses (38%). 90.7% cases were detected between February and May. Children's mean age was 13.83±18 months. Fever was frequent (69%) and bronchiolitis (27%) and recurrent wheezing (63%) were the main clinical diagnosis. Hypoxia was present in 65% of them (mean duration 2.9±2 days) and 47% had an infiltrate in X-ray. Only 6 (2.8%) children were admitted in the PICU. Only duration of the hospitalization was different, and longer in the coinfections group ($p < 0.05$). There were many differences in seasonality and clinical characteristics between hMPV and other respiratory viruses being more similar to RSV.

Conclusions

hMPV infections accounted for 5.5% of total viral infections in hospitalized children. The clinical characteristics were similar to RSV infections. Seasonality and clinical data were different of other viral infections.

22A. EDUCATION: OTHER

ESP17-0041

FACTORS ASSOCIATED WITH CHILDREN WITH BACTEREMIA AND URINARY TRACT INFECTION IN HOSPITALIZED CHILDREN

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Background

Urinary tract infection (UTI) is the most common serious bacterial infection in the pediatric population, and a well-known complication is bacteremia.

Methods

This is a case control study comparing children from birth to 18 years of age with bacteremic UTI (bacteremia group), to a matched cohort of UTI without bacteremia (no bacteremia group). We compared group demographics, and clinical, laboratory and imaging results of the two groups.

Results

Thirty one cases of children with UTI and bacteremia during 2008-2015 were identified, and matched to 62 cases with no bacteremia according to age and gender. In the study groups – 58% were female, and the mean age was 2.43 years. E.coli was the most common bacteria cultured in both groups, isolated in 62.2% of cultures. Factors associated with bacteremic UTI included major background illnesses, higher C-reactive protein at admission, hypoalbuminemia and positive urine leukocytes. The bacteremia group was also notable for longer length of hospitalisation and admission to the pediatric intensive care unit.

Conclusions

UTI is a common pediatric entity. Cases of major background morbidity and laboratory evidence of high CRP, hypoalbuminemia and positive urine leukocytes should alert the physician to the possibility of concurrent bacteremia, with resultant appropriate treatment.

22A. EDUCATION: OTHER

ESP17-0042

RENAL IMPAIRMENT RELATED TO DIFFERENT ANTIFUNGAL MEDICATIONS IN CASES OF INVASIVE CANDIDA INFECTIONS IN TAWAM HOPITAL PEDIATRIC POPULATION BETWEEN 2008-2014

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Background

Tawam Hospital has been dealing with increasing number of invasive Candida infections. Amphotericin B preparations continued to provide the widest coverage for all Candida strains and has been the drug of choice for definitive and empirical therapy in our institute. However, renal complications have always been a concern with this group of antifungals. There is no conclusive data to show if one preparation is safer than the other in this regard

Methods

We retrospectively studied 61 patients who received Amphotericin B preparations for treatment of positive candida cultures from blood, urine and CSF from children age 0-15 between 2008-2014. The total patient cohort included 140 patients. However, only those who had their urea and electrolytes checked before and after starting medications were included in our study. Therefore, only 40 out of 61 were studied and analyzed.

Results

7 of our patients were treated with Amphotericin B Liposomal (Ambisome). Two of them (29%) had elevated Urea/Creatinine after initiating the therapy. 11 patients were treated with Amphotericin B Lipid Complex (Abelcet). Two of them (18%) had elevated Urea/Creatinine after initiating the therapy. Fluconazole was used in 14 patients. Fluconazole did not seem to affect Urea/Creatinine that much.

Conclusions

Although Amphotericin B is known to be associated with renal side effects, the newer preparations seem to offer a much safer alternative. Among the two available preparations, Abelcet seemed to be safer. However, our study is limited by the small number of patients included but this seems to be an issue with most studies of invasive candida infections. Fluconazole continued to have minimal renal side effect

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0043

CLINICAL CHARACTERISTICS OF MACROLIDE-RESISTANT MYCOPLASMA PNEUMONIAE FROM CHILDREN IN JEJU

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Background

Mycoplasma pneumoniae is one of the most common causal organisms of community-acquired pneumonia in children and adolescents. It is important to monitor the prevalence of macrolide-resistant *Mycoplasma pneumoniae* (MRMP), particularly owing to the limited alternative therapies for children. A high prevalence of MRMP in East Asia has increased interest in *M. pneumoniae* in Jeju Island.

Methods

Nasopharyngeal aspirates were obtained from children under the age of 15 years at Jeju National University Hospital on Jeju Island, South Korea between 2010 and 2015. We analyzed 111 *M. pneumoniae* obtained from 107 children admitted for lower respiratory tract infection. The frozen *M. pneumoniae* DNA was used to detect macrolide resistance genes. Domain V of the 23S rRNA gene was amplified by polymerase chain reaction.

Results

Of 107 clinical *M. pneumoniae* isolates, 11 (10.3%) carried macrolide resistance mutations in the 23S rRNA gene. All macrolide resistance mutations were A2063G transitions. We found an acquired A2063G mutation in one isolate from a patient during macrolide treatment. Patients' characteristics and clinical severity did not differ between those with MRMP and macrolide-sensitive *M. pneumoniae*, with the exception of frequent pleural effusion in the MRMP group. Alternative treatments such as quinolones or tetracyclines were not increased in the MRMP group compared with the macrolide-sensitive *M. pneumoniae*.

Conclusions

In Jeju Island, 10.3% of *M. pneumoniae* were macrolide-resistant. Clinical characteristics were not different according to macrolide sensitivity. Thinking of the acquirement of A2063G mutation, previous antimicrobial usage and timing of diagnostic test should be considered.

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0045

KIKUCHI DISEASE IN A CHILD: MASQUERADER OF TUBERCULOSIS

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Title of Case(s)

Kikuchi disease in a child: Masquerader of tuberculosis

Background

Background: Kikuchi disease was initially described as a self limiting histiocytic necrotising lymphadenitis in Japan in 1972, and is now well recognised and reported entity from all over the world. The pathogenesis is still poorly understood but is thought to include infections and autoimmune diseases in paediatric population. Cervical tubercular lymphadenitis is a common condition in children in developing world like India and presence of central necrosis in affected lymph node lead to misdiagnosis and unnecessary use of anti tubercular drugs which are not only toxic but long term use also put them under psychological stress.

Case Presentation Summary

Case summary: Here we present a 13 year old female child presented to us with fever and cervical lymphadenopathy from last 1 month and was already put on anti tubercular(ATT) drugs by some private practitioner. On examination multiple, firm, non tender lymph node was present in right submandibular region which on biopsy revealed histopathological features typical of kikuchi disease. No acid fast bacilli(AFB) was isolated. Child was put on symptomatic treatment and ATT was stopped.

Learning Points/Discussion

Discussion: The most common clinical manifestation is fever and painless cervical lymphadenitis. Diagnosis is based on histopathological findings, characterised by focal necrosis in the paracortical region with abundant karyorrhexis, aggregates of atypical mononuclear cells, absence of neutrophil and usually intact capsule. Treatment of kikuchi disease is symptomatic and spontaneous recovery occurs in 1-4 month. This case is being reported to enhance the awareness among clinician and pathologist especially in Indian subcontinent and developing countries where tuberculosis is still rampant.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0047

SUBACUTE SCLEROSING PANENCEPHALITIS: A BRIEF REPORT FROM DEVELOPING WORLD

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Title of Case(s)

Subacute sclerosing panencephalitis: Brief report from the developing world

Background

Subacute sclerosing pan-encephalitis (SSPE) is a chronic progressive neurological disorder of childhood due to persistence of defective measles virus in brain. SSPE has been reported worldwide, but in west it is considered to be a rare disorder. The disease is still prevalent in developing world due to poor vaccination coverage. This study helps us to understand current demographic profile and to expand the awareness to the clinician of its current diagnostic and treatment strategies.

Case Presentation Summary

We analysed 20 patients of SSPE during a period of January 2013- October 2016. Mean age of children in this study was 6.7 years (range 4-11 years) with a male preponderance ratio of 3.5:1. The most common presentation was behavioural changes along with history of recurrent falls. On examination most of the patients were in stage 2 or stage 3 (Jabbour stages). Follow up course reveals loss of speech and ambulation in majority of cases. Mean duration of onset of symptom to death was from 6 months to 3 years. Periodic discharges were seen most commonly with varying degree of interburst interval. Patients were put on antiepileptic drugs along with Isoprinosine.

Learning Points/Discussion

SSPE is a slow onset progressive neuro-degenerative disorder with very high case fatality ratio of 95%. Onset of symptoms starts from 6-10 years after the measles virus infection. It is characterized by behavioral changes in a previously normal child. Subsequently myoclonic seizure usually leads to final stage of akinetic mutism. The diagnosis is based on clinical feature, periodic discharges in EEG and rise of measles antibody titre in CSF. There is no definite cure of this illness and measles vaccination is the only preventive solution.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0048

EPSTEIN-BARR VIRUS ASSOCIATED INFECTIOUS MONONUCLEOSIS IN YOUNG CHILDREN AT A UNIVERSITY HOSPITAL IN KOREA

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Background

Epstein-Barr virus (EBV) associated infectious mononucleosis (IM) is a common disease in adolescents, but known to be rare in young children. We aimed to know the differences of prevalence and clinical manifestations of children with EBV-associated IM according to age.

Methods

Retrospective review for medical records of 68 children aged 0 to 15 years, who were hospitalized with EBV-associated IM at Gyeongsang National University Hospital between 2010 and 2014, were performed. Primary EBV infection was confirmed by positive serologic test for EBV VCA IgM. The age group was divided into 4 groups: 0-3 years, 4-6 years, 7-9 years, and 10-15 years.

Results

The number of patients was 19 (27.9%) in 0-3 years, 25 (36.8%) in 4-6 years, 13 (19.1%) in 7-9 years, and 11 (16.2%) in 10-15 years, respectively. Fever was the most common presentation regardless of age and more common in 0-3 y group than in 4-6 years ($P=0.018$). Pharyngitis was more common in 7-9 years than in 0-3 years ($P=0.048$) and myalgia was more common in 10-15 years than in 0-3 years ($P=0.007$). Pharyngitis was accompanied with lymphadenopathy, longer febrile duration, and rashes. It seemed that skin rash was more common and atypical lymphocytes was less frequently found in 0-3 years compared to other groups, but statistically insignificant ($P> 0.05$). No differences of hepatosplenomegaly and laboratory findings were present among age groups.

Conclusions

EBV infection was common in young children although clinical manifestations were somewhat different compared to old children. EBV associated IM should be suspected in young children with fever, pharyngitis and lymphadenopathy.

22A. EDUCATION: OTHER

ESP17-0049

INFLUENZA VACCINATION COMPLIANCE AMONGE HEALTH CARE WORKERS (HCWS) IN A RURAL HOSPITAL

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Background

During winter 2015-2016, Greece experienced one of the worst influenza season in which 435 serious cases of laboratory confirmed influenza (408 of them were hospitalized in ICU) and 197 deaths were recorded. Nosocomial influenza is associated with considerable morbidity and mortality among people with underlying diseases and an excess economic impact. HCWs are at risk of occupational exposure to and subsequent contraction of influenza. The purpose of our study was to investigate the vaccination status against influenza of workers in our hospital in winter 2015-2016.

Methods

A simple anonymous questionnaire was distributed to all employees and 239 were returned completed. Employees were divided in to 4 occupational groups: physicians, nurses, paramedical and technical-administrative staff.

Results

Table shows vaccination status against influenza (winter 2015-16), previous vaccination and vaccination rate against hepatitis B (in total and per profession):

	Vaccination against influenza(winter 2015-2016)	Previous vaccination against influenza (at least once)	Vaccination against hepatitis B
Physicians	17,64% (9/51)	39,21% (20/51)	66,66% (34/51)
Nurses	3,65% (3/82)	19,51% (16/82)	87,8% (72/82)
Paramedical	7,84% (4/51)	27,45% (14/51)	72,54% (37/51)
Technical-administrative	3,63% (2/55)	34,54% (19/55)	56,36% (31/55)
Total	7,53% (18/239)	28,87% (69/239)	72,8% (174/239)

Conclusions

- 1.Although HCWs vaccination has been consistently recommended by public-health authorities as the main measure for preventing nosocomial influenza and despite the fact that vaccine coverage rarely exceeds 40% worldwide , vaccination rate against influenza in our hospital is extremely low (7,53%).
- 2.The relatively higher previous vaccination rate against influenza (28,87%) could be a significant reservoir in order to achieve higher and sustained vaccine coverage in our hospital.
- 3.The fairly high rate of vaccination against hepatitis B (72,8%) shows a different (possibly wrong) perception of the importance of both diseases.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0050

THE EPIDEMIOLOGY OF SMEAR POSITIVE PULMONARY TUBERCULOSIS IN FELEGE HIWOT REFERRAL HOSPITAL, NORTHWEST ETHIOPIA: A FIVE YEARS RETROSPECTIVE TREND ANALYSIS

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Background

Globally, tuberculosis (TB) continues to cause considerable morbidity and mortality. Ethiopia is among the 22 high TB burden countries reported. The aim of this study was to describe the magnitude and associated risk factors of smear positive TB in Felege Hiwot Referral Hospital (FHRH) over five years period.

Methods

We analyzed the records of 12,442 TB patients registered at FHRH from 2011 to 2015. Information was collected on the number of cases and sputum smear microscopy results of TB patients. All data were entered, cleaned and analyzed using SPSS version 22 for windows. Logistic regression model was used to analyze the association between TB positivity and potential predictor variables; $p < 0.05$ was considered to be significant.

Results

Among the total study subjects, 7052 (56.7%) of whom were males. The majority, 7841 (63.0%) were from rural settings. The median age of patients was 35 years (ranged from 1- 95 years). Most of TB suspected patients at 4105 (33.0%) were in the age group of 15-29 years. The number of cases visiting FHRH over the five years period was quite different. However, the prevalence of smear positive TB in each year was almost comparable, ranging from 4.2% to 6.5%. The prevalence of TB among new and follow up cases was at 5.2% and 4.5%, respectively. The overall burden of smear positive pulmonary TB was at 5.2%. Significant predictors of smear positive TB were age group of 15-29 (OR 0.45, 95% CI, 0.23-0.77), 30-44 (OR 0.22, 95% CI, 0.15-0.32) and 45-59 (OR 0.38, 95% CI, 0.26-0.56).

Conclusions

In the studied area, a rather high prevalence of smear positive TB is documented. Hence, interventions to decrease the impact of TB have to be evaluated and strengthened.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0052

HOSPITALIZATION FOR LOWER RESPIRATORY TRACT INFECTION IN CHILDREN AGED LESS THAN 2 YEARS IN THE PROVINCE OF QUEBEC, CANADA, IN RELATION WITH PNEUMOCOCCAL VACCINE USE

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Background

The main clinical manifestations of serious lower respiratory tract infections (LRTI) in young children which require hospitalization are bronchiolitis, mainly caused by viral infections, and pneumonia which is associated with a large variety of different viral and bacterial pathogens. *Streptococcus pneumoniae* remains an important cause of community-acquired pneumonia and pneumococcal conjugate vaccines (PCVs) may reduce their burden. A routine vaccination program targeting all newborns with PCV7 was started in the province of Quebec, Canada in December 2004, replaced by PCV10 in 2009 and by PCV13 in 2011. The study objective was to analyse trends in LRTI hospitalizations in relation to PCV use.

Methods

The study population includes hospital admissions with a main diagnosis of LRTI among 6-59 month-old residents of Quebec from April 2000 to May 2015. Trends in proportions and rates were analyzed using Cochran-Armitage tests and Poisson regression models.

Results

Downward trends in hospitalization rates were found for LRTIs. This was more pronounced for pneumonia than for bronchiolitis and started before the introduction of PCV vaccination in Quebec. There were no trends in rates for hospitalization with paediatric intensive care unit (PICU) admission. There was a decrease in the mean duration of hospital stays, but not among those admitted to a PICU.

Conclusions

Reductions in the hospitalization rate of all-cause pneumonia and bronchiolitis may be largely explained by changes in clinical practice. There is little evidence that all-cause pneumonia, especially the most severe cases, decreased over the study period due to the introduction of PCVs. This study casts doubt on the interpretation of ecological analyses of the implementation of PCV vaccination programs.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0055

TYPICAL HAEMOLYTIC UREMIC SYNDROME IN CHILDREN: CASE SERIES AT CHILDREN'S EMERGENCY HOSPITAL „M.S.CURIE” IN BUCHAREST, ROMANIA

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Title of Case(s)

TYPICAL HAEMOLYTIC UREMIC SYNDROME IN CHILDREN: CASE SERIES AT CHILDREN'S EMERGENCY HOSPITAL „M.S.CURIE” IN BUCHAREST, ROMANIA

Background

Haemolytic uremic syndrome (HUS) is the most frequent cause of acute kidney injury (AKI) in children. Typical HUS is usually caused by Shiga toxin producing *Escherichia coli*. We report 32 cases of HUS admitted to the Department of Nephrology and Dialysis in Children's Emergency Hospital „M.S.Curie” in Bucharest, Romania. These cases were diagnosed from January till November 2016, 15 of them in the first 2 months of the year.

Case Presentation Summary

The 32 cases here described fulfilled in their clinical evolution the criteria for HUS. The age of the patients was from 6 to 41 months. The majority were females (19) and were from the urban area (28). All had presented diarrhoea as an onset symptom (13 with bloody stools), and 17 cases presented oligoanuria. The stool culture was positive for *E.coli* O26 strain in 5 cases, O157:H7 strain - one case, both strains (O26 and O157:H7) - 2 cases and enteropathogenic *E.coli* - 4 cases. Nevertheless, the verotoxins 1+2 were detected by PCR in the majority of cases. Serum samples were also tested for antibodies of 6 of the most common serogroups using ELISA method: 6 sera were positive for *E.coli* O26 and 2 sera for both *E.coli* O26 and *E.coli* O157:H7.

Learning Points/Discussion

HUS is a life-threatening multisystemic disease. It was established an average of 16 cases per year in Romania. However, outbreaks are described all over the world. One of the outbreaks was in January and February 2016 in the southern part of Romania. The prognosis was good in almost all the cases, but we also faced 3 deaths due to complications.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0056

NEUROLOGIC COMPLICATIONS IN TYPICAL HAEMOLYTIC UREMIC SYNDROME IN CHILDREN: CASE SERIES AT CHILDREN'S EMERGENCY HOSPITAL „M.S.CURIE” IN BUCHAREST, ROMANIA

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Title of Case(s)

NEUROLOGIC COMPLICATIONS IN TYPICAL HAEMOLYTIC UREMIC SYNDROME IN CHILDREN: CASE SERIES AT CHILDREN'S EMERGENCY HOSPITAL „M.S.CURIE” IN BUCHAREST, ROMANIA

Background

Haemolytic uremic syndrome (HUS) is a well known cause for acute kidney injury (AKI) in children. The most common extra renal manifestation is central nervous system disturbance (~20% of HUS patients). We report 32 cases of HUS admitted to the Department of Nephrology and Dialysis in Children's Emergency Hospital „M.S.Curie” in Bucharest, Romania. These cases were diagnosed from January till November 2016, 15 of them in the first 2 months of the year.

Case Presentation Summary

13 out of 32 cases had neurological symptoms (41%). E.coli O26 cases are usually associated with severe outcomes, including neurologic complications. From these 13 cases, 4 were tested positive for E.coli O26 serogroup and one case for E.coli O157:H7. 2 cases had seizures at the clinical onset of HUS, while 6 cases had seizures during the clinical course. The seizures were due to hydroelectrolytic balance disorders, especially hyponaetraemia. Another common neurologic complication was uremic encephalopathy, which was identified in 4 cases. Also, 2 coma cases were noted. HUS is a microangiopathic haemolytic anaemia; therefore we faced the following complications: intraparenchymal hematoma (1 case), stroke (2 cases) and cerebral microhemorrhages (1 case). These complications were associated with cardiac arrest unresponsive to resuscitation maneuvers in 2 cases.

Learning Points/Discussion

Neurologic complications, like seizures or encephalopathy, are one of most important risk factors for progression to severe HUS. The endothelial injury, platelet aggregation and local intravascular coagulation in the blood vessels of the brain are the cause of other complications that we faced in these cases. The central nervous system involvement has also a strong association with acute mortality in this syndrome.

08A. EDUCATION: HIV CURE IN CHILDREN

ESP17-0057

MOTHER-TO-CHILD-TRANSMISSION OF HIV – WHY IS IT STILL SO HIGH?

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Title of Case(s)

MOTHER-TO-CHILD-TRANSMISSION of HIV – WHY IS IT STILL SO HIGH?

Background

Mother-to-child transmission (MTCT) of HIV remains the main source of pediatric HIV infection.

The purpose of this study was to assess the MTCT rate of HIV infection and the risk factors over a 6-year period in one HIV unit, Bulgaria.

Case Presentation Summary

Methods:

This retrospective study of parinatally HIV exposed children and their mothers referred to University Hospital, Plovdiv, was conducted from January 2010 to December 2015. A child was considered HIV infected if had two detectable positive viral load tests at different times. A nonbreastfed child HIV status was considered negative if presented with two or more undetectable viral loads and negative HIV antibody test at age 18 months.

Results:

Fifteen children and 14 mothers were included in the present study.

The median mothers age was 27,38 years. HIV diagnosis was made before pregnancies in 6 (43%) mothers. In 1 case maternal infection was diagnosed in late pregnancy. In another 5 (35 %) cases diagnosis was made during or immediately after delivery. Finally, in 2 cases (14%) maternal diagnosis followed diagnosis of child infection.

Four out of 15 children (26 %) got infected. Three were missed for post-exposure prophylaxis (PEP), and in one child PEP was delayed as she was diagnosed with HIV at age 1 month. Two children died - one of *Pn. jerovecii* pneumonia and the other one of tuberculosis at age 3 months and 1 year, respectively. The other 2 children are on ART and are doing well.

Learning Points/Discussion

Perinatally acquired HIV infections in our study was high. No HIV screening during pregnancy and no PEP were the main risk factors of MTCT in our study.

12B. SCIENCE: INVASIVE FUNGAL INFECTIONS

ESP17-0059

EFFICACY AND SAFETY OF VORICONAZOLE IN IMMUNOCOMPROMISED PATIENTS: SYSTEMATIC REVIEW AND METAANALYSIS

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Background

Voriconazole is a second-generation triazole with an extended spectrum of activity. It is the drug of choice for Invasive Aspergilosis (IA) being *Aspergillus* spp the foremost mold that causes invasive fungal infections (IFI) among patients with oncology-hematology diseases. Voriconazole has also been used for the treatment of other IFI. Compared to conventional Amphotericin B, (AmB), Voriconazole has been shown to have a better response, with improved survival, and fewer severe side effects in adult patients with IA. Likewise, given its excellent bioavailability and broad antifungal spectrum, it is an attractive option for patients who are at high risk of developing IFI. Voriconazole has also been used for the treatment of other IFI. An evaluation of large number of studies that compare efficacy and adverse effects of voriconazole compared with other antifungals for IFI treatment or prophylaxis would be useful to make definitive conclusions about the safety and efficacy of the drug in immunocompromised hosts.

Methods

Data sources: a systematic review of the medical literature was performed.

Study Selection: Only randomized controlled trials (RCT) comparing voriconazole with any other antifungal agent were included.

Results

Data Extraction: 100 RCTs were selected but only 7 fulfilled the eligibility criteria (Jadad score >2) out of 1068 studies identified.

Data synthesis: Evidence found voriconazole is safe and effective as prophylaxis and or treatment in IFI.

Forest Plot: Efficacy of voriconazol Pooled Relative Risk (Der Simonian-Laird): 1.17 (IC95% 1.01 to 1.34); p 0.03 Heterogeneity test: Q 32.7; p 0.00001

Conclusions

According to available literature Voriconazole was safe and effective compared with other drugs or placebo in prevention and or treatment of IFI in immunocompromised patients, however further studies are needed to validate our conclusion.

Systematic Review Registration (Please input N/A if not registered)

N/A

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0060

AN OUTBREAK OF PENICILLIN-SUSCEPTIBLE MEC A-POSITIVE STAPHYLOCOCCUS AUREUS IN A NEONATAL WARD IN JAPANESE CHILDREN'S HOSPITAL

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Title of Case(s)

An Outbreak of Penicillin-susceptible mecA-positive Staphylococcus aureus in a Neonatal Ward in Japanese Children's Hospital

Background

MRSA carriage in neonatal ward has always been annoying issue. Active surveillance with screening medium is used broadly for detecting MRSA colonization. We experienced a colonization outbreak of unique strain of MRSA, namely, Penicillin-susceptible, but Oxacillin-heteroresistant and mecA-positive Staphylococcus aureus (PS-MRSA) in neonatal ward. This strain could not be isolated by usual screening medium.

Case Presentation Summary

In late July of 2016, our surveillance system noticed unusual surge of colonization rate of MSSA in neonatal ward. Detailed examinations revealed that this *S. aureus* had unique characteristics, namely, it is always susceptible to Penicillin but heteroresistant to Oxacillin and Cefoxitin, and also carries mecA gene. Reinforcement of hand-hygiene with contact precautions, strict isolation and cohorting of the patients were carried out. In August, however, the colonization rate reached around 30%. Then we decided the introduction of decolonization of PS-MRSA with mupirocin ointment. Total of 14 patients had undergone the decolonization, 12 patients had been confirmed to be decolonized. After these implementations, carriage rate of PS-MRSA decreased, and no new cases of colonization were reported. In late October, we declared the termination of the outbreak, finally. Fortunately, there had been no severe infections due to PS-MRSA during the outbreak.

Learning Points/Discussion

The emergence of this type of PS-MRSA may pose several clinical problems. This PS-MRSA could not be noticed easily by using routine selection medium. So genetic analysis such as PCR is necessary for detection of mecA gene. Moreover, appropriate antimicrobial therapy for this strain is unknown. And also there might be threat of converting PS-MRSA into more resistant strain during treatment.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0061

CYTOKINE RESPONSE IN CHILDREN WITH VIRAL CROUP

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Background

Croup is the most severe complications of acute respiratory viral infections in young children. The relationship between cytokine blood levels and croup severity, disease sequel, despite numerous studies is still unclear.

Methods

124 children aged 12 mon. - 36 mon. with viral croup were treated at the Lviv Infectious Diseases Hospital were kept under observation. We allocated patients into 3 groups: group 1 (89 children with croup), group 2 (26 children with recurrent croup), group 3 (18 children with acute laryngitis). Croup symptoms, serum cytokine (IL1, IL4, IL6, IL10, IL17) levels, present DNA & RNA (using an RT-PCR) 9 viruses in respiratory nasal mucus were studied; Chan croup severity score were used

Results

In children with croup the intensive production pro-inflammatory cytokine - IL1 β were established, its level was 8.81 pg/ml (7,30-10,46) and it was 2 times higher than in patients without evidence of laryngeal stenosis. Simultaneously, we observed the increased levels of anti-inflammatory cytokines - IL4 (up 5.29 pg/ml; 4,56-5,99 pg/ml), IL10 (18.90 pg/ml; 15,69-22,02 pg/ml), that was more three times higher than in patients with acute laryngitis. In patients with recurrent croup, unlike patients with the first case of croup we don't see a significant correlation between the pro-inflammatory and anti-inflammatory cytokine levels

Conclusions

The significantly higher levels of cytokines in children with croup compared with the group of patients with acute laryngitis were found. Our results also suggest about a strong imbalance between pro-inflammatory (IL1, IL6) cytokine levels and anti-inflammatory (IL4, IL10, IL17) cytokine in children with recurrent croup. This cytokines imbalance kept the intensity of inflammatory reactions and its lead to local swelling, muscle spasm, excessive production of mucus in the place of viral replication.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0062

INTRAMEDULLARY SPINAL TUBERCULOSIS PRESENTING WITH PARAPLEGIA

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Title of Case(s)

Intramedullary Spinal Tuberculosis Presenting with Paraplegia

Background

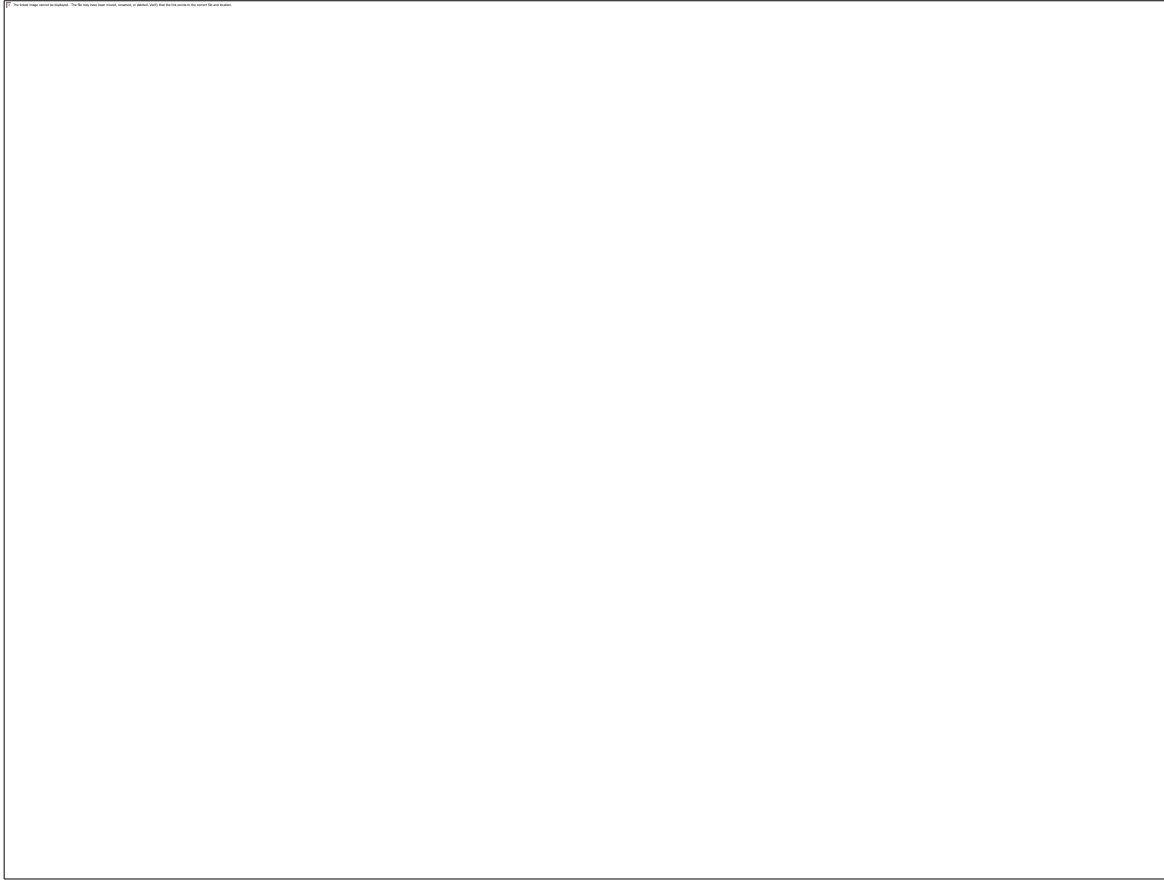
We report a rare instructive case of spinal intramedullary tuberculosis.

Case Presentation Summary

A 16-years-old immuno-competent female presented with gradual paraplegia, a thoracic sensory level and lack of bladder or bowel sensation. This occurred on the background of a fall 3 months prior. The fall had led to a meniscal injury to the right knee, obscuring the underlying motor weakness, and delaying recognition of an underlying neurological problem.

Spinal MRI scan revealed an enhancing intramedullary lesion at T10-level. PET-CT showed hot avidity in the left axilla, cerebellum and spinal cord, correlating with lesions on MRI (Figure 1). The patient United Kingdom born, had no travel history to high TB endemicity areas or known previous tuberculosis contacts.

The patient was referred to a specialist neurosurgical centre for spinal decompression surgery and diagnostic biopsy. Histological examination demonstrated granulomatous inflammation with a small group of acid fast bacilli. Fully sensitive *Mycobacterium tuberculosis* was subsequently grown from an axillary lymph node biopsy. She was treated with isoniazid, rifampicin, pyrazinamide and ethambutol, planned for 12 months, and a weaning dose of dexamethasone. She was transferred back to the referring hospital for on-going physiotherapy and occupational therapy under the outreach guidance of a spinal injuries unit, whilst awaiting a specialist spinal injury rehabilitation unit bed. With intensive rehabilitation, she regained functional independence but no meaningful reduction in the underlying neurological impairment.



Learning Points/Discussion

The vast majority of tuberculosis affects the spinal cord due to spinal osteo-articular disease. Very rarely, lesions can be intramedullary – a rare cause of an intrinsic cord lesion. Symptoms are much more insidious compared to those associated with a spinal pathological fracture, highlighting the importance of thorough history taking and clinical examination.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0063

ARTEMISININ BASED COMBINATION THERAPY FOR UNCOMPLICATED MALARIA MANAGEMENT AMONG UNDER 5 CHILDREN IN CAMEROON: A BEST PRACTICE IMPLEMENTATION PROJECT

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Background

The burden of disease attributable to malaria has significantly improved in last 3 years, however the morbidity and mortality risks are still present, especially so for children under five years of age.

Objectives

To contribute in the promotion of evidence based practice in the management of uncomplicated malaria in children less than 5 years old and thereby improve patient outcomes and resource utilization in low income settings. To evaluate the impact of clinical audits on practitioner practice and patient outcomes in the management of malaria. To identify barriers and enablers to implementation of best practices in the management of uncomplicated malaria in children under 5.

Methods

In this implementation project we sought to use clinical audits and feedback to improve clinical practice at district level using the JBI PACES approach. We identified barriers and collected baseline data on practice at 3 clinical sites. We compared compliance with best practice recommendations at baseline against a follow up compliance at 4 months following implementation of strategies identified using JBI GRiP Matrix.

Results

Compliance rates improved overall by 31% (R: 20 – 42) for all criteria and all sites with differences noticed between sites.

Conclusions

Clinical audits are a good approach for promoting evidence based practice in resource limited settings for both clinicians and patients. The JBI PACES software also facilitates evidence utilization in settings where there are no clinical practice recommendations.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0064

GROWING PATTERN OF PATIENTS WITH CONGENITAL CYTOMEGALOVIRUS

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Background

Little is known about the growing pattern of children with congenital CMV infection (cCMV). We aimed to assess the pattern of linear growth and weight gain in infants with cCMV during the first 3 years of life.

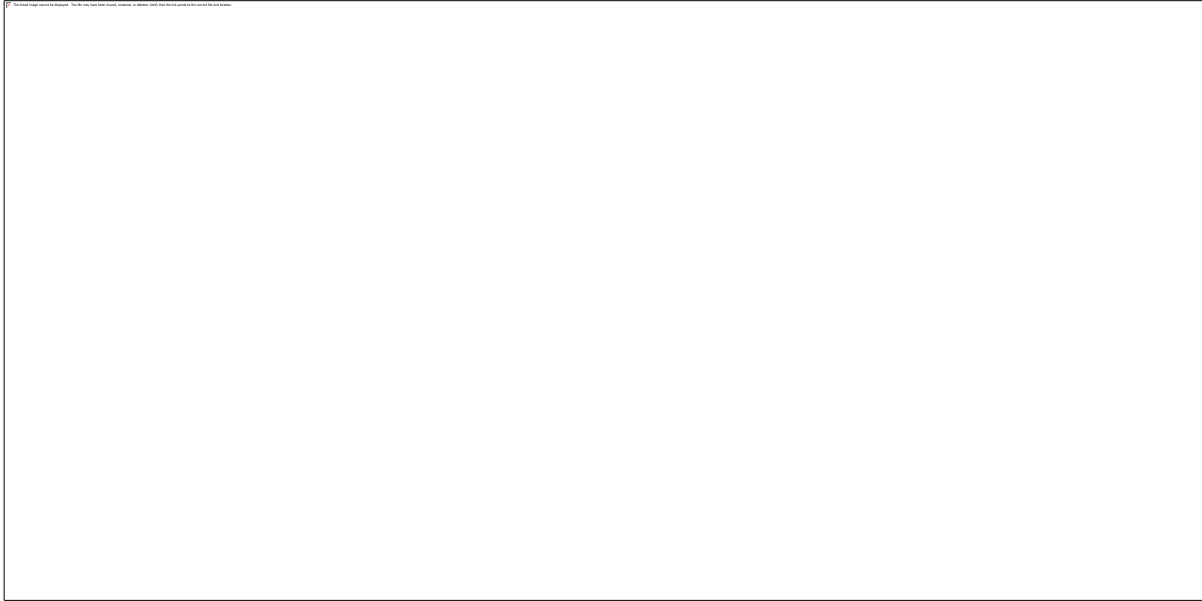
Methods

This is an observational, multicenter, cohort study. Data were obtained from the Spanish Network of Congenital CMV Infection (REDICCMV). We used the WHO Anthro application to convert anthropometric data into age- and sex-corrected corresponding standard deviation (z) scores with reference to WHO Child Growth Standards.

Results

A total of 323 children were included; 246 (76%) were term newborns. At birth, 5% (CI95%, 2 to 8) of term children were below -3SD of length, weight and head circumference. At 36 months, 5% (CI95%, 0 to 10), 6% (CI95%, 0.3 to 12) and 9% (CI 95%, 1-19) of all children (n=82) and 2% (95%CI, 0 to 6), 4% (95%CI 0 to 10) and 8% (95%CI 0 to 18) of term babies (n=54) were below -3SD of length, weight and head circumference, respectively. Term children were significantly different than the reference population at 0, 12, 24 and 36 months (p<0.001), except for males at 36 months. Symptomatic patients were smaller than asymptomatic patients at all ages. Patients treated with antivirals were also smaller than untreated patients at 0, 12, and 24 months.

The figure shows weight and height (z) scores distribution at 0, 12, 24 and 36 months in children with cCMV from REDICCMV (red line), as compared with WHO Child Growth Standards (green line).



Conclusions

Patients with cCMV are significantly smaller at birth. A catch-up occurs in most patients but, at 36 months, 5%, 6% and 9% are still below -3SD for length, weight, and head circumference, respectively.

06A. EDUCATION: DIAGNOSIS THROUGH HOST RESPONSE

ESP17-0065

ARE CLINICAL SIGNS OF PNEUMONIA RELIABLE IN UNDER-FIVE SEVERELY MALNOURISHED CHILDREN WITH DIARRHEA?

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Background

Still pneumonia is the top killer disease among under-five children worldwide. In 2015, 5.9 million deaths occurred globally in this age group where 16% deaths due to pneumonia. Malnutrition is another major health challenge which may increase the chance of death for about 15 times when coupled with pneumonia. Death in children with pneumonia also having diarrhea is about 8 times higher compared to those without diarrhea. Although, we have some information on the influence of severe malnutrition in diagnosing pneumonia, data on the impact of diarrhea in diagnosing pneumonia in severely malnourished children is scarce.

Methods

We conducted this study at Dhaka Hospital of icddr,b in Dhaka, Bangladesh from 2011-12 and prospectively enrolled all severely malnourished children (WAZ<-4 or WLZ <-3 or nutritional oedema or MUAC <115 mm) aged 0-59 months with radiological pneumonia. Study children also having diarrhea constituted cases (n=245) and those without diarrhea constituted controls (n=89). Demographic and clinical characteristics were compared between the cases and the controls.

Results

Median age (9 months), sex and other socio-demographic characteristics were comparable between two groups. Cases less often presented with breathing difficulties (41% vs. 63%, $p < 0.001$), age specific fast breathing (37% vs. 51%, $p = 0.037$), and lower chest wall in-drawing (40% vs. 61%, $p = 0.001$) compared to the controls. Other parameters including WHO danger signs of pneumonia were comparable among the groups ($p > 0.05$ for all).

Conclusions

The results suggest that the clinical signs of pneumonia are less reliable in severely malnourished children with diarrhea compared to those without diarrhea. This may warrant the necessity of radiological examination in order to have proper diagnosis and prompt management to reduce fatal outcome in such children especially in resource poor settings.

12B. EDUCATION: INVASIVE FUNGAL INFECTIONS

ESP17-0067

CASPOFUNGIN THERAPY FOR REFRACTORY CANDIDEMIA IN NEONATES

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Title of Case(s)

Caspofungin Therapy for Refractory Candidemia in Neonates

Background

Invasive candidiasis is an increasing complication in the neonatal intensive care unit (NICU) associated with high morbidity, mortality and hospital stay. Amphotericin B is the treatment of choice for *Candida* infections in neonates, but sometimes the course of illness is complicated by persistent fungemia, being a challenge to find an adequate therapeutic option. The echinocandin presents one of the best options for therapy in adults, but experience in newborn is scarce. The aim is describe the efficacy and safety of caspofungin in two neonates with refractory invasive candidiasis at Hospital de Pediatría Garrahan from 2012 to 2016

Case Presentation Summary

Both were preterm with a median weight of 1.900 grams and 32 weeks of gestacional age. One of them had a complex gastrosquisis. The age at diagnosis was 50 and 14 days respectively.

Both had indwelling central venous catheter, parenteral nutrition, previous antibiotics and mechanical ventilation with surgery performed for gastroschisis.

The diagnosis was invasive infection with endovascular focus due *Candida albicans* susceptible to amphotericin B, fluconazol and caspofungin. Amphotericin B was switched to caspofungin after 15 days of positive blood cultures.

The median time of caspofungin treatment was 30 days with blood sterilization at the 3th day with no adverse events. Both survived.

Learning Points/Discussion

Caspofungin was effective, safe and well tolerated as it was an alternative therapy for refractory candidiasis in two neonates who were unresponsive to amphotericin B, however more studies are needed.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0071

ORAL TREATMENT IN PEDIATRIC OSTEOARTICULAR INFECTIONS CAUSED BY *KINGELLA KINGAE*; IS IT POSSIBLE?

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Background

The approach of acute paediatric osteoarticular infections (OAI) has been recently modified, mainly due to the sequential therapy with initial intravenous antibiotics and quick step to short-term oral treatment. Entirely oral treatment has not been described. We present here a series of infants with OAI caused by *Kingella Kingae* with exclusively oral treatment.

Methods

Retrospective chart review between February 2013 and February 2016 at the Pediatric Rheumatology Unit of the University Hospital La Paz. Inclusion criteria were: children under 4 years with diagnosis of OAI microbiologically confirmed by blood culture, specific polymerase chain reaction (PCR) for *Kingella kingae* and / or synovial fluid culture that were treated exclusively orally.

Results

Twelve children diagnosed of septic arthritis (10 cases) or osteomyelitis (2 cases), caused by *Kingella kingae* were recorded and analyzed (3 blood cultures, 2 synovial fluid culture and 7 polymerase chain reaction in synovial fluid). The mean age of our cohort was 15 months (range 6-25 months). The average erythrocyte sedimentation rate (ESR) was 72 mm/h and the C-reactive protein (CRP) 27 mg/L. The average white blood cell count was $164,160 \pm 75,380/\text{mm}^3$. Arthrocentesis was performed when it was necessary. None of them needed surgery. In all, exclusively oral treatment was established from the beginning. All patients had favorable clinical course without complications or long-term sequelae.

Conclusions

In a selected group of infants with OAI caused by *K.Kingae*, after arthrocentesis, oral treatment was established with a favorable clinical evolution.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0072

HEMOPHAGOCYtic LYMPHOHISTIOCYTOSIS LIKE SYNDROME SECONDARY TO HUMAN PARECHOVIRUS INFECTION IN A 42 DAYS OLD BOY.

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Title of Case(s)

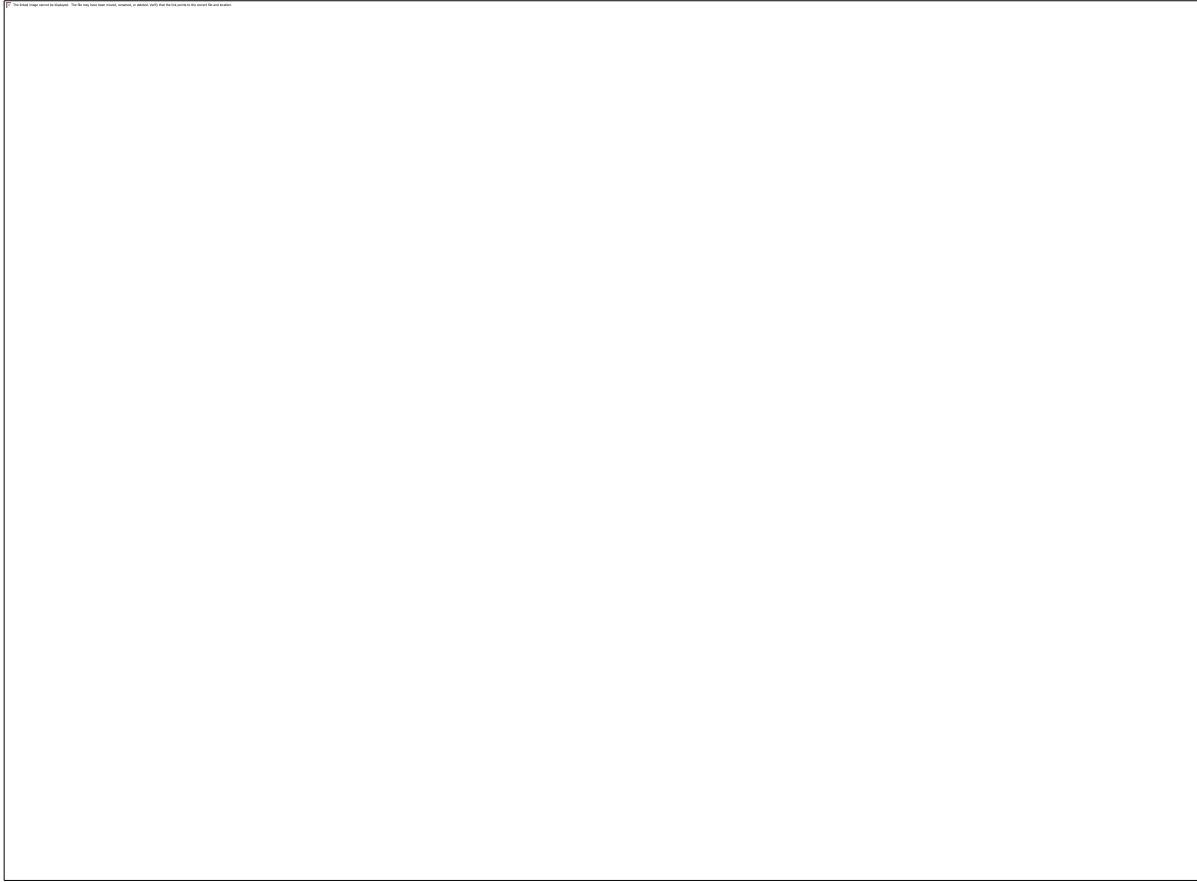
Hemophagocytic lymphohistiocytosis like syndrome secondary to Human parechovirus infection in a 42 days old boy.

Background

Human parechovirus (HPeV) belongs to *Picornaviridae* family and has been reported to cause a sepsis-like illness in neonates and young infants.

Case Presentation Summary

We experienced the occurrence of HPeV infection in a 42 days old previously healthy male, who was admitted to our hospital with 1 day of fever, decay and irritability. The second day of fever he had an evanescent rash on chest and lower extremities which lasted for 3 days. Laboratory exams at admission revealed bicytopenia (anemia and leukopenia), normal C reactive protein (CRP), and urinary analysis with 16 leukocytes without bacteria. Bacterial cultures (urine, blood, and CSF) were negative. At day 4, serum aspartate, aminotransferase (AST), lactate dehydrogenase (LDH), ferritin and triglycerides were increased with pancytopenia and low fibrinogen. Viral PCR in plasma were negative for HHV6, VZV, HSV-1, HSV-2 and EV. Respiratory molecular PCR in nasopharyngeal swab and serum CMV IgM were negative. HPeV PCR in blood was positive. Initially, due to the diagnosis of fever without a source he was started on empiric antibiotics (ampicillin plus cefuroxime) and were discontinued after 2 days with negative bacterial cultures and HPeV positive PCR. He evolved with hemophagocytic lymphohistiocytosis like syndrome and required therapy with dexamethasone 8.8 mg/m²/day in Pediatric Intensive Care Unit, where he stayed for 2 days. He responded to treatment and was discharged after 9 days of hospitalization.



Learning Points/Discussion

HPeV infection can be severe and physicians should consider the possibility of development of HLH like syndrome in young infants if bicytopenia is observed.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0073

CLINICAL AND EPIDEMIOLOGIC PECULIARITIES OF PERTUSSIS IN THE FIRST YEAR OLD CHILDREN

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Background

In Ukraine, despite the fact that 70-85% of children are vaccinated against pertussis annually, the infants pertussis rates is still high.

Methods

The retrospective analysis of the inpatient medical records of children aged 0 – 12 mo. at Lviv Regional Infectious Diseases Hospital has been performed. The data of 53 patients (mean age was 7,13±1,10 mon) who were undergoing treatment during 2012 and 46 children (mean age was 7,87±1,63 mon) who were under medical care in 1997-2001 have been analyzed

Results

Children undergoing treatment in different year periods have not been characterized by significant differences in frequency of inspiratory whoop, apnea, vomiting, duration of apnea, duration of coughing with inspiratory whoop. At the admission in both groups Preziosi & Halloran severity scores was not different - 9.39±2.95 points and 8.81±2.60 points. Leukocytosis has been observed in 93.9% children hospitalized in 2012 y. and hyperleukocytosis (with the average leukocytes level - 20,9±4.87x10⁹/l) was in 9,1% children. In the period 1997-2001 yy., 95,1% infants had leukocytosis, 19,3% - hyperleukocytosis (mean leukocyte count in this infants was higher – 24.20±3.90x10⁹/l).

Conclusions

Longer disease duration the at the pre-hospital stage, less frequency and less duration of changes in lungs and lower leucocytes levels in peripheral blood have been attributed to the differences in the clinical course of pertussis in infants in 2012 in comparison with 1997-2001 yy. We have distinguished some reasons, which obviously caused these and other differences in the clinical course of pertussis in infants. Firstly – it is change of the dominating serotype *B. pertussis* agent; secondly – the other type of vaccines for regularly vaccination used (Ukraine acellular vaccine has been used since 2004 y); thirdly – it is introduction of modern treatment regimens

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0074

NEUROLOGICAL COMPLICATIONS OF ROTAVIRUS ENTERITIS IN CHILDREN - CASE PRESENTATION

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Title of Case(s)

Neurological complications of rotavirus enteritis in children - case presentation

Background

Acute rotavirus enteritis is a frequent clinical manifestation of rotavirus infection in children. Because of the polymorphic clinical presentation of acute rotavirus infection in children, the concept of rotaviral disease has currently been described. Frequently reported extra-intestinal manifestations include respiratory, neurological, hepatic, cutaneous, renal, and hematological manifestations.

Case Presentation Summary

We present the case of a 8 year old boy, admitted in the 9th Pediatric Department of the National Institute of Infectious Diseases "Prof. Dr. Matei Bals", with the diagnosis of acute rotavirus infection with neurological complications. Diagnosis was established on epidemiological criteria (2 brothers with the same illness), clinical (fever, vomiting, abdominal pain, diarrhea, gait impairment, and aphasia) and laboratory criteria (identification of rotavirus in fecal matter and CSF). Also, diagnosis was sustained by EEG and MRI.

Onset was 5 days prior to admission with fever, vomiting, abdominal pain and diarrhea. Later, neurological complication appeared: drowsiness, gait impairment, bradialia and bradipsychia, and finally aphasia. Upon admission, the child presented in altered general state, feverish, pale, drowsy, with speech and gait impairment. Based on clinical, epidemiological and laboratory data, the diagnosis of acute rotavirus infection is established. Neurological consult paired with EEG and MRI revealed associated neurological complications: cerebellitis and aphasia. Under treatment with Dexamethasone, osmotic diuretics, human immunoglobulins, b group vitamins, evolution was slowly favorable. At a month after onset, the patient was recovered with only a slight psychic retardation.

Learning Points/Discussion

Rotavirus infection can present under various clinical forms, from mild to severe. Although rare, these neurological complications can be severe with a high risk of sequelae and even death in the absence of adequate treatment.

05A. EDUCATION: CONGENITAL DISEASES

ESP17-0075

EARLY SEPTIC SHOCK DUE TO CONGENITAL DISSEMINATED TOXOPLASMOSIS

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Title of Case(s)

Early Septic Shock due to Congenital Disseminated Toxoplasmosis

Background

Toxoplasmosis is a protozoan disease caused by the coccidian parasite *Toxoplasma gondii*. Although most infections are subclinical and asymptomatic, the disease is important in immunocompromised hosts and during pregnancy.

Neonatal presentation has a wide range of symptoms depending on the moment of infection during pregnancy, immunological status of the mother and parasite strain.

We report a case of severe neonatal infection on the first day of life due to *Toxoplasma gondii* mimicking septic shock syndrome associated with multiple organ failure **Case Presentation Summary**

We report a newborn infant of 39 weeks gestational age, born to a 46-years hypothyroid mother with intrauterine growth retardation, oligohydramnios, and weighed 2,100 grams. Apgar score was 4/8. Serology of the 32nd week was negative for HIV, Toxoplasmosis, Chagas, HIV, HBV, and syphilis.

He was admitted because of early neonatal septic shock with multiple organ failure, intraventricular hemorrhage, thrombocytopenia, hepatosplenomegaly, hepatitis, and severe bilateral ophthalmic vasculitis with retinal detachment and a refractory shock requiring mechanical respiratory assistance, platelet transfusion, antibiotics, inotropics, and ophthalmic laser. Newborn blood cultures, urine CMV, HIV HBV, HCV, parvovirus B19, enterovirus, HSV I-II, rubella, chagas, syphilis were negative. IgG and IgM were positive for Toxoplasmosis. Congenital toxoplasmosis was diagnosed, and treatment with pyrimethamine, sulfadiazine, folinic acid and corticosteroids was started with a good outcome **Learning Points/Discussion**

Septic shock is an unusual presentation of congenital toxoplasmosis. Although rare, clinicians facing an unexplained life-threatening condition in the first week of life should take into consideration the possibility of neonatal toxoplasmosis.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0076

PATTERN OF NEONATAL MORBIDITY AND MORTALITY AT SCBU OF A TERTIARY HOSPITAL IN A POOR-RESOURCE SETTING

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Background

Background. Globally; prematurity, perinatal asphyxia and neonatal infection account for over 90% of perinatal morbidity and mortality

Aims/Objective. To determine the pattern of morbidity and mortality of neonates admitted to our Special Care Baby Unit (SCBU).

Methods

Methods Cross-sectional study at SCBU of Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, Nigeria. Data from the case folders of all consecutive neonates admitted for the period of one (1) year; 1st October, 2015 to 31st September, 2016 were documented and entered into a spreadsheet using SPSS 20.0. Chi square was used to test relationship between categorical variables. P-value < 0.05 was considered statistically significant. Ethical approval was obtained from Ethics committee of UDUTH, Sokoto.

Results

Results: We admitted 1,242 babies into the SCBU; males were 675(54.0%) and females were 567(46.0%). Neonatal mortality within study period was 105 (8.5%). The unit neonatal mortality rate was 45.3/1000 live births as compared to 37/ 1000 live births by National demographic and Health Survey (NDHS)/WHO for the country. Causes of death include; Prematurity (41; 39%), Perinatal asphyxia (24; 23%), neonatal sepsis (16; 15.3%) and others (7; 6.7%). This is in agreement with global causes of neonatal deaths (WHO, NDHS, 2014).

Conclusions

Conclusion: Our figures are not any better but higher and, we attributed this partly to the increasing harsh economic recession in the country. Outside efforts to improve health care services, poverty reduction should also be addressed.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-0077

CHLORHEXIDINE USE FOR CORD CARE; OUTCOME AT SCBU OF A TERTIARY HOSPITAL IN NORTH WEST NIGERIA.

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Background

Background. Sepsis in the first week or two of life is a major cause of newborn deaths. Chlorhexidine use for cord care has been recommended by WHO by 2014 but, only became a routine cord care method in our center within the last 16 months. Prior to this method, mothers use other methods especially methylated spirit and/or oil.

Aims/Objective. To determine the outcome of chlorhexidine use for cord care of neonates admitted to our Special Care Baby Unit (SCBU)**Methods**

Methods. A prospective study at SCBU of Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, Nigeria. Chlorhexidine 7.1% digluconate was applied once in a day for 7 consecutive days to the cord of all recruited/consecutive neonates admitted to SCBU that had no features suggestive of septicaemia. The study period was for one (1) year; 1st October, 2015 to 31st September, 2016. Ethical approval was obtained from Ethics committee of UDUTH, Sokoto.

Results

Results: We admitted 1,242 babies into the SCBU but, only 1,760 babies were included in the study; males were 960 (54.5%) and females 800 (45.5%). Eighty-five percent (1,496) babies had chlorhexidine application alone, the remaining 15% (264) used methylated spirit and/or oil because the the mothers declined chlorhexidine use alone. No baby of the chlorhexidine group was treated for sepsis at discharge, 7(2.7%) of babies that used methylated spirit were treated for sepsis but, 3 (43.0%) of them died.

Conclusions

Conclusion: Chlorhexidine use should be encouraged but, a randomized-control trial is on-going at our center following this preliminary report.

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-0081

ANTIBIOTICS USE IN UNDER-5 CHILDREN IN A PERI-URBAN COMMUNITY IN NIGERIA:ASSESSMENT OF MATERNAL KNOWLEDGE , ATTITUDE AND PRACTICES

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Background

Antibiotics misuse through self medication is rampant in most communities in Nigeria. Antibiotics are routinely used by adults and paediatric populations for diverse ailments without formal prescription which often lead to antibiotics resistance and unnecessary increase in cost of care. This study is aimed to determine the knowledge, attitude, and practices (KAP) of mothers of under-5 children about antibiotic use in a peri-urban community in Nigeria and to investigate the correlation between the respondent KAP and their socio-demographics.

Methods

A self administered cross sectional survey involving 200 respondents was conducted using a structured questionnaire at the paediatric out-patient clinic of the Comprehensive Health Centre in Ilara-Mokin, Ondo State, Nigeria from 3rd June, 2016 to 28th October, 2016. Summary statistics was use to summarise variables. Pearson Correlation Coefficient was used to test the strength of association among KAP. Logistic regression analysis was used to determine significant predictor of outcomes.

Results

None of the respondent had good knowledge while less than half (42%) had a moderate level of knowledge. All the respondent could not differentiate between bacterial and childhood viral infections. Negligible portion (3%) of the respondents were aware that antibiotics misuse can lead to resistance , About three quarter (72%) believed that antibiotics must be prescribed and use by every sick child. Educational qualification was the only socio-demographic characteristic that has a positive correlation with knowledge and attitude towards antibiotic use.

Conclusions

The study findings established that antibiotic misuse is significant among mothers of under-5 children , especially less educated ones. The need for a policy guideline and educational intervention to increase awareness about the consequences of misuse and to promote positive attitude and practice of antibiotic use is considered of prime importance

04E. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0084

EMPLOYMENT OF MOTHER INCREASES THE RISK OF MORBIDITY AND DEATH IN BANGLADESHI CHILDREN UNDER FIVE HOSPITALIZED FOR SEVERE MALNUTRITION AND PNEUMONIA

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Background

Pneumonia is a common co-morbidity in children having severe malnutrition and often associated with fatal outcome. Many of these children used to be brought late in hospital facilities due to employment of mother and experience even more fatal consequences. However, we do not have sufficient data whether employment of mother increases the risk of morbidity and deaths in hospitalized children who presented with severe malnutrition and pneumonia. We intended to evaluate associated factors of employed mother and outcome in such children.

Methods

In this nested case-control study, we evaluated children of either sex, aged 0-59 months, admitted to the Dhaka Hospital of the International Centre for Diarrhoeal Disease Research, Bangladesh those who admitted with severe malnutrition and pneumonia between April 2011 and August 2012. Comparison was made among children with (cases=61), and without employed mother (controls=339).

Results

Case-fatality-rate was significantly higher among the cases than the controls (16% vs. 7%, $p=0.03$). The median (inter-quartile range) age (months) was comparable between the cases and the controls [12.0 (5.4, 20.0) vs. 9.0 (5.0, 16.0) months; $p=0.13$]. In logistic regression analysis, after adjusting for potential confounder (such as poor socio-economic condition), children of employed mother, who were hospitalized for severe malnutrition and pneumonia, less likely to have antibiotics at home (OR=0.17, 95% CI=0.04-0.79, $p=0.02$), more likely to have active TB contact (OR=5.33, 95% CI=1.51-18.74, $p<0.01$), confirmed TB (OR=2.51, 95% CI=1.01-6.34, $p=0.05$), and grunting respiration (OR=11.84, 95% CI=1.21-115.65, $p=0.03$) compared to those without employed mother.

Conclusions

The observation underscores the importance of requirement of policy implication for looking after the siblings of the employed mother in order to prevent their morbidity and deaths.

Clinical Trial Registration (Please input N/A if not registered)

Not Applicable

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0085

NEONATAL COMMUNITY-ACQUIRED INFECTIONS, WHEN TO SUSPECT STAPHYLOCOCCUS AUREUS?

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Background

Staphylococcus aureus (SA) including MRSA (methicillin resistant SA) is infrequent in previously healthy newborns. We sought to describe the rate of disease and risk factors associated to SA infection.

Methods

We conducted a retrospective, observational and analytical study of neonatal community-acquired (CA) infections. Study period: 01/01/2011 – 12/31/2015 (5 years). Statistical analysis was performed using Stata v13.

Results

During the study period, 207 neonatal CA infections were identified. SA was responsible for 11.59% of them (24/207). All of them were previously healthy term (22) or nearly term (2) infants. History of cesarean delivery was present in 52.6% of them (average caesarean delivery in Argentina was 31%). Two patients had family history skin or soft-tissue infections. In 16.4% (4/24), a peripheral vascular access had been used previously. Localized skin infection was present in 13/24 (54.17%) cases. Eleven infants (45.8%) had invasive disease. Most frequent localizations were bone and joint infection, lung and central nervous system.

Fever was more frequent in infants with invasive disease, 64.3% vs 20%; $p=0.04$. White cell count was similar between both groups. C reactive protein (CRP) was performed only to 9 patients with a media of 1.2 (SD 1.4) in localized infection and 186.4 (SD 177) in invasive disease, $p=0.07$. Almost half of patients (45.8%; 11/24) required surgical drainage. Clinical outcome was favorable with complete resolution in 22/24. Two patients cured with sequel. During 2011-2012 period MRSA rate was 41.7% vs 75% during 2013-2015, $p=0.06$.

Conclusions

Staphylococcus aureus is an infrequent cause of neonatal CA infections. It can be present even in infants without any risk factors. Clinical presentation can guide suspicion. Larger studies are needed to evaluate usefulness of CRP at admission and increase of methicillin resistance.

14B. SCIENCE: NON-INVASIVE GASTROINTESTINAL AND MUCOSAL INFECTIONS

ESP17-0086

PARALYTIC ILEUS INCREASES THE RISK OF MORBIDITY AND DEATH IN SEVERELY MALNOURISHED BANGLADESHI CHILDREN HOSPITALIZED FOR DIARRHEAL ILLNESS

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Background

Severely malnourished children under five requiring hospital admission for diarrheal illness frequently develop ileus during hospitalization and often associated with fatal outcome. However, there is no data on associated risks for ileus in such children. We intended to evaluate risk factors of ileus and their outcome.

Methods

In this descriptive study we enrolled diarrheal children of either sex, aged 0-59 months, who were admitted with severe malnutrition to the Dhaka Hospital of the International Centre for Diarrhoeal Disease Research, Bangladesh between August 2009 and July 2013. Comparison was made among children with (cases=45), and without ileus (controls=261). Ileus was defined if a child developed abdominal distension and had hyperactive or sluggish or absent bowel sound and a radiologic evidence of abdominal gas-fluid level during hospitalization.

Results

Case-fatality-rate was significantly higher among the cases than the controls (22% vs. 8%, $p < 0.01$). In logistic regression analysis after adjusting for potential confounders such as hypocalcemia on admission and blood transfusion at hospitalization, the independent admission risk factors for ileus were reluctance of feeding (OR=3.22, 95% CI=1.24-8.39, $p=0.02$), septic shock (OR=3.62, 95% CI=1.247-8.95, $p < 0.01$), and hypokalemia (OR=1.99, 95% CI=1.03-3.86, $p=0.04$) on admission.

Conclusions

Case-fatality-rate was significantly higher among the severely malnourished diarrheal children with ileus compared to those without ileus. Children under five with severe malnutrition who hospitalise for diarrheal illness and present with reluctance of feeding, septic shock, and hypokalemia on admission are at higher risks of developing ileus during hospitalization. Thus, identification of these simple parameters in severely malnourished diarrheal children on admission at hospital may prompt clinicians to be more vigilant in managing these conditions especially in resource limited settings in order to reduce deaths.

Clinical Trial Registration (Please input N/A if not registered)

NA

05D. SCIENCE: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0087

PREDICTION MODELS FOR RISK INFANTS INFECTED WITH HIV: ANALYSIS OF A SCORING SYSTEMS OF MATERNAL, INFANTS, AND MODE OF DELIVERY

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Background

Background: Diagnosis of HIV in infants is still difficult in areas with limited resources and no PCR facilities. Delay in diagnosis will lead to increased morbidity and mortality. This study aimed to find an **effective and practical** predictive model of risk infant infected with HIV.

Methods

Methods: A cross sectional study was conducted on medical record of 100 infants born to HIV-infected mothers at 4 hospitals and 1 health center in Jakarta, and 1 hospital in Riau islands. Four combinations of demographic and risk factors on mother and infant were developed to find Model that can predict the occurrence of HIV infection in the infants, effectively (sensitivity & spesificity > 70%) and practice (easier to apply). External validation was conducted on 20 infants born to HIV positive mother by using effective and practical Model to predict risk of HIV infection and confirmed by PCR-RNA at 6 weeks of age.

Results

Results: There were 3 risk factors, no maternal ARVs (OR 33.6), pulmonary TB infection (OR 5.1), and vaginal delivery (OR 9.2). Four models were developed, but only 2 models could predict the occurrence of infected HIV infant effectively: Model 1 (maternal age, maternal ARVs, pulmonary TB infections, gestational age, mode of delivery and infant's sex) and Model 2 (maternal ARVs, pulmonary TB infection and mode of delivery). Statistical

analysis found that Model 2 is more effective, practical and easier to be applied in the areas with limited resources, and has the highest agreement with PCR RNA.

Conclusions

Conclusion: Model 2 is an effective and practical screening tool to determine risk of HIV infection on infant born to HIV mother prior to PCR examination.

Clinical Trial Registration (Please input N/A if not registered)

04E. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0088

IMMUNE STATE IN CHILDREN WITH FREQUENT RESPIRATORY INFECTIONS WITH DIFFERENT CONCENTRATIONS OF SERUM IGA.

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Background

In the Russian Federation frequent respiratory infections a registered more than 6 times per year refers children to a group of repeatedly or frequently ill.

Methods

All patients (aged from 3 to 17) years were divided into 3 groups depending on the level of IgA: 1 group consisted of 50 children with immunoglobulin A level was within the age norm; 2 group consisted of 31 patients whose IgA values were below age norms, but not lower than 0,05 g / l; 3 group included 4 people with IgA level less than 0.05 g / l. Immune status was assessed by expression of CD 3+, CD 4+, CD 16+, CD 19+, in immunofluorescence test on a flow cytofluorimeter Cytomics FC 500 (Becman Coulter, USA) using appropriate monoclonal antibodies, the levels of serum immunoglobulins by radial immunodiffusion in gel by Mancini.

Results

The clinical picture of the patients in 1 group prevailed infection (88%) and allergy syndrome (52%), in 2 group infectious (100%) and limfproliferative (77,4%), in the 3 group infection (100%) limfproliferative (100%). The evaluation of the immune status of children in 1 group decline microbicidal activity of neutrophils and the depletion of their reserves have revealed. In 2 group marked increase in the number of mature T lymphocytes and circulating immune complexes. The humoral link determined by the low level of IgA. In 3 group in humoral despite the normal content of B-lymphocytes observed almost complete lack of immunoglobulin A. Phagocytic link characterized by decrease of microbicidal activity and adaptation reserves of neutrophils.

Conclusions

Changes of the immune status determines the characteristics of the disease clinics and should be taken into account when assigning a personalized therapy.

Clinical Trial Registration (Please input N/A if not registered)

04A. EDUCATION: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-0089

ASSESSING THE EVIDENCE FOR MATERNAL PERTUSSIS IMMUNIZATION IN LMIC: A REPORT FROM THE BILL AND MELINDA GATES FOUNDATION SYMPOSIUM ON PERTUSSIS INFANT DISEASE BURDEN

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Background and Objective

Pertussis maternal immunization (MI) programs have proven effective in reducing early infant pertussis mortality in high-income countries, but little is known about the contribution of pertussis to deaths in the first 3 months of life in low- and low-middle-income countries (LMIC), and current vaccines are cost-prohibitive for routine use.

Methods

Recognizing that decisions on the potential impact of pertussis MI in LMIC need robust contemporary mortality data for early infant pertussis, a global expert symposium was held to firstly review current evidence and to identify knowledge gaps with respect to infant pertussis disease burden in LMIC, and secondly to discuss strategies to assess the potential impact of pertussis MI.

Learning Points Discussion

WHO recommends that countries with high infant pertussis morbidity and mortality may consider pertussis MI as the most efficient additional strategy beyond routine infant immunization coverage and timely administration. More epidemiologic data are required to inform policy decisions on the potential value of pertussis MI in LMICs; early analyses suggest a dose cost under \$1.00 may pose good value. Learning points: Pertussis remains endemic despite a substantial reduction in the incidence of severe pertussis in the vaccine era. Priority should be given to improving EPI programs to ensure higher and punctual coverage with DTwP. The investment case for pertussis MI in LMIC is dependent on more precise estimates of early infant mortality attributable to pertussis and achievable vaccine cost incremental to existing maternal tetanus vaccine programs.

04E. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0090

PERTUSSIS IN INCOMPLETE VACCINATED INFANTS

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Background

Pertussis, caused by *Bordetella pertussis*, is a highly contagious airway infection. Especially in infants, pertussis remains a major health concern. Despite decreasing the incidence of this disease by extensive vaccination around the world, in Ukraine pertussis has been re-emerged especially in unvaccinated and incomplete vaccinated infants.

Methods

70 infants with pertussis in the Lviv Regional Infectious Diseases Hospital were under observation. We allocated patients into 2 groups - 36 unvaccinated children – UnV (mean age - 5,64±1,38 mon) and 34 incomplete vaccinated children - InV (mean age - 6,41±0,89 mon, witch received 1 or 2 dose acellular pertussis vaccine). The selection criteria has included pertussis symptoms presents and increase serum PS/PT IgG & IgM or positive PCR. The pertussis severity has been estimated according to M.Preziosi & E.Halloran score. The final analysis has been performed on basis of 74 variants including epidemiologic data, clinical data, and results of laboratory investigations.

Results

The paroxysmal stage duration in UnV infants was 12,38 (9,87-14,91) days and in InV infants - 6,93 (5,38-8,48) days ($p<0,05$). Apnea were observed in 19,44% UnV infants and 11,23% InV infants. The WBC count at the admission was 17,90 (14,36-21,60) $\times 10^9/l$, absolute lymphocyte count was 12,10 (9,18-15,02) $\times 10^9/l$ in UnV infants compare to 14,68 (12,37-16,98) $\times 10^9/l$ ($p<0,05$) and 9,81 (7,98-11,63) $\times 10^9/l$ ($p<0,05$) in InV infants. Hyperleukocytosis ($WBC>20,0 \times 10^9/l$) was in 25% UnV children and 11,7% InV infants. The average length of stay in hospitals UnV infants was 22,27 (14,22-30,33) days and 13,62 (9,44-20,53) days InV infants ($p<0,05$)

Conclusions

Partially vaccinated children are at high risk for pertussis but even partial pertussis vaccination is effective in reducing the severity of illness and decrease length of stay infants in hospital.

Clinical Trial Registration (Please input N/A if not registered)

N/A

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0091

DIFFERENTIAL FEATURES OF CULTURE PROVEN CHOLERA AND NON-SHIGELLA WATERY DIARRHEA IN UNDER-FIVE CHILDREN IN BANGLADESH

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Background

Features that can differentiate cholera from other types of watery-diarrhea have practical implications.

Methods

A secondary analysis was carried out on data collected between 1996-2014 in a hospital-based Diarrheal-Disease-Surveillance-System (DDSS) in the Dhaka-Hospital of icddr,b. The DDSS enrolls a 2% systematic sample, regardless of age, sex, and diarrhea-severity. The data included information on socio-demographic factors, environmental history, clinical characteristics, immunization status, feeding practices, the etiology of diarrhea and antimicrobial resistance patterns for bacterial enteric pathogens.

Results

After cleaning of data, relevant information of 20,936 children aged <5-years were available and they comprised the study sample. Of them, from 2264 children, different species of *Vibrio cholerae* were isolated and they were considered as cases. From the rest 18,672 children, viruses or other bacteria (other than all species of shigella) or no organism were isolated from the stool or rectal swab culture and they were considered as controls. In both the groups 40% were female children. In the cholera cases and non-cholera-non-shigella controls the mean±SD age was 27.1±16.6 and 13.2±9.8 months ($p<0.001$), admitted with 1.7±2.9 and 2.5±3.6 days of diarrhea, and case fatality rate was 0 and 25 (0.1%) ($p<0.001$) respectively. Variables found significantly associated with cholera in bi-variate analysis were used in backward logistic regression analysis, which revealed that dehydration on admission (OR:2.180, $p=0.007$), non-breast fed status of the child (OR:3.325, $p<0.001$), mother's employment (OR:1.972, $p=0.032$), illiterate-mother (OR:1.936, $p=0.014$), father's monthly income ≤10,000 taka (OR:5.307, $p=0.003$), rotavirus-negative cases (OR:3.241, $p=0.001$), and need of intravenous fluid (OR:10.432, $p<0.001$) were the associated/ risk factors of cholera.

Conclusions

The above mentioned associated or risk factors of cholera in under-five children would help to differentiate cholera from non-cholera-non-shigella watery diarrhea who usually does not need any antibiotic.

Clinical Trial Registration (Please input N/A if not registered)

N/A

22A. SCIENCE: OTHER

ESP17-0092

MORBIDITIES AND CHANGES IN ANTHROPOMETRICS IN MODERATELY-ACUTE MALNOURISHED CHILDREN AGED LESS THAN FIVE YEARS IN A NUTRITION FOLLOW UP UNIT OVER THREE MONTHS IN BANGLADESH

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Background

Approximately 2 million under 5 years old (U-5) children are suffering from moderate acute malnutrition (MAM) [weight for length or height z-score (WLZ or WHZ) <-2 to -3], with a 3-4 times odds (risk) of death compared to their well nourished peers. This study aimed to identify the changes of nutritional status and morbidities of MAM children in a nutrition follow up unit (NFU) over 3 months.

Methods

icddr,b in Dhaka, Bangladesh runs an NFU for U-5 MAM children. At the time of discharge from hospital children having MAM are requested for follow up visits at the NFU after 14 days and then monthly until the children attain the WHZ \geq -2. During each NFU visit the children receive health and nutrition education; monthly ration of multivitamin drop, zinc and iron supplementation; and treatment of ailment if any. Over the seven years study period 254 MAM children completed their NFU visits for at least three months and they comprised our study sample.

Results

Their mean age at 1st follow up visit was 14 months and their average weight gain was 900 grams over three months follow up period, which reflected a significant changes in WLZ or WHZ (from -2.42 to -1.73), WAZ (-4.58 to -4.04), MUAC (107 to 117 mm), but no improvement was observed in length or height for age z-score (-4.84 to -4.84). Cough and cold was the most common (14-21%) co-morbidities followed by respiratory tract infection or pneumonia (13-14%) recorded during the NFU visits.

Conclusions

NFU visits improve the nutritional status of the MAM children in a significant level. However, improvement of stunting status needs further effort.

Clinical Trial Registration (Please input N/A if not registered)

N/A

06A. SCIENCE: DIAGNOSIS THROUGH HOST RESPONSE

ESP17-0093

B CELL RECEPTOR REPERTOIRE SEQUENCING IN PATIENTS WITH PRIMARY IMMUNODEFICIENCY

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Background

Many patients with primary immunodeficiencies (PIDs) manifest with a B-cell defect, often resulting in an increased risk of infection. However, the severity of the underlying immunodeficiency is difficult to determine using existing diagnostic approaches. Functional properties of B-cells are determined by their B-cell receptor (BCR). In PID patients, BCR diversification is often diminished, leading to an altered BCR repertoire. Here, we explore high-throughput BCR repertoire sequencing (RepSeq) for the assessment of B-cell function in PID patients.

Methods

B-cells were first isolated from peripheral blood samples followed by cell lysis and RNA extraction. BCR heavy chain transcripts were PCR amplified using an in-house protocol that captures all isotypes, and incorporates unique molecular identifiers to allow subsequent removal of PCR artefacts. Samples were multiplexed, and sequenced on the Illumina MiSeq. Data analysis was performed using published and in-house scripts.

Results

So far, we have analysed 12 participants - 5 healthy controls and 7 PID patients (Hyper-IgE syndrome (STAT3), ADA2 deficiency [n=2], PIK3R1 deficiency, CVID, Hypogammaglobulinemia [n=2]). Compared with controls, patient BCR repertoires generally presented more naïve B-cell characteristics, including longer CDR3 lengths and lower V-gene mutation rates. Combining several BCR repertoire properties using principal component analysis showed healthy control and patient samples to form distinct clusters. While the healthy controls clustered densely, the patients showed more variability. Interestingly, patients with a more severe phenotype localised further away from healthy control samples compared with less affected patients.

Conclusions

We demonstrate that BCR repertoires from PID patients are different from those of healthy controls. BCR RepSeq properties seem to correlate with the severity of the underlying immunodeficiency suggesting that this method allows to assess global B-cell function, and may therefore aid in the treatment decision process.

Clinical Trial Registration (Please input N/A if not registered)

NCT02735824

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0094

VACUUM-ASSISTED CLOSURE FOR THE TREATMENT OF DEEP STERNAL WOUND INFECTIONS AFTER PEDIATRIC CARDIAC SURGERY

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Background

Sternal wound infection (SWI) is a significant complication following cardiac surgery. Treatment traditionally consists of wound revision, debridement and antibiotic therapy. Surgery is reserved for severe cases of deep SWI (DSWI).

The use of vacuum-assisted closure (VAC) in the treatment of SWI has increased in the last decade, but most data to date refer to adults.

Our aim was to evaluate the use of VAC for the treatment of DSWI in infants and children.

Methods

The database of our pediatric tertiary medical center was retrospectively reviewed for all children with DSWI who were treated with VAC in 2003-2016. Clinical, laboratory, treatment, and outcome data were collected from the medical files.

Results

Out of 5600 patients operated during the study period, 50 patients (0.9%) developed DSWI and were treated with VAC. Average age and weight were 23 months (range 1 week-14 years) and 8.5 kg (range 2-43 kg) respectively. DSWIs appeared an average of 13 days postoperatively (range 3–100 days), VAC was applied after an average of 16 days postoperatively (range 5-103 days) for an average duration of 10 days (range 1-21 days).

The main bacterial pathogen was methicillin-susceptible *Staphylococcus aureus* (n=33, 66%). Accordingly, most of the patients were treated with cloxacillin, for an average of 36 days (range 9-189 days). There were no statistically significant differences in patients' characteristics between patients with (n=28 cases, 56%) and without bacteremia, and between young infants (age <3 months, n=18, 36%) and older patients.

All cases except one (contact dermatitis) were uneventful. In 9 patients the wounds were closed surgically after VAC removal and only 2 patients required pectoralis flap, none since 2005.

Conclusions

VAC is an effective and safe means of treating DSWIs after pediatric cardiac surgery.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0096

CLINICAL AND MICROBIOLOGICAL DIFFERENCES BETWEEN PVL (+) AND PVL (-) COMMUNITY-ACQUIRED STAPHYLOCOCCUS AUREUS ACUTE OSTEOMYELITIS AND SEPTIC ARTHRITIS IN COSTA RICAN CHILDREN

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Background

Panton-Valentine Leukocidin (PVL) is an important virulence factor produced by *S.aureus*. Few Latin American studies have analyzed its importance in pediatric septic arthritis (SA) and acute osteomyelitis (AO). We aimed to compare clinical and microbiological findings among Costa Rican children with SA and AO caused by PVL(+) and PVL(-) *S.aureus*.

Methods

Retrospective and prospective study of pts <13 yrs of age with a discharge diagnosis of SA and/or AO caused by *S.aureus* from Oct-1-2013 to Sep-30-2016, who were hospitalized at the only national tertiary referral teaching hospital of Costa Rica. Student's test, X² analysis and Epistat were used for statistical analysis. All analyses were 2-tailed, and P<0.05 was considered statistically significant.

Results

Among 57 pts with a discharge diagnosis of *S.aureus* SA and/or AO, molecular analysis was performed in 50 (87.7%) pts. Overall rate of MRSA was 62.5%. 32 isolates were PVL(+) (28 MRSA, 4 MSSA), and 18 were PVL(-) (4 MRSA, 14 MSSA; p<0,0001). Pts with PVL(+) strains had longer duration of hospitalization (mean 32d) compared to PVL(-) (mean 18d) (p <0,0001). PVL(+) pts showed significantly higher admission CRP values and WBC counts (p <0,0001 each), but did not have higher rates of positive blood cultures (78,1% vs 72,2%; p 0,63), and no difference in having anemia (46,8% vrs 33,3%; p 0,44). Pts with PVL(+) strains had lower rates of PICU admission versus PVL(-) pts (25,0 % vs 27,7% respectively; p 0.83).

Conclusions

SA and/or AO caused by *S.aureus* stains carrying PVL(+) genes were associated with longer hospitalization and higher CRP and WBC counts. This is the only study from Central America analyzing clinical and microbiological differences between PVL(+) and PVL(-) isolates in children with community-acquired *S.aureus* SA and/or AO.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-0098

A VARICELLA OUTBREAK IN PRESCHOOL CHILDREN WITH ONE-DOSE VARICELLA VACCINE RECIPIENTS, IZMIR, TURKEY

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Background

In Turkey, a single dose varicella vaccine was introduced into the National Immunization Program in 2013. Before this implementation, varicella vaccine had been available in the private sector for 15 years since 2000. We investigated a varicella outbreak in kindergartens with high varicella vaccination coverage to assess risk factors for vaccine failure and calculate vaccine effectiveness.

Methods

This study was carried out during a varicella outbreak in 3 kindergartens nursery in Izmir, Turkey, in April 1-30, 2016. Vaccination status of children was verified with immunization records and clinical presentations were collected from pediatricians. Vaccine effectiveness was calculated using the equation: $(\text{attack rates in unvaccinated children} - \text{attack rates in vaccinated children}) / \text{attack rates in unvaccinated children} \times 100\%$.

Results

A total of 124 children were enrolled in the study. Of the 124 children, 77 (62%) had received 1 dose of varicella vaccine before the outbreak. Varicella developed in 34 of 124 children during the outbreak. Among the 34 children, 18 (53%) were vaccinated children (breakthrough varicella cases). The attack rate was 23.4% among vaccinated children and 34% among unvaccinated children. The effectiveness of single-dose varicella vaccine was 33.6% against all varicella and 71.4% against moderate or severe varicella. Children vaccinated 5 or more years before the outbreak had 3.5 times the risk of disease than those who had been vaccinated more recently (OR 3.5 [95% CI, 1.08-11.5]); $p = 0.046$). Age at vaccination (<15 months vs. ≥15 months) were not associated with development of breakthrough varicella.

Conclusions

One dose of varicella vaccine does not provide enough protection to prevent outbreaks completely despite effective in prevent moderate/severe varicella. A two-dose varicella vaccine program may achieve effective control of the disease and help to prevent varicella outbreaks in Turkey.

08A. EDUCATION: HIV CURE IN CHILDREN

ESP17-0100

DETERMINATION OF REFERENCE VALUE FOR CD4+ T LYMPHOCYTES IN HEALTHY CHILDREN OF NEPAL

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Background

Baseline CD4+ T cell population count is useful in monitoring disease progression especially recovery from antiretroviral treatment. Nepal does not have reference value for CD4+ T cell count and percentage, which severely limits the prospect of prognosis in children with infections. We aim to establish the reference value of CD marker in Nepalese setting so that it becomes gold standard value

Methods

Methods: We analyzed 250 cord blood from Paropakar Maternity and Woman's Hospital Kathmandu and 1150 peripheral blood samples from different schools of Kathmandu in order to calculate the absolute count of CD T lymphocyte markers using Fluorescence-activated cell sorting methodology. Serological tests for HIV, HCV, HBV and syphilis were done using ELISA antibody tests (BIOKIT, Barcelona, Spain). The data were entered and statistical analysis was done

Results

We observed total mean absolute CD4T cell count as 1446 ± 750 cells/ μ L (median 1326, range: 415-4387 cells/ μ L). The absolute CD4T cell count in male (mean: 1487 ± 841 , median: 1215 cells/ μ L) were significantly higher than that in female (mean: 1406 ± 645 , median: 1355 cells/ μ L). The reference range for absolute CD4+ T cell count was found to be 634-4040 cells/ μ L for male children and 491-2922 cells/ μ L for female children. Significantly higher CD4+ T cell percentage in male participants (mean: $41 \pm 8\%$, median: 40%) with elevated CD4 to CD3 ratio in younger children (0.67 from cord blood Vs 0.53 from 10-14yr) compared to older ones

Conclusions

Nepal being a small country with diversity in population composition has probably diverse immune functions and alterations for specific set of infection conditions. Especially in HIV PMTCT, the observed reference value of CD4T cell in healthy children would be useful for diagnosing the progress of HAART in children with HIV. This baseline will may assist in monitoring and rescheduling the effectiveness of HAART in coming future

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0101

PREDICTORS FOR THE DIAGNOSIS OF VISCERAL LARVA MIGRANS IN CHILDREN - UPPER EGYPT

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Background

Visceral larva migrans (VLM) is a worldwide neglected disease, prevalent among children from socio-economically disadvantaged populations in temperate and tropical regions. Infections may go undiagnosed as the required diagnostic tests; serological, molecular and/or imaging examinations are expensive, which may not be affordable or available. We aimed to establish predictors useful in the diagnosis of VLM in children in Upper Egypt.

Methods

A one year cross-sectional study was conducted at Assiut University Children's Hospital and eighty-one children aged between 6 months to 13 years old (mean \pm SD 5.7 \pm 3.2 years) were eligible to our inclusion criteria, 55.6% of them were males. Socio-demographic risk factors, clinical, laboratory and imaging tests were collected.

Results

ELISA (anti-*T. canis* IgG) results were positive in 60.5%. By using the bivariate analysis, a significant association was found between seropositive ELISA and younger age less than four years (p -value < 0.0001), having underground water at their homes ($p = 0.004$), previous history of parasitic infection ($p = 0.003$) and positive liver ultrasonographic findings ($p = 0.001$). In a multivariate logistic regression model with positive and negative ELISA results as a dependent factor, younger age (< 4 years), history of parasitic infestation and positive liver ultrasonographic findings were found to be significant predictors, while no significant association with other factors was identified.

Conclusions

.Thus, clinicians should consider the positive liver ultrasonographic changes with the earlier history of parasitic infection in children under four years as predictors for VLM infection, according to which they should undergo ELISA or other tests to confirm their diagnosis.

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-0107

ADEQUACY OF VANCOMYCIN/GENTAMYCIN AS EMPIRICAL REGIMEN IN TREATMENT OF LATE ONSET SEPSIS: RETROSPECTIVE STUDY IN NEONATAL INTENSIVE CARE UNIT IN UAE

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Background

Despite the constant look out for microbial patterns and antibiotic sensitivities, neonatal sepsis still has high morbidity and mortality if not managed appropriately. The local biograms differs from region to region, and there has been a major shift of empirical antimicrobial treatment for late onset neonatal sepsis worldwide

Methods

Our study was based on positive cultures obtained from neonates admitted to our Neonatal Intensive Care Unit with the diagnosis of possible sepsis between ≥ 72 hrs and 90 days of age

Results

The most common causative organisms in our patients were Coagulase Negative Staphylococci (CONS), Staphylococcus aureus, Klebsiella pneumoniae, E.coli and Pseudomonas. Our current empirical regimen for LOS consists of Vancomycin and Gentamicin. Assessment of our regimen's adequacy revealed 100% sensitivity to Vancomycin among gram positive organisms and 95.5% sensitivity to Gentamicin among gram negative organisms. Such high sensitivity to this empirical regimen supports our choice for the time being.

Conclusions

The local biograms must be revisited from time to time to optimize empirical antibiotic choices and ensure a better quality of care for our patients.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0108

SEROPREVALENCE OF ENTEROVIRUS 71 AND COXSACKIEVIRUS A16 AMONG HEALTHY CHILDCARE IN HANGZHOU CITY

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Background

Enterovirus 71(EV71) and Coxsackievirus A16 are members of the picornaviridae family and are the major causative agents of hand foot and mouth disease(HFMD).EV71 may cause more severe neurological diseases, such as aseptic meningitis, acute flaccid paralysis, and fatal neurogenic pulmonary edema. Increasing the EV71 vaccine immunization rates is urgently needed to stop the spread of the disease; however, the adaptive immune response to EV71 infection remains unclear. The object of our study was to analyze CA16 and EV71 seroepidemiologically in the population of healthy childcare in Hangzhou city, China.

Methods

A total of 362 children(199 males and 163 females, divided into four groups,3-4, 4-5, 5-6,>6 years)between 3.34 and 6.66 years old were tested for serum IgG antibodies against CA16 and EV71 by enzyme-linked immunosorbent assay(ELISA) in 2015.

Results

The results showed that the CA16 seroprevalence was 92.54% which was significantly higher than that for EV71(26.24% seropositive, $P<0.05$). There was no significant gender-specific difference. A total of 85 individuals(23.5%)was seropositive for both viruses, 260(71.8%)showed serum IgG antibodies to at least one of two viruses. A total of 17 individuals(4.7%)revealed no antibodies. The analysis of the different age groups revealed that no significant age-specific difference in seroprevalence was observed for both CA16 and EV71.

Conclusions

The seroprevalence survey demonstrates a common spread of CA16 and EV71 among the childcare in Hangzhou, China, but a relatively high susceptibility of the childcare population to EV71.

02B. SCIENCE: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-0109

SUPERBUG OF NOSOCOMIAL INFECTION METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) AND RECENT TRENDS IN ANTIBIOTIC SUSCEPTIBILITY PATTERN

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Background

MRSA is an emerging pathogen in skin and soft tissues and most common cause of nosocomial infections. It is getting resistance to available drugs rapidly which is alarming for medical workers and researchers.

Methods

A total of 3022 samples from various anatomical sites of patients were analyzed for MRSA and 14% of these were positive for MRSA. Identification and antimicrobial sensitivity testing was performed using the CLSI 2015 guidelines. Quality is ensured by using the quality strain of *S. aureus* (ATCCR 29213). Most commonly recommended drugs were used for susceptibility testing with standard potency.

Results

MRSA is resistance to most of the drugs prescribed for the Gram positive infections. It is rapidly getting resistance against aminoglycosides, macrolides, DO and SXT. The drugs available for treatment of infection caused by MRSA include Clindamycin, Linezolid and Vancomycin. Resistance to vancomycin is being reported throughout world but in our study none of these were resistant.

Conclusions

There is the need for discovery of new antibacterial drugs or modification of existing drug to make them more effective and to initiate awareness programs about excessive and misuse of antibiotics. There should be some rule and regulation for empirical therapy after admission to hospital and before or after surgery.

Clinical Trial Registration (Please input N/A if not registered)

N/A

01C. SCIENCE: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-0110

SCREENING FOR ANTIMICROBIAL EFFECT OF ESSENTIAL OILS AND ANTIBIOGRAM AGAINST VARIOUS CLINICAL ISOLATES

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Background

The antibiotic resistance is becoming a major hurdle in the field of medicine and necessitate the discovery of novel and natural therapeutic agents. The ambition of the present study is to evaluate the potential of Essential oils (EOs) as antimicrobial agents against five clinical isolates including Gram-negative and Gram-positive.

Methods

The activity of eighteen different EOs on five clinical isolates including: Methicilin resistant Staphylococcus aureus (MRSA), klebsiella pneumonia(K. pneumonia), Staphylococcus aureus (S. aureus), Bacillus subtilis (B.subtilis) and Escherichia coli (E.coli) was investigated by well diffusion assay, minimum inhibitory concentration (MIC), time-kill assay, loss of cytoplasmic material and also bacteriostatic and bactericidal nature was determined

Results

Among all EOs black seed and lemon grass was found to be effective against almost all clinical isolates except gram negative bacterias which showed high resistance against EOs as well as different antibiotics. They also showed best results in each parameter and are found to be bactericidal

Conclusions

The current study highlights antibacterial activity of twelve out of eighteen EOs that showed spectrums at different extents. Two of twelve oils are considered the best and can be used in promotion of good health.

Clinical Trial Registration (Please input N/A if not registered)

N/A

22A. EDUCATION: OTHER

ESP17-0111

INTENTION TO VACCINATE UNIVERSALLY AGAINST VARICELLA, ROTAVIRUS GASTROENTERITIS, MENINGOCOCCAL B DISEASE AND SEASONAL INFLUENZA AMONG PARENTS IN THE NETHERLANDS: AN INTERNET SURVEY

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Background

For the decision-making process regarding introduction of new vaccines into the National Immunisation Programme (NIP), advance insight into the potential acceptance among the population is relevant. We studied the intention of Dutch parents to have their child vaccinated against four diseases not currently covered by the NIP in the Netherlands.

Methods

We invited a random sample from the national immunisation register of 1500 parents to complete an internet survey on vaccination against varicella, rotavirus gastroenteritis, meningococcal B disease, and seasonal influenza. Prediction analyses for each vaccine preventable disease were performed to determine which questionnaire statement was most informative in predicting the intention to vaccinate.

Results

The survey was completed by 491 parents (33% response). The intention to vaccinate was highest for meningococcal B disease (83% positive intention), followed by rotavirus gastroenteritis (38%), and lowest for varicella (28% positive intention) and seasonal influenza (15% positive intention). Main drivers of the intention to vaccinate were the perceived importance of vaccination against this particular disease (attitude) and the perception of whether or not the disease is severe enough to vaccinate against (risk perception).

Conclusions

This study showed that the intention to accept additional vaccinations against infectious diseases in the NIP varied by disease and was mainly related to the perceived severity of the disease. The results of this study can be informative in the decision-making process whether or not to introduce new vaccines into the NIP.

06B. SCIENCE: DIAGNOSTIC TOOLS

ESP17-0113

USAGE OF A RAPID DIAGNOSTIC TEST FOR MALARIA IN CHILDREN

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Background

Malaria is still the primary cause of pediatric deaths. The efficient management of pediatric malaria requires its rapid and accurate diagnosis. To overcome this drawback, rapid diagnostic tests have been developed, but their evaluation before commercialization is never exhaustive. The aim of this study was to evaluate the performance of a rapid diagnostic test (SD BIOLINE Malaria Antigen P.f/Pan) to diagnose malaria in children.

Methods

Testing was conducted on children aged between 6 months and 15 years who were examined at the children hospital as a result of fever. Enrollment took place from April to October 2014. All children presenting with fever were sampled (3ml of blood). These blood samples were tested for malaria using microscopy on a thick blood smear and by a rapid diagnostic test (RDT) SD Bioline *Malariae AntigenP.f/Pan*

Results

A total of 249 children were enrolled in this study. Malaria presence as determined by microscopy and by RDT was 30.9 % and 58.2 % respectively. The sensitivity, specificity, positive and negative predictive values compared to microscopy were: 75; 48.8; 39, and 81.6 %. With these performances, the malaria SD Bioline rapid test does not meet the acceptability standards recommended by WHO for rapid tests (sensitivity > 95%) in children. HIV prevalence in the study population was 14.5% and HIV-malaria co_infection was 2 %.

Conclusions

The SD Bioline method should only be used in peripheral health structures that lack resources, and should be aided by clinical diagnosis.

Clinical Trial Registration (Please input N/A if not registered)

02B. SCIENCE: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-0114

URINARY BACTERIAL INFECTIONS IN LESS THAN 5 YEARS OLD CHILDREN AND HIV STATUS

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Background

Urinary tract infection (UTI) is one of the most common pediatric infections. It distresses the child, and may cause permanent kidney damage. The aim of this study was to determine the frequency of UTI in children under 5 and the resistance profile of isolated bacteria.

Methods

Children aged 2 months to 5 years were enrolled. These children were examined by a pediatrician to whom cyto-bacteriological urine exam was prescribed. Urine samples were collected and analyzed for UTI using conventional techniques.

Results

A total of 120 children aged 1 to 4 were recruited. Seven children presented with UTI with the following bacteria isolated: Four cases of *Klebsiella pneumonia*, two of *Escherichia coli*, one of *Proteus mirabilis*. Twenty five children were HIV infected and no association was found between HIV and UTI. This may be due to the fact that these HIV infected children are under cotrimoxazole. From the isolated bacteria, regarding their sensitivity to antibiotics (11 of Betalactams family), all the strains were resistant to at least one antibiotic. All the *Klebsiella pneumonia* strains were resistant to at least 4 antibiotics and up to 10 out of the 11 antibiotics tested. The three *Escherichia coli* strains were resistant to atleast 4 and most 8 out the 11 antibiotics tested. *Proteus mirabilis* was sensitive to all except one antibiotic. Given the ratio of positive culture to the total number of exams prescribed, we suggest using urine deep stick test for screening before prescribing the full laboratory culture work.

Conclusions

The deep stick should be the first choice to screen children when UTI is suspected, being cheaper than the full urinalysis culture-microscopy. Susceptibility to the most commonly used antimicrobials should always be done.

Clinical Trial Registration (Please input N/A if not registered)

22A. EDUCATION: OTHER

ESP17-0115

THROMBOCYTOPENIA IN KAWASAKI DISEASE INCREASES THE RISK OF DEVELOPING CORONARY INJURY

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Title of Case(s)

3 patients with atypical Kawasaki disease and thrombocytopenia that developed coronary injury

Background

In the acute phase of Kawasaki Disease (KD) platelets are usually normal or elevated. The presence of thrombocytopenia has been reported in 1-2%. It's postulated that it may be secondary to consumption coagulopathy, since high mean platelet volumes (MPV) have been found. There is evidence that such thrombocytopenia may be associated with an increased risk of developing coronary affection. Of the 165 cases of KD treated in a third-level hospital during a 13-year-period (2002-2015), we describe 3 (1.8%) who presented thrombocytopenia (<100000 / μ L).

Case Presentation Summary

All 3 cases developed atypical KD (3-4/6 clinical criteria and 3/6 analytical criteria). Two were infants (5 and 13-months-old) referred from other hospitals and the other was a 7-year-old child. They were initially treated as suspected sepsis with liver failure, toxic shock syndrome (both without microbiological confirmation), and hemophagocytic syndrome (without full criteria). They presented thrombocytopenia (14,000-66,000-77,000/ μ L), with high mean platelet volume (9.9-11.1-13.4fL) and low prothrombin activity in two cases (9 and 54%).

Treatment with immunoglobulins, corticosteroids and ASA was started at 6-12-16 days after fever onset, and blood analyses were normalized afterwards.

The echocardiographic findings were definitive for the diagnosis, beginning 14-19-60 days after fever resolution. The coronary affection consisted of coronary ectasias in all cases and aneurysms in both infants, 3.8mm and 8.9mm. In the last controls, echocardiographic improvement (disappearance of ectasia and reduction of aneurysm size) was observed in all cases.

Learning Points/Discussion

KD can present with thrombocytopenia and consumption coagulopathy in a low percentage of cases. This finding may delay the diagnosis and be a risk factor for the development of coronary artery disease. The presence of thrombocytopenia in children with suspected atypical KD should not delay treatment.

17A. EDUCATION: REFUGEE CHILDREN

ESP17-0116

CONTROL OF AN HEPATITIS A OUTBREAK IN A REFUGEE CAMP IN GREECE

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Title of Case(s)

Control of an Hepatitis A outbreak (32 cases) in a Refugee Camp in Greece

Background

A refugee's lifestyle challenging because of the lack of basic requirements such as shelter, food, and water. Thus, refugees can be highly susceptible to infections.

On 4th July 2016 started an outbreak of HAV in the refugee camp. The diagnosis was based on the clinic and biochemical parameters with positive IgM anti-HAV. In the first 6 cases the closest rings were vaccinated. After the 7th case appeared, and due to the vaccines shortage in Europe, we decided to vaccinate all the population 1-15 y.o. on the 3rd August.

Case Presentation Summary

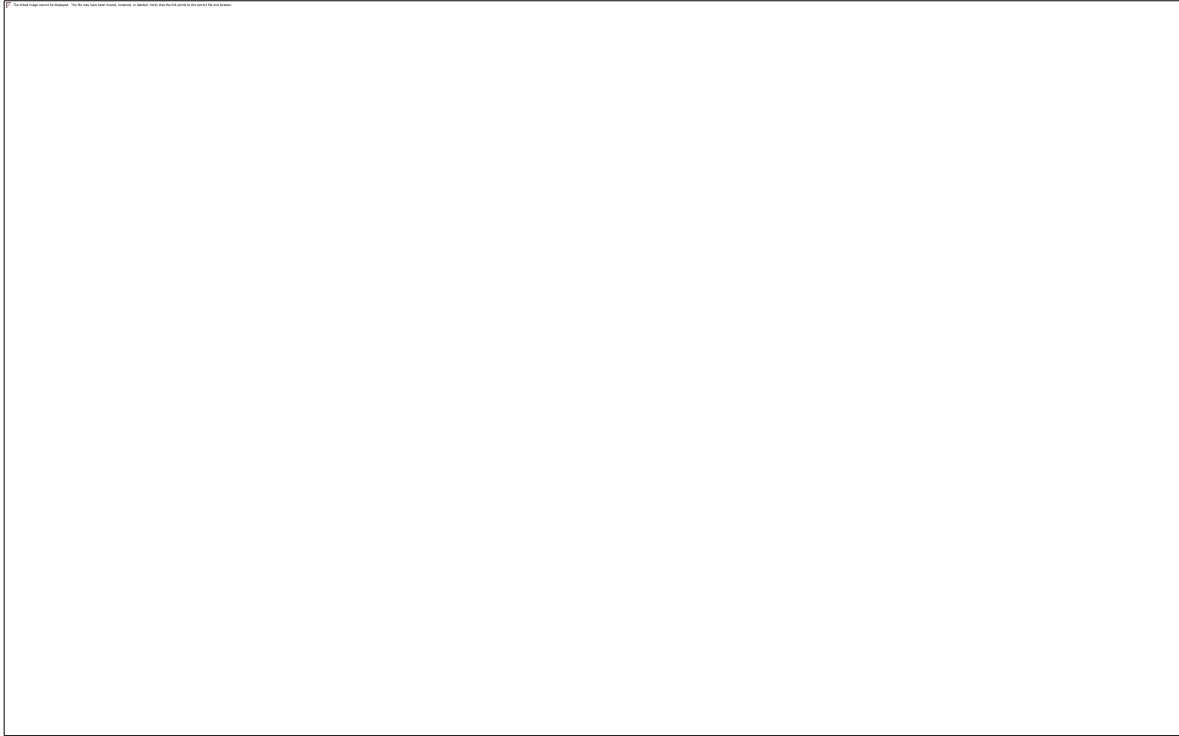
32 people developed the infection, 1-28 y.o. (mean 10.16 (SD 7.3)). There were 515 people in the settlement (54% Syrian Kurds, 46% Syrian Arabs), thus 215 children 1-15 y.o.

150 children 2-10 y.o. went to the "camp school", where 15 were primary infected, attack rate = 10%. They had 106 closed contacts, 9 of them developed the infection, secondary attack rate by age: <15 y.o. (7/68) = 10.3%. Between 16-40 y.o. (2/31) = 6.5%.

Studying the attack rate according to the seroprevalence of the population described in the literature: <5 years = 25.7%. 6-10 years = 41.7%

Secondary attack rate: <5 years (50% immune) = 21.4%, 6-10 years (88% immune) = 53%, 11-15 years (96% immune) = 270%. 16-40 years (97% immune) = 225%. Of the 32 cases, 7 were Kurds and 25 Arabs. OR for being Kurd and develop the disease is 0.391 (IC 0.202-0.757), Arabic 1.772 (IC 1.437-2.185).

By 30th August the last case was diagnosed, 8 weeks after the outbreak started. No more cases appeared 25 days after the immunization



Learning Points/Discussion

Active vaccination to children 1-15y.o. was a successful component in disrupting HAV transmission in this refugee population.

The secondary attack rate in adults during this epidemic indicates that Syria belonged to countries with low HAV endemic status, which confers an added risk to the refugee population, especially young adults, due to the possibility of new outbreaks.

20B. EDUCATION: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-0117

ANTIPYRETIC USE FOLLOWING VACCINATION IN THE GAMBIA: PERCEPTIONS AND PRACTISE

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Background

Fever is a common adverse event following vaccinations. Measures to control this adverse event in the context of routine paediatric vaccinations include prophylactic or post vaccination antipyretics. Some studies have however documented poorer immune responses to vaccination in infants who receive such antipyretics. Some antipyretics are known to have anti-inflammatory effects and may therefore modify the reactions to vaccinations such as fever, redness, swelling, and pain around injection sites. Differences induced in reactions following such antipyretic use may be important in comparing clinical trial results and interpreting results of trials where immunogenicity is an end point.

Methods

We assessed the attitude, perceptions and practices related to the use of antipyretics in routine immunization clinics in The Gambia during the final early infant series vaccination visit (4 month visit).

Results

Thirty nine vaccinators and 585 infant caregivers (ICG) were interviewed. 11% and 50% of the vaccinators felt that children required antipyretics pre and post vaccination, respectively, and 28% would routinely ask parents to administer antipyretics post vaccination. 29% of ICG would sometimes (7%) or always (22%) give antipyretics prior to vaccination, while 86% would give them sometimes (25%) or always (61%) post vaccination. 53% reported concern about side effects of vaccination.

Conclusions

Adverse events following vaccination are a concern to vaccinators and ICG, and many administer antipyretics before or after vaccination. Further studies are required to explore the effects of such antipyretic use as the routine administration of antipyretics prior to and following vaccination may modify the immune response and reactions to vaccinations.

06B. SCIENCE: DIAGNOSTIC TOOLS

ESP17-0118

EVALUATION OF SERUM AMYLOID A IN HAND FOOT AND MOUTH DISEASE

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Background

To explore the clinical application value of serum amyloid protein (SAA) , interleukin-6 (IL-6) , C-reactive protein (CRP) and SAA/CRP in early diagnosis of hand-foot-mouth disease (HFMD) , and to provide the experimental base for HFMD diagnosis and treatment.

Methods

The serum levels of SAA, IL-6, CRP in 873 children with HFMD, in whom were admitted in Hangzhou Children's Hospital from April to December in 2015 and 487 healthy children (healthy control group) were detected. And diagnostic efficacies of these indicators were evaluated by using Mann-Whitney *U* test and receiver operating characteristic (ROC) curve.

Results

the levels of SAA ($Z=-29.023, P=0.000$) , IL-6 ($Z=-15.052, P=0.000$) , CRP ($Z=-23.793, P=0.000$) and SAA/CRP ($Z=-24.792, P=0.000$) in HFMD group were significantly higher than those in healthy control group, and all had statistically significant differences. The area under the ROC curve of SAA (0.980) was higher than that of SAA/CRP ratio (0.911) , CRP (0.899) , and IL-6 (0.752) for diagnosing HFMD. When the diagnostic criteria of SAA was set at 10.30 mg/L according the ROC curve , its sensitivity was 91.6% and specificity was 96.6% were higher than that of SAA/CRP, CRP and IL-6. Compared with SAA/CRP ratio, CRP and IL-6, SAA had better diagnostic efficacy.

Conclusions

SAA can predict and screening HFMD early, combined with IL-6, CRP, SAA/CRP can improve the efficiency in the early diagnosing of HFMD, which is worthy of clinical application widely.

Clinical Trial Registration (Please input N/A if not registered)

N/A

13B. SCIENCE: INVASIVE VIRAL INFECTIONS

ESP17-0119

OBSERVATION ON INTESTINAL DETOXIFICATION TIME OF HFMD INDUCED BY COXSACKIEVIRUS A6

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Background

To observe the intestinal detoxification of hand, food and mouth disease (HFMD) induced by coxsackievirus A6 (CA6), so as to provide scientific reference for prevention and control measures or management time limit on CA6-infected HFMD.

Methods

18 cases of HFMD children were followed up, who were confirmed as CA6 infection in laboratory. Stool specimen was collected every 4-7 days, and fluorescence PCR was used for virus nucleic acid detection until the stool viral nucleic acids of infected children turned to be negative. The intestinal detoxification time of CA6-infected HFMD was compared with that of EV71-infected HFMD and CA16-infected HFMD.

Results

The medium stool viral load was 25×10^5 copies/ml (55×10^4 copies/mL, 9×10^6 copies/ml) in CA6-infected children, and there were no statistically significant differences in viral load of pharyngeal swab specimens ($Z = -1.158$, $P > 0.05$). Stool virus nucleic acid turned to negative at an average of 20 (15.50~22.25) d in CA6-infected children. Positive rates of stool virus nucleic acid were 77.8%, 27.8% and 0 in children in second, third and fifth week. There were statistically significant differences between CA6 group and EV71 group in distribution of positive rate of stool virus nucleic acid ($\chi^2 = 13.894$, $P < 0.05$); while there were statistically significant differences between CA6 group and CA16 group in distribution of positive rate of stool virus nucleic acid ($\chi^2 = 10.698$, $P < 0.05$). There were no correlation between stool viral load and time of stool nucleic acid turning negative in CA6-infected children ($P > 0.05$).

Conclusions

It is suggested that different prevention and control measures or management time limit should be put forward for HFMD caused by different enterovirus, so as to better control the prevalence of HFMD and save certain social and medical resources.

Clinical Trial Registration (Please input N/A if not registered)

N/A

04E. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0123

THE ROLE OF THYMUS AND ACTIVATION REGULATED CHEMOKINE IN CHILDREN WITH ASTHMA CAUSED BY MYCOPLASMA PNEUMONIAE INFECTION

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Background

Study on the role of thymus activation regulated chemokine (TARC) in children with asthma caused by *Mycoplasma pneumoniae* (MP) infection.

Methods

According to the clinical diagnosis of *Mycoplasma pneumoniae* infection and serum MP-IgM or MP-DNA copy number of induced sputum, children with pneumonia is divided into MP infection group and non MP infection group after admission to hospital. The level of TARC in serum was measured by using enzyme linked immunosorbent assay(ELISA). The difference of serum TARC level was analyzed between the MP infection group and non MP infection group, and between acute stage and convalescence stage.

Results

The proportion of asthma attack was higher than that of non MP infection group and the results were statistically insignificant ($X^2=4.44$, $P=0.04$). The level of TARC in MP infected group was higher than that in non MP group and the results were statistically insignificant ($t=4.01$, $P=0.00$). Children with asthma had higher level of TARC in MP infection group than Non MP infection group that regardless of whether an asthma attack, and the results were statistically insignificant ($t=2.62$, $P=0.01$; $t=5.21$, $P=0.00$). Children without asthma had higher level of TARC in MP infection group than Non MP infection group that without asthma attack, and the results were statistically insignificant ($t=2.07$, $P=0.05$). In the MP infection group and non MP infection group, the level of TARC in children with asthma was higher than that of children without asthma, and the results were statistically insignificant ($t=2.11$, $P=0.04$; $t=2.03$, $P=0.05$). The level of TARC in children with asthma attack in convalescence stage was lower than that of children in acute stage, and the results were statistically insignificant ($t=4.69$, $P=0.00$; $t=2.37$, $P=0.05$).

Conclusions

TARC play an important role in MP infection induced asthma attacks.

Clinical Trial Registration (Please input N/A if not registered)

N/A

06B. SCIENCE: DIAGNOSTIC TOOLS

ESP17-0124

PROLONGED POSITIVE RESULT OF BORDETELLA PERTUSSIS REAL-TIME PCR AFTER APPROPRIATE ANTIBIOTIC THERAPY

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Background

Laboratory diagnosis of *Bordetella pertussis* infection is based on bacterial culture test, serological test and nucleic acid amplification test. The nucleic acid amplification method has been reported to have high sensitivity and long-term positive persistence. In this study, using the *IS481* real-time PCR assay, we assessed the persistence of *B. pertussis* DNA in serial nasopharyngeal specimens from children treated for *B. pertussis*.

Methods

SUBJECT: We examined pediatric patients who suspected a whooping cough from clinical symptoms and who was positive for real-time PCR targeting *IS481*. **METHODS:** The posterior nasal cavities of the subject children were scraped with a flocced swab before the start of treatment, one week and two weeks after the start of treatment. DNA was extracted from the swab using QIAamp DNA Blood Mini Kit (Qiagen®). Based on past reports, real-time PCR was performed using primer and probe designed to detect *IS481* of *B. pertussis*.

Results

41 cases were positive for *IS481* by real-time PCR at Juntendo University related facilities since September 2014. Mean Ct value of 41 cases was 28.8. Clarithromycin (15mg/kg/d, at least 7days) was administered in all 41 cases. In 21 of 41 cases, the second samples were taken. The real-time PCR was positive (mean Ct value: 31) in 15 of the 21 cases at the second time (6th to 9th day from the first examination). In one patient who could take the fourth sample, *IS481* was detected on 21th day and Ct value was 32.

Conclusions

Real-time PCR targeting *IS481* of *B. pertussis* will be positive for up to 21 days after appropriate antibiotic therapy.

Clinical Trial Registration (Please input N/A if not registered)

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-0125

ANALYSIS OF ANTIBIOTIC USAGE IN A GERMAN UNIVERSITY CHILDREN'S HOSPITAL: IDENTIFYING INTERVENTIONS FOR AN OPTIMIZED ANTIBIOTIC THERAPY

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Background

The establishment of antibiotic stewardship results in a reduction of antibiotic usage, cost saving, and better patient outcome. However, effective implementation strategies for these programs in pediatric patients are missing. The objective of our study was to analyze the current status of antibiotic usage in a university children's hospital to identify specific interventions for an optimized antibiotic therapy.

Methods

From 01.08.16 to 30.11.16 we collected data of all pediatric (without oncological) and pediatric surgical patients on normal wards receiving systemic antibiotics. Antibiotics, duration of therapy, and dosage were recorded. Patients with tuberculosis (2), cystic fibrosis (4), long-term patients (2), and patients receiving only prophylactic antibiotics (unless it was perioperative prophylaxis – PAP) were excluded. Overall 331 (190 pediatric, 141 pediatric surgical) patients with 2308 “Days of Therapy” and 1653 “Length of Therapy” were analyzed.

Results

19% of pediatric and 30% of surgical inpatients received at least one antibiotic.

Of all antibiotics administered 48% were cephalosporines (with 20% ceftazidime) and 31% penicillins (Fig. 1).

Main indications were UTI (20%) and CAP (14%) in pediatrics, PAP in surgical patients (63%).

Regarding PAPs 48% were given longer than 24 hours and in 17% the indication was not documented.

Initial therapy for CAP with ampicillin according to guidelines was used in only 9 of 28 patients (32%).

Intravenous cefuroxime dosages for children ≥ 12 months ranged from 30 to 150 mg/kg/d.

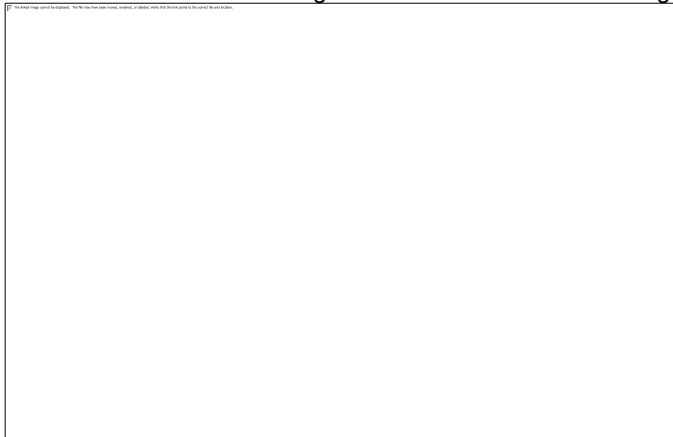


Fig. 1: Antibiotic usage

Conclusions

Our data provide a basis to develop antibiotic stewardship interventions and indicate that choice of antibiotic and dosage requires improvement. A lack of guideline adherence and the preference for cephalosporins, especially ceftazidime, should be targeted by antibiotic stewardship interventions. Local guidelines with specific recommendations for the most common infections would improve antibiotic prescribing.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0126

DYNAMICS OF PNEUMOCOCCAL COLONIZATION IN DAY-CARE CENTRE ATTENDEES OVER THE COURSE OF ONE YEAR - INCLUDING THE EVALUATION OF THE 13-VALENT CONJUGATE VACCINATION

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Background

In the pre-vaccine era, the causative pathogens of bacterial meningitis were Hib (70%) and Pneumococcus (20%). In November 2010, with financial support from the government, the Hib and PCV7 vaccinations were started. These vaccinations were subsequently added to the national immunization programme in April 2013. In November 2013, PCV7 was replaced by PCV13. Vaccination coverage with Hib and PCV13 is very high in Japan.

Methods

To evaluate pneumococcus along with the impact of immunization in infants under the age of one attending day-care centres in the city of Osaka. Nasopharyngeal cultures of 43 healthy infants were taken at five day-care centres over the course of one year. Research was conducted in order to determine colonization rates, serotypes and the impact of the vaccines on colonization.

Results

1. At the start of the year, pneumococcus was detected in 25/43 (58%) of the infants. At the end of the study, colonization rates were between 70 and 90%. 2. The colonization rate of PCV13 serotypes was only 4% in all pneumococci. 3. The most prevalent non-PCV serotype in our study was 15A. The largest portion of this serotype (97.5%) was penicillin non-susceptible. 4. Invasive Hib or pneumococcal infections were not observed in these infants.

Conclusions

The colonization rates of pneumococcus increased in infants attending day-care. At one year of age, PCV13 serotypes were not detected among those fully vaccinated. It is common to leave a child under the age of 1 in a day-care centre in Japan. On the basis of these facts, it is important to administer additional fourth-time vaccination to infants as soon as they turn one year of age.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0128

CLINICAL AND EPIDEMIOLOGIC CHARACTERISTICS OF ACUTE RESPIRATORY VIRAL INFECTION WITH CROUPY PRESENTATION IN WONJU CITY, SOUTH KOREA

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Background

The purpose of this study is to find out the clinical and epidemiologic characteristics of etiology-proven acute respiratory viral infection which presented with croup symptoms such as hoarseness, barking cough, and/or respiratory difficulty.

Methods

This study included all etiology-proven acute respiratory viral infection which presented as croup from May 1, 2013 to Dec. 31, 2016 in Wonju Severance Christian hospital. To determine the viral pathogens associated with childhood croup, a total of 327 nasopharyngeal swab samples were examined using multiplex PCR method for 14 species of respiratory viruses(UTM, Copan Diagnostics, Italy). The medical records of multiplex PCR proven croup cases were retrospectively reviewed. Severity scoring was used for defining severe croup cases.

Results

Among 327 cases of croup patients, viral etiology was detected in 302 cases. Parainfluenza type 1(25.1%) was the most common pathogen, followed by Parainfluenza type 2(17.2%), and Influenza A/B(13.5%). The most common etiology differed according to age: Parainfluenza type 1(25.8%) in the patients younger than 4 years of age, Influenza A/B(22.2%) in the patients equal to or older than 4 years. Parainfluenza type 1(30.1%) was the most common etiology in spring, summer and autumn, while Influenza A/B(33.3%) and RSV A/B(24.9%) were the most commonly detected during winter. Compared to other etiologies(46.5%), Parainfluenza type 2(76.2%) showed higher percentage of severe cases(76.2%)($p < 0.05$). Parainfluenza type 2 was prevalent between 1 to 3 years of age(28.6%), and in autumn(18.4%).

Conclusions

Croup caused by Influenza is common in winter season and in the age older than 4 years. Parainfluenza type 2, which is prevalent in 1 to 3 years old and in autumn, causes severe croup more frequently.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0133

GLOBAL AND REGIONAL ESTIMATES OF THE INCIDENCE OF CHILDHOOD BACTERIAL MENINGITIS CAUSED BY HAEMOPHILUS INFLUENZAE TYPE B

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Background

To estimate global and regional incidence of childhood bacterial meningitis that is attributable to *Haemophilus influenzae* type b (Hib) before the widespread introduction of Hib vaccination in low- and middle-income countries (LMIC).

Methods

We conducted a systematic review for the period January 1st 1980 to December 31st 2010 to identify all studies on the etiology-specific incidence of bacterial meningitis in children. We categorized the studies by six World Health Organization (WHO) regions. We used random effects meta-analysis to derive estimates of the incidence and case-fatality rates for meningitis caused by Hib both globally and within WHO regions.

Results

We found 98 studies that met the inclusion criteria. The estimated global incidence of Hib meningitis per 100,000 child-years (cy) was 17.38 (95% confidence interval (CI) 15.86-18.90), with case-fatality rate of 12% (95% confidence interval (CI) 9-15%). The incidence per 100 000 cy was highest in the African region – 26.69 (CI 19.86-33.51), followed by Western Pacific region with 23.06 (16.23-29.89), the American region with 20.52 (17.07-23.98), Eastern Mediterranean region with 19.40 (9.38-29.43), South-East Asian region with 14.14 (5.97-22.31) and Europe with 12.96 (9.76-16.16). The case-fatality rate was also highest in the African region with 26% (CI 20-32%), while in other regions it ranged between 3% and 10%.

Conclusions

Our study showed that there is now sufficient evidence to generate improved etiology-specific estimates of the global and regional incidence of childhood bacterial meningitis attributable to Hib. These estimates should serve as the starting point in future assessments of the impact that Hib vaccination achieved in reducing the burden of meningitis in LMIC.

Systematic Review Registration (Please input N/A if not registered)

N/A

08A. EDUCATION: HIV CURE IN CHILDREN

ESP17-0134

EFFICACY OF VIRAL SUPPRESSION AMONG CHILDREN RECEIVING TRIPLE ANTIRETROVIRAL TREATMENT IN RURAL KENYA

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Background

In children infected with HIV, antiretroviral therapy aims at providing long term viral suppression and it requires maximal efficacy and minimal toxicity. Routine viral load monitoring for children on ART is recommended to determine the suppression status in order to optimize the treatment options. Globally, the epidemiological control target aims at achieving over 90% Viral suppression among HIV infected persons on anti-retroviral treatment. The goal of the intervention was to measure viral suppression among age and treatment cohorts for the purpose of informing treatment opportunities in Kenya.

Methods

Retrospective review of the children's viral load tests done between 1 January and 31 December 2015 was done. Data was extracted from the National viral load platform, a central database managed by National AIDS and STI control Program. Children below 15 years were considered for review and were considered suppressed where the Viral load was below 1000 copies/ml

Results

During the period, 3864 children on ART received viral load test where 3009 (77.8%) were suppressed and 856 (22.2%) were not suppressed. 1994 (51.8%) were female and 1870 (48.2%) male. The median age suppressed children was 5 years (IQR 4-6), while that of those not suppressed was 5 (IQR 3 – 11). The median duration since start of ART among children not suppressed was 49 months (IQR 25 – 81), while the median duration of ART among suppressed children was 36 months (IQR 12 – 60). Female and children under the age of 5 years were most suppressed (81.2%) while children above the age of 11 years were least suppressed (63.8%).

Conclusions

From the results, there were differences in Viral suppression noted by age and duration of ART and particularly treatment need to be optimized by age

05D. SCIENCE: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0136

ZIKA VIRUS INFECTION AND THE RISK OF MICROCEPHALY IN SAUDI ARABIA: A RESEARCH PROJECT

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Background

Zika virus(ZIKV) is an arthropod-borne virus in the genus of *Flavivirus*. Since identification of ZIKV infection in Brazil in May, 2015, the virus has spread throughout the Americas. Its emergence in the Americas has coincided with a steep increase in patients developing Guillain-Barré syndrome and congenital microcephaly. Saudi Arabia is a country that carries the potential risk of infection because of the presence of *Aedes* species and gathering of people from infected countries during Hajj and Umra seasons.

This research aims to study the frequency of ZIKV infection among the Microcephaly newborn baby and their mother's, and to examine the association of ZIKV infection with microcephaly.in addition the study will assess the knowledge of mothers on ZIKV infection.

Methods

A hospital-based cross-sectional study will be conducted in Riyadh city, Saudi Arabia during 2017. All deliveries with microcephaly at Riyadh Prince Sultan Military Medical City and King Khaled hospital will be eligible. The data will be collected using a valid structured questionnaire where the main study variables include: i) Microcephaly at birth defined as head circumference at least 2 SD smaller than the mean for age and sex, and ii) ZIKV infection which will be diagnosed by RT-PCR and IgM. Appropriate statistical analyses will be done including multivariate logistic regression analysis.

Results

The study results are expected to fill the gap in Saudi literature about microcephaly and help to settle the global debates around the association of ZIKV with microcephaly.

Conclusions

As part of the WHO Zika virus research agenda, this research is expected to add in the literature about ZIKV infection and its association with congenital microcephaly, particularly of unknown etiology.

Clinical Trial Registration (Please input N/A if not registered)

NONE

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0137

HEALTH STATUS OF CHILDREN BORN TO MOTHERS WITH TUBERCULOUS INFECTION

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Background

Incidence of tuberculosis in Ukraine is the highest in reproductive age. That's why the problem of newborn's health delivered by mothers with tuberculosis is extremely important.

Methods

Totally we have examined 142 newborns: 70 from mothers with active tuberculosis (I group), 38 from mothers with inactive tuberculosis (II group) and 34 from mothers with active tuberculosis that developed within 1 year after delivery (III group). Control group was formed with 71 newborns from healthy mothers.

Results

In groups I and III body mass was significantly lower than in control. In 12,8 % neonates from the group I body mass was less than 2500 g. that is 4 times more frequent finding than in all other groups. Congenital malformations detected in 3 cases in group I and 1 in group III. Premature delivery was observed in 28% cases in group I. In this group we have observed asphyxia at birth (15,4 %), damage of central nervous system (19,2%), neonates hypotrophy (34,6%) In group II it was observed respectively in 4%, 4,7% i 20%.

In 89 children the observation was extended till the age 7 years. Local forms of tuberculosis were observed in 2 children from group I and 1 from group III. Within 3 years infected children were observed in 30% cases in group I and 15,8% in in group III. At the age of 7 the numbers were 36,6% in group I, 10,5% in group II and 26,3 % in group III.

Conclusions

Children born to mothers with tuberculosis has higher risk of tuberculosis especially if mothers had active tuberculosis at the time of pregnancy and delivery.

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-0138

THE EMERGENCE OF MULTIDRUG-RESISTANT (MDR) SHIGELLA SPECIES IN NORTHWEST OF IRAN

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Background

The aim of this study was to determine the antimicrobial resistance patterns of *Shigella* species isolated from Northwest of Iran.

Methods

This study was conducted in the Tabriz Pediatric Hospital, the only pediatrics' referral Educational-Health Care Center in northwest of Iran. The stool specimens were collected from suspected children with diarrhea and were cultured on Selenite-F Broth, Xylose lysine deoxycholate agar and Salmonella-Shigella agar. The cultured media were incubated at 37 °C for 24-48 h and suspected colonies were further examined by conventional biochemical and serological tests. The antimicrobial susceptibility of the isolates was tested using Kirby-Bauer disc diffusion methodology according to the CLSI standards. *Escherichia coli* ATCC 25922 was used as a control for antibiotic susceptibility determination.

Results

The most frequently isolated species included *S. flexneri* followed by *S. sonnei*, *S. boydii* and *S. dysenteriae*. Our results indicated significantly increasing in antimicrobial resistance of the isolates especially to ceftizoxime, chloramphenicol, and amikacin. Moreover, the mostly of the isolated *Shigella* species were identified as multidrug resistant.

Conclusions

These results showed the high increase in antibiotic resistance of *Shigella* species in northwest of Iran which indicate more need for antibiotic stewardships.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-0145

ROTAVIRUS INFECTION (RVI) VACCINATION – THE FIRST STEPS TO REDUCE INCIDENCE RATE IN RUSSIA

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Background

RVI in the Krasnoyarsk region constitutes 88.0% of etiologically confirmed intestinal infections (IIs). Since 2007, the incidence rate of RVI has increased by 11.5 times, primary affecting pediatric population, with the ratio of 97.4% in 2015. These suggested that preventive measures for RVI are to be introduced.

To evaluate the effect of the regional immunization program of children (Achinsk, Krasnoyarsk region) with pentavalent rotavirus vaccine (PVRVV) (Merck, Sharp & Dohme Corp., USA, LP-001865 dated 10/01/2012).

Methods

1,267 children were vaccinated with PVRVV (80.0% of the newborn cohort) in July 2015-June 2016: 1 dose – 1267; 2 doses – 918; 3 doses – 815. PVRVV was given both separately and along with other vaccines of the Russian National Immunization Calendar (NIC), except for BCG/BCG-m. The immunization effect was evaluated in January-September in 2015 and in 2016: reduction of IIs hospitalizations among 0-3 years old cohort, reduction of IIs outpatient visits among pediatric and adult patients.

Results

We have observed the safety and tolerability of PVRVV (overall rate of adverse events constituted 2.3%), the possibility of combination with other vaccines of the NIC, absence of side effects with self-administration, reduction of IIs hospitalizations in 0-1 years old group of vaccinated by 3.8 times, as well as among children 1–3 years old, who are not subject to vaccination, by 5.3 times; reduction of IIs outpatient visits both among pediatric and adult population.

Conclusions

Our study confirms numerous global observations of the fact that the RVI vaccination is one of the best ways to control the RVI incidence rate, thereby improving the socio-economic population well-being through preservation of life and health in children.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0146

TRANSFUSION-ACQUIRED BABESIOSIS IN AN IMMUNOCOMPROMISED HOST

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Title of Case(s)

Transfusion-Acquired Babesiosis in an Immunocompromised Host

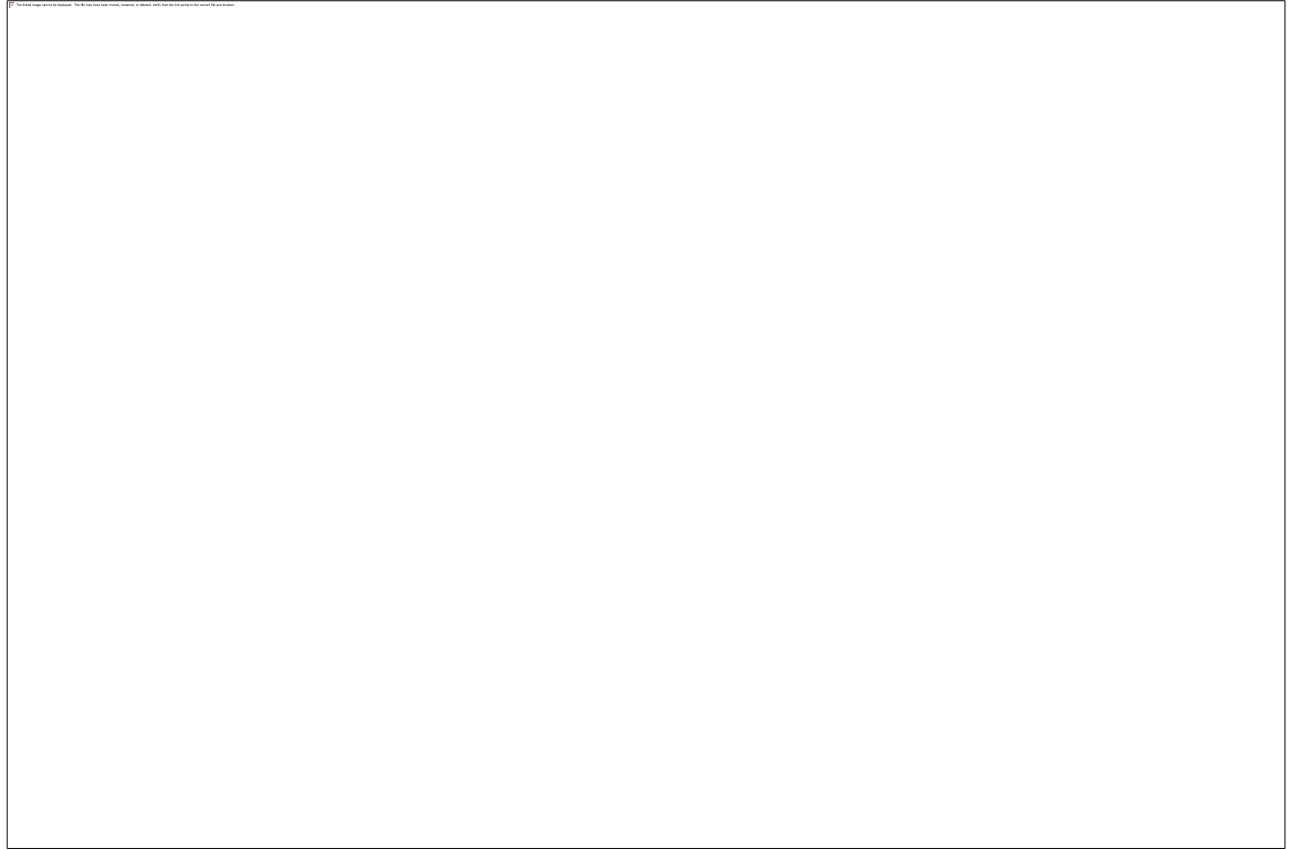
Background

Babesia microti is the most common transfusion-acquired pathogen in the United States. Despite this, routine blood screening is not performed, even in endemic regions. Human babesiosis presents as a spectrum of syndromes ranging from asymptomatic infection to fatal disease. It may cause severe infection in immunocompromised hosts, particularly those with B-cell defects.

Case Presentation Summary

A 17-year-old female with complex congenital heart disease and resultant heart failure requiring ventricular assist device placement, was admitted with a 1 month history of worsening cytopenias and a 1 week history of fevers with associated chills. She was broadly sensitized to HLA antigens, having received multiple blood transfusions in the past. Both IVIg and rituximab were administered in the months preceding admission, in an attempt to desensitize her prior to an anticipated transplantation. Daily blood cultures and viral PCR diagnostic testing were unrevealing for an infectious etiology. On day 12 of fever, a blood parasite smear revealed intraerythrocytic ring forms concerning for babesiosis (Image 1), confirmed by PCR as *Babesia microti*. Dual therapy with atovaquone and azithromycin was initiated and her repeat smear 4 days later resulted as negative. She was monitored with serial PCRs, which remained positive until week 7 of therapy, after which she received a further 1.5 weeks of treatment. Approximately 7 months after her diagnosis of babesiosis, she underwent successful heart

transplantation, without recurrence to date.



Learning Points/Discussion

- Transfusion-acquired babesiosis is associated with a more severe course of disease in immunocompromised hosts.
- The potential benefits of B-cell depleting therapies such as rituximab need to balance with the risks of known iatrogenic immune compromise.
- Prolonged courses of therapy are often required to clear babesiosis in immunocompromised patients.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0147

DENGUE ASSOCIATED HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS

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Title of Case(s)

Dengue-Associated Hemophagocytic Lymphohistiocytosis

Background

Acquired haemophagocytic lymphohistiocytosis (HLH) is multisystem disorder in which an uncontrolled immune response results in hyperinflammation. While often associated with malignancy or autoimmune conditions, infectious triggers are common in children, with Dengue being increasingly recognized in endemic regions. Due to its potentially fatal outcome, early diagnosis of HLH is essential for successful treatment.

Case Presentation Summary

A 4 year old previously healthy girl presented with 6 days of fever and fatigue, with onset of symptoms while she was returning to the US from India. Approximately 3 days before admission, she developed abdominal pain and vomiting. On arrival to the hospital, she was febrile and ill-appearing, with hepatosplenomegaly and a diffuse erythematous macular rash. Laboratory evaluation was notable for pancytopenia, transaminitis and hyperferritinemia. Malaria testing was negative, as was blood culture for *Salmonella typhi*. Although the fever in Dengue typically resolves after 5 days, she remained febrile, despite treatment with broad-spectrum antibiotics. On day 9 of fever, with persistently elevated ferritin 9690 (*ref range 20-70 ng/mL*) and hypofibrinogenemia 123 (*ref range 172-471mg/dL*) she underwent bone marrow biopsy that confirmed hemophagocytosis. After consultation with Oncology she was started on IV dexamethasone, with rapid resolution of symptoms. Dengue type 3 was detected by PCR, serologies also later returned positive. Her genetic evaluation for primary HLH

returned as negative.



Learning Points/Discussion

- Acquired HLH is often caused by infections in children, with Dengue being increasingly recognized in those living in the tropics or returning from endemic regions.
- This case highlights many clinical features that should heighten suspicion for HLH in a patient with Dengue, including prolonged fever, hepatosplenomegaly and transaminitis.
- Physicians should be aware of this important association to ensure timely diagnosis and prompt initiation of treatment.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0150

SUCCESSFUL TRANSCATHETER ARTERIAL ANTIMICROBIAL THERAPY FOR REFRACTORY LIVER ABSCESS IN CHRONIC GRANULOMATOUS DISEASE (CGD)

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Title of Case(s)

Successful Transcatheter Arterial Antimicrobial Therapy for Refractory Liver Abscess in Chronic Granulomatous Disease (CGD)

Background

Chronic Granulomatous Disease (CGD) is one of primary immunodeficiency disorders. Patients frequently have recurrent infections. Hepatic abscess is usually refractory. Treatment options include surgery, percutaneous drainage, and systemic steroid administration. Although surgical intervention is standard treatment, some patients have to choose non-surgical options. We report the first successful case of transcatheter arterial antimicrobial therapy for refractory liver abscess in CGD.

Case Presentation Summary

A 21 year-old Japanese man diagnosed with CGD presented with fever and right upper quadrant pain for 4 days. Computed tomography (CT) revealed a 9-cm liver abscess. No culture was taken due to the lack of fluid lesion. He was treated with oral trimethoprim/sulfamethoxazole, intravenous ceftazidime, and fluconazole for 7 weeks. However, his radiographic findings did not subside with recurrent liver abscess 8 months later. The patient and his family requested transcatheter arterial antimicrobial therapy. We moved catheter through hepatic artery, and confirmed developed A4 branch. Then, we administered antimicrobials into right hepatic artery and A4 branch. After several series of transcatheter arterial piperacillin/tazobactam, fluconazole, and methylprednisolone therapy once a week, the mass lesion subsided substantially. He has not had any exacerbation clinically nor radiologically for more than a year.

Learning Points/Discussion

The antimicrobial concentration can be high enough to suppress hepatic abscess refractory to intravenous antimicrobial therapy by transcatheter arterial antimicrobial therapy with few side effects. As limitations of this case, we could not assess antimicrobial appropriateness due to lack of microorganism confirmation in addition to patient's burden of multiple angiography. In conclusion, transcatheter arterial antimicrobial therapy can be one of treatment options for refractory hepatic abscess especially for those who are not candidate of surgical interventions.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0151

CLINICAL OUTCOMES IN HIV INFECTED CHILDREN ON ANTIRETROVIRAL TREATMENT AT GERTRUDE'S CHILDREN'S HOSPITAL COMPREHENSIVE CARE CLINIC OVER A 12 YEAR PERIOD.

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Background

Morbidity and mortality from paediatric HIV/AIDS has seen a dramatic decline in the decade. According to the UNAIDS 2016 report, the incidence of new infections fell by 50% between 2010 and 2015 while the number of children accessing antiretroviral treatment rose by a similar figure. The retrospective study will examine data on clinical, treatment and mortality outcomes as well as trends over a 12 year period in a HIV care clinic serving a low resourced population we hope to gain valuable insights to guide care and treatment and inform future research needs.

Methods

Data will be collected on all patients aged 0-19 years who commenced treatment between 1st June 2005 and 30th June 2016 at Gertrude's Children's Hospital Comprehensive care clinic. Parameters to be studied will be: PMTCT option received, clinical progression of HIV infection, mortality, retention in care, orphanhood and treatment regimen switches.

Analysis of data will be done and the significant correlations between between variables presented.

Results

Discussion of results and comparison with other studies will be done.

Conclusions

conclusions will finally be drawn based on the study findings and comparison with previous research.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0153

PLASMODIASIS AND ANEMIA AMONG CHILDREN BETWEEN 0 -6 MONTHS IN HEALTH CENTER IN IGBESA IN ADO ODO LOCAL GOVERNMENT OGUN STATE. SOUTH WEST, NIGERIA

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Title of Case(s)

Several factors contribute to anemia in children in African countries but Malaria remains the number one risk factor. Prompt treatment of malaria can reduce the malaria burden while effective control is being advocated for. Anemia during childhood remains a major public health challenge especially in Africa with malaria being a major risk factor. Malaria also accounts for most hospital visits especially in children. This study aimed to determine malaria as a major cause of anemia among 0-6 months old children in a state health center in Igbesa, Ogun State, Nigeria.

Background

Two hundred and eighty four children between the ages of zero to six months, 144 males and 140 females were admitted with packed cell volume (PCV) of <30% over a 6 month period from July to December, 2014. Malaria parasite was detected through simple chromatographic test (Rapid diagnostic test). Anemia was defined as Packed Cell Volume <45%. At presentation, anemia occurred in 284[100%] of the patients admitted, 144[51%] were males and 140[49%] females, malaria parasite was positive in all the patients. Children of age 6 months had the highest prevalence of anemia which was 70[25%]; the lowest prevalence of 32[0.1%] was in 1-2 months age group. Males have significant higher risk for both malaria and anemia. Several factors contribute to anemia in children in African countries but Malaria remains the number one risk factor. Effective control measure against malaria is however advocated.

Case Presentation Summary

Several factors contribute to anemia in children in African countries but Malaria remains the number one risk factor. Effective control measure against malaria is however advocated. Prompt treatment of malaria can reduce the malaria burden while effective control is being advocated for.

Learning Points/Discussion

Effective control measure against malaria is however advocated.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0154

THE FIRST RESULTS OF MASS VACCINATION AGAINST PNEUMOCOCCAL INFECTION IN RUSSIA

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Background

Immunization against Pneumococcal Infection with the 13-valent PCV (PCV13) has started in Russia in December 2014 in a 2+1 schedule (primary immunization at 2 and 4.5 months with the booster dose at 15 months of age). For 2016 birth cohort PCV13 uptake with 2 primary doses had reached 83.5%.

Methods

The case-control study of 790 vaccinated children and 1290 matched controls (unvaccinated against pneumococcal infection). Official statistical data on morbidity and vaccine uptake in Russia was provided by the Russian Federal Statistics Service.

Results

The proportion of pneumonia as the main death cause in <1 y.o. children declined from 4.2% in 2011 to 2.8% in 2015. In comparison to the pre-PCV13 era pneumonia case-fatality rate in children decreased by 30-36% after PCV13 NIP implementation. In 2013, 2014 and 2015 pneumonia incidence per 100.000 in children <1 years of age and in children 1-2 years old was 1216, 1159, 1103, and 1444, 1430 and 1331, respectively. There is a 9.3% decline in pneumonia incidence in children <1 y.o. and 7.8% decline in children 1-2 years old.

In comparison to the control group PCV13-vaccinated children had lower incidence of pneumonia, otitis and pneumococcal meningitis (respectively 2.5, 2.2 and 5 times less than in unvaccinated children).

Conclusions

There are trends of declining infant mortality and decreasing pneumonia incidence in children early after PCV13 NIP implementation in Russia. Nevertheless, these results must be interpreted carefully, and further surveillance with multifactorial analysis should be performed for at least 4 consequent years to confirm those findings as the PCV13 NIP results.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0155

INVASIVE PNEUMOCOCCAL DISEASE IN A PEDIATRIC POPULATION WITH UNDERLYING COMORBIDITIES

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Background

Streptococcus pneumoniae is a major cause of severe and life-threatening diseases in children and particularly among individual with high-risk illnesses. We assessed the clinical and microbiological epidemiology of invasive pneumococcal disease (IPD) in patients with and without selected underlying diseases before and after PCV10 introduction in Brazil

Methods

We conducted a hospital-based surveillance study of IPD (defined as isolation of *S. pneumoniae* in sterile site) in children under 17, from 2000-2016. Base comorbidities and outcomes were information was extracted from medical records and analyzed according to pre-vaccination period (2000-2009) and post-vaccination period (2010-2016)

Results

A total of 283 IPD episodes were identified; 217 (76.6%) had clinical data for analysis: 71 (32.7%) were healthy, 146 (67.2%) had comorbidities. During pre-PCV10 period (n=230) comorbidities were seen in 66.3% of patients: chronic pulmonary disease (25.7%), congenital cardiopathy (3.2%); chronic renal disease (5.3%); diseases of the gastrointestinal tract (10.2%); chronic neurologic diseases (7%); homeless (5.9%); oncologic disease (11.2%); prematurity (9.6%). Most prevalent serotypes among those with comorbidities: 14 (37/92), 6B/D (12/92); 23F (6/92); without comorbidities: 6B/D (11/52); 14 (13/52); 5 (7/52) and 1 (5/52). ICU need was 35.7%; lethality rate was 10.6%. Along post-PCV10 period (n=53) 70.8% had comorbidities: chronic renal disease (14.3%); oncologic disease and immunosuppression (8.9% each); chronic pulmonary disease, rheumatologic disease, diseases of the gastrointestinal tract and chronic neurologic diseases (10.7% each) were more prevalent. The most prevalent serotypes among those with comorbidities were 19A and 9N (9.7% each); 8, 18C, 19F, 23B, 23F, 6A and 6B/D (6.4% each). ICU need was 37.2%; lethality rate was 12.5%.

Conclusions

Implementing programs aiming preventable risk factors and reassuring pneumococcal vaccination for high-risk population are essential to diminish the burden of invasive pneumococcal infections in such population

08C. EDUCATION: HIV/AIDS

ESP17-0159

SUCCESSFUL HIV SUPPRESSION DURING HAEMATOPOIETIC STEM CELL TRANSPLANTATION (HSCT) FOR JUVENILE MYELOMONOCYTIC LEUKAEMIA (JMML): BALANCING TOXICITY, DRUG DELIVERY, EFFICACY AND INTERACTIONS

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Title of Case(s)

Successful HIV suppression during haematopoietic stem cell transplantation (HSCT) for juvenile myelomonocytic leukaemia (JMML): balancing toxicity, drug delivery, efficacy and interactions

Background

Maintaining HIV suppression during HSCT is challenging even in adults. Potential drug-drug interactions (DDI), combined toxicities, metabolic alterations, and reduced oral tolerance/absorption require careful consideration when planning antiretroviral therapy (ART). Viral suppression is essential to avoid HIV drug resistance, while minimising impact of HIV and/or ART on transplant outcome. We report a first case of sustained HIV suppression during HSCT for JMML in a child with perinatally acquired HIV (PHIV).

Case Presentation Summary

An ex-28⁺⁵/40 boy with PHIV and previously treated congenital CMV developed JMML (monosomy 7, NRAS codon 13 mutation) at 9 months corrected gestational age (CGA). 6-MP was initiated followed by azacitidine then fludarabine/cytarabine. 10/10 matched unrelated donor HSCT with treosulphan/cyclophosphamide/melphalan/ATG conditioning was planned.

Pretransplant ART included zidovudine, lamivudine, nevirapine, abacavir. Nevirapine was switched to ritonavir-boosted lopinavir for hepatitis. Zidovudine was discontinued due to cytopenias. HIV viral load <50 copies/ml since 4 weeks CGA. ART during transplant: raltegravir 6mg/kg BD (with levels), abacavir 8mg/kg BD, lamivudine 5mg/kg BD with addition of zidovudine 160mg/m² IV BD, enfuvirtide 2mg/kg IV BD when oral route suboptimal or low raltegravir blood levels.

HIV viral load remained <50 copies/ml during and 5 months post-transplant. Although no DDI predicted, therapeutic cyclosporine levels were difficult to maintain. He remains in remission with 100% donor engraftment with no GVHD. Ongoing complications include possible fungal infection, chronic diarrhoea and deranged liver function.

Learning Points/Discussion

Multidisciplinary discussion involving pharmacy, ID, transplant, virology and oncology services is essential to plan ART during HSCT. In the absence of resistance, raltegravir/abacavir/lamivudine with IV zidovudine/enfuvirtide as required appears effective. Sustained suppression is possible despite multiple challenges.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0160

PREDICTORS OF MORTALITY IN KLEBSIELLA PNEUMONAE BLOOD STREAM INFECTION IN LEVEL III NEONATAL INTENSIVE CARE UNIT NEW DELHI

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Background

Blood Stream Infections (BSI) caused by *KLEBSIELLA PNEUMONAE (KP)* that produce extended-spectrum beta-lactamase (ESBL) are increasingly being reported in NICU settings. Prevalence in India ranges from 23-86%. However limited information is available about the effect of ESBL on the morbidity and mortality of BSI in neonates.

Objective: was to identify predictors of mortality in babies with *KP* BSI

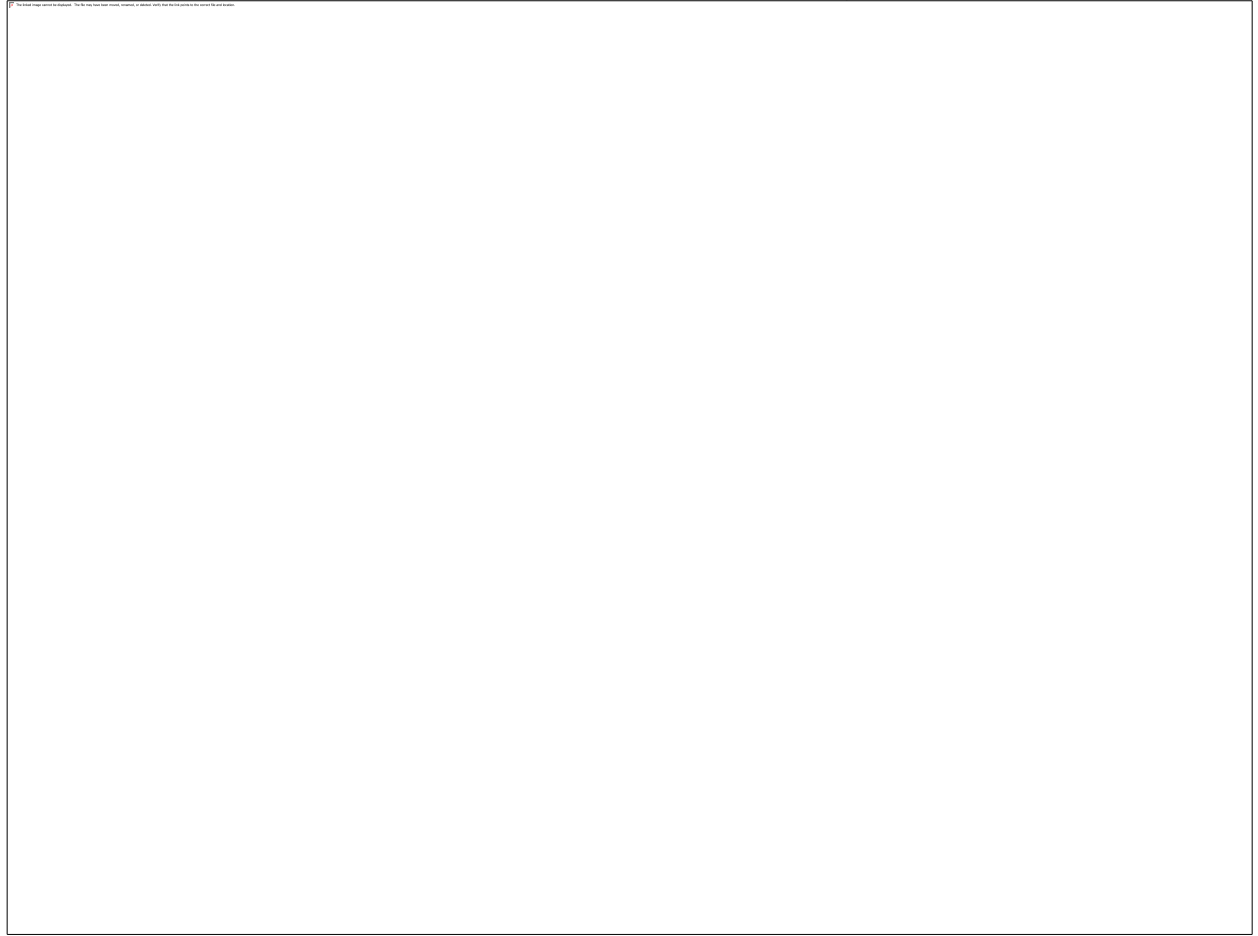
Methods

It was a Retrospective Cohort Study between January and September 2016 in a NICU in New Delhi. Study population included babies who grew *KP* on blood culture. Screening for ESBL was done as per Clinical and Laboratory Standard Institute guidelines. Data on patient demographics, medications, central catheters, nutrition, ventilator use etc. was retrieved. Risk factors were evaluated from the time of admission until the onset of BSI and then till discharge or death. Data analysis was performed using SPSS Version 20.0. Risk factors were evaluated using Univariate and Multivariate Logistic Regression Analysis. P values <.05 were taken as significant.

Results

Fifty out of total of 1849 admitted newborns developed *KP* BSI, 9 of which were by ESBL and 41 by Non-ESBL. Six out of 9 babies with ESBL *KP* and 24 out of 41 babies with Non-ESBL *KP* BSI died (p 0.65). Male gender, ventilation, ventilation duration, asphyxia, steroids use, TPN and ESBL production did not significantly influence mortality. On univariate analysis factors associated with significantly higher mortality were prematurity, low birth weight, prolonged duration of stay, surfactant and vasopressor use. Prematurity, prolonged duration of stay and

vasopressor use were found to be independent risk factors on multivariate analysis.



Conclusions

Prematurity, prolonged duration of stay and vasopressor use are independent risk factors for mortality in *KP* BSI.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0161

CHARACTERISTICS AND RISK FACTORS FOR KLEBSIELLA PNEUMONAE BLOOD STREAM INFECTION IN NEWBORNS ADMITTED IN LEVEL III NEONATAL UNIT NEW DELHI

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Background

Blood Stream Infection (BSI) contributes significantly to neonatal morbidity and mortality. The *Klebsiella Pneumoniae* (KP) is a significant cause in these babies. The data on burden of KP disease in hospitalized newborns is limited. It is perceived that Extended Spectrum Beta Lactamase (ESBL) KP is a more virulent or more serious pathogen than Non-ESBL KP. Newborns are unique in the sense that both ESBL and non ESBL BSI may have comparable morbidity and mortality

Objective: was to determine the proportion of KP infections that were ESBL and non-ESBL and to find the risk factors for ESBL KP BSI

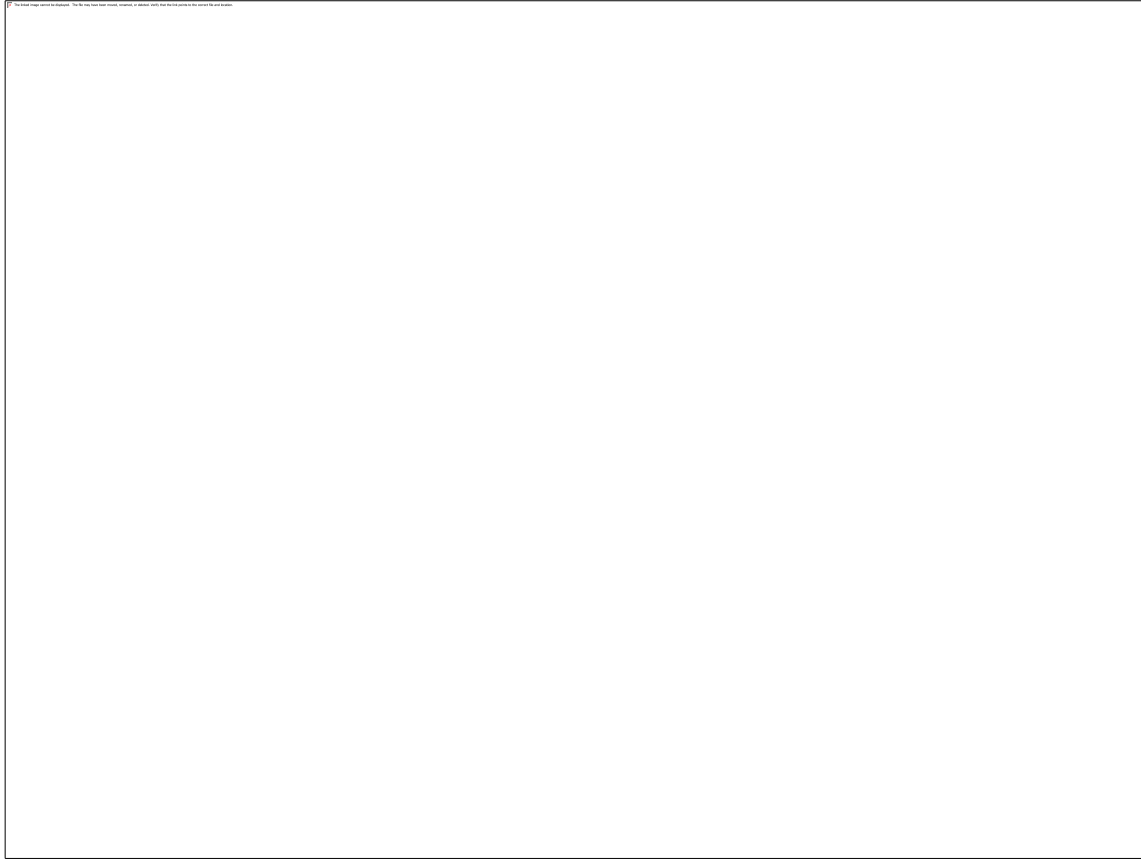
Methods

Retrospective cohort study (January to September 2016) in a NICU in New Delhi. Study population included babies who grew KP in blood culture. Screening for ESBL was done as per Clinical and Laboratory Standard Institute guidelines. Data on patient demographics, underlying diseases, medications, central catheters, nutrition, ventilator use etc. was retrieved. Data was analysed using SPSS Version 20.0. Risk factors were assessed using Univariate analysis. P values<.05 were taken as significant.

Results

Fifty out of total of 1849 admitted newborns developed KP BSI, 9 of which were by ESBL and 41 by Non-ESBL. There was no outbreak of KP BSI during the study period. Isolations of ELBS KP were uniform throughout. Examination of conditions associated with morbidity in these infants e.g. birth-weight, gestation, asphyxia, ventilation, central catheters, vasopressors, surfactant, steroid etc did not reveal any notable differences between newborns infected with ELBS or non-ELBS KP. Mortality caused by ESBLKP and non ESBLKP (6/9 v.s. 24/41 p

0.65 OR 1.42 C.I. 0.31-6.47) were comparable.



Conclusions

In non outbreak situations both type of infections (ESBL and Non-ESBL) had similar morbidity and mortality.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0162

SYSTEMIC CORTICOSTEROIDS IN THE MANAGEMENT OF ORBITAL CELLULITIS IN CHILDREN: CASE SERIES AND REVIEW OF THE LITERATURE .

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Title of Case(s)

Systemic Corticosteroids in the Management of Orbital Cellulitis in Children: Case Series and review of the literature .

Background

The most common source of orbital cellulitis is invasive ethmoidal sinusitis. Orbital cellulitis might be complicated by cavernous sinus thrombosis and abscess formation .S-CS has been proved beneficial in the treatment of acute rhino-sinusitis. Evidence about the effectiveness of S-CS therapy in orbital cellulitis in children is scarce. We present our experience in a case series of pediatric patients treated with S-CS in addition to antibiotics.

Case Presentation Summary

We retrospectively reviewed clinical files of children hospitalized in Schneider children medical center Israel with orbital cellulitis between 2007 and 2016 ,and received S-CS in addition to standard antibiotics. S-CS treatment was part of preparation for a CT scan in patients with asthma/hyper reactive airways disease or prescribed by an ENT or an ophthalmologist specialist. The data collected included: demographics (age, sex), clinical presentation, imaging and laboratory findings, treatment protocols, and outcome. Out of 32 cases with orbital cellulitis, 9 patients received at least one dose of S-CS. Seven of these 9 children, who were treated early in the course of the disease, showed rapid clinical improvement in proptosis, eye movement, edema or pain. None of the patients seemed to have any complication related to this treatment.

Learning Points/Discussion

S-CS in addition to standard antibiotics , given early in the course of treatment for orbital cellulitis, may be beneficial

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0163

MENINGITIS CAUSED BY LACTOBACILLUS RHAMNOSUS IN AN INFANT

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Title of Case(s)

Meningitis caused by *Lactobacillus rhamnosus* in an infant

Background

Lactobacillus rhamnosus is a gram-positive rod in the normal flora of the oropharynx, gastrointestinal and female genital tract that can rarely cause infections in immunocompetent pediatric patients. Herein we report a case of meningitis caused by *L. rhamnosus* in an infant.

Case Presentation Summary

A 6-week-old girl was admitted to the emergency room with complaints of fever, reduction in breastfeeding and restlessness. On admission, her physical examination revealed fever (38°C), bulging anterior fontanelle and abdominal distension. The remainder of the physical examination and her vital signs were normal. Peripheral blood culture was taken and lumbar puncture performed. Ampicillin and cefotaxime were started empirically. A lumbar puncture culture obtained on admission yielded *L. rhamnosus* susceptible to ampicillin, rifampicin and clindamycin. There was no history of probiotic usage. Control lumbar puncture was performed and became sterile. Antibiotherapy was continued for 10 days. The patient's clinical condition improved and she was discharged from the hospital without any sequelae.

Learning Points/Discussion

Lactobacillus species is usually considered commensal microorganisms of the normal flora. Although invasive disease caused by *L. rhamnosus* occurred primarily in immunocompromised patients, it should be kept in mind as an opportunistic microorganism in immunocompetent children.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0165

KAWASAKI DISEASE IN A 6-YEAR- OLD GIRL COINCIDENT WITH INFLUENZA B INFECTION

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Title of Case(s)

Kawasaki Disease in a 6-year- Old Girl coincident with Influenza B Infection

Background

Kawasaki disease (KD) is an acute systemic vasculitis of unknown etiology that predominantly affects infants and young children. Herein we report a case of KD in a 6-year-old girl coincident with influenza B infection.

Case Presentation Summary

A previously health 6-year-old girl was admitted to the emergency room with complaints of fever, sore throat and cough. On admission, her physical examination revealed bilateral non-exudative conjunctivitis, unilateral cervical lymphadenopathy, systolic murmur (3-4/6), edematous hands and feet with prominent desquamation and fever (38.3°C). Polymerase chain reaction on her nasopharyngeal aspirate was positive for influenza B. Echocardiogram showed hyperechogenicity of coronary arteries. She received intravenous immunoglobulin (IVIg) at 2 gr/kg. Oseltamivir was started and continued for 5 days. After treatment of IVIg her fever resolved, conjunctivitis and clinical condition recovered. The patient was discharged without any sequelae.

Learning Points/Discussion

Kawasaki disease is an increasing clinical challenge because of unusual, atypical clinical presentations. Because the etiology and potential contribution of infections of KD remains unclear, respiratory virus detection does not exclude the diagnosis of KD.

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-0166

NEONATAL BLOOD STREAM INFECTION AT LEVEL III NEONATAL INTENSIVE CARE UNIT NEW DELHI: ROLE OF KLEBSIELLA PNEUMONAE AND THEIR ANTIMICROBIAL SUSCEPTIBILITY

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Background

The organisms responsible for neonatal sepsis vary across geographical boundaries. Gram positive organisms are implicated as the most common cause of neonatal sepsis in developed countries. In most developing countries gram negative bacteria especially *Klebsiella Pneumoniae* (*KP*) remain the major source of infection. Increasing resistance to commonly used antibiotics is being reported in *KP* isolates making treatment extremely difficult.

Objective: was to Investigate *KP* causing Blood Stream Infection (BSI) and to find their antimicrobial susceptibility

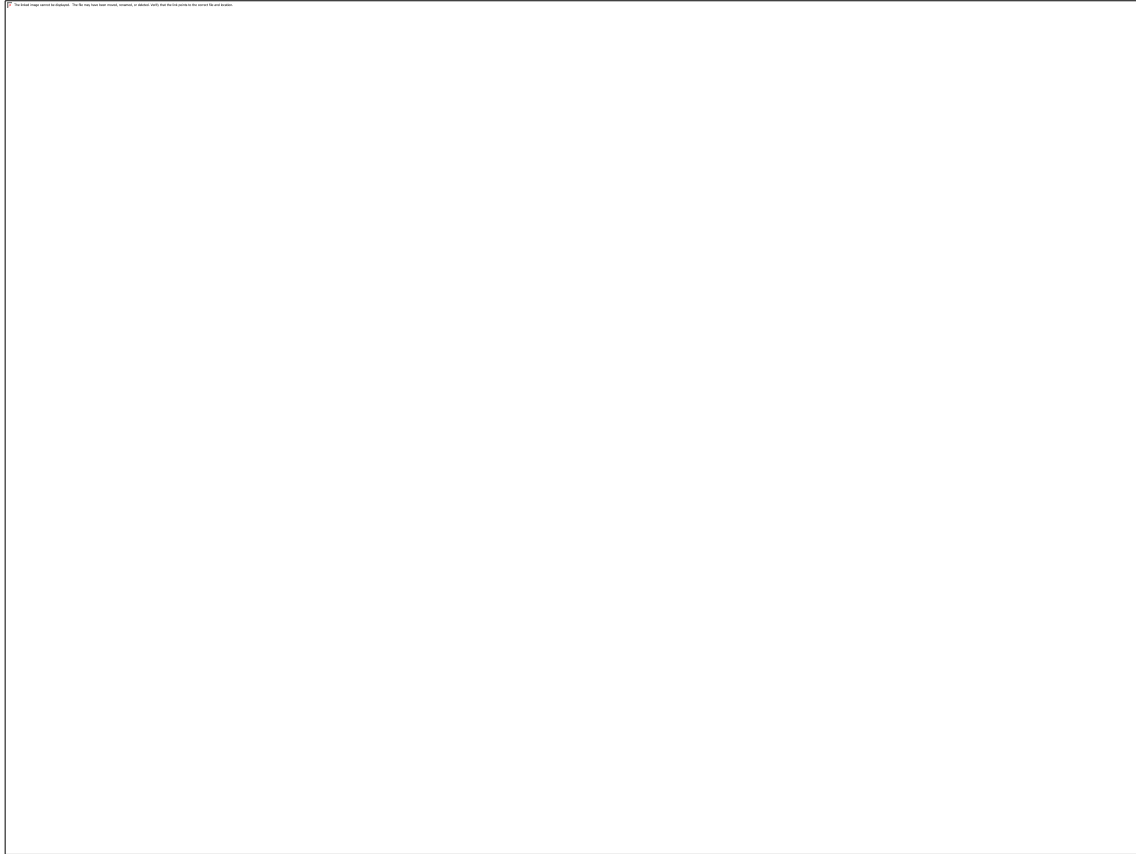
Methods

It was a Retrospective Cohort Study between January and September 2016 in a Level III Neonatal Unit New Delhi. Study population included babies who grew *KP* on blood culture. Screening for ESBL was done as per Clinical and Laboratory Standard Institute guidelines. Charts were reviewed and their antimicrobial susceptibility was retrieved. Analysis was performed using SPSS Version 20.0 and frequency distribution tabulated.

Results

Fifty out of total of 1849 admitted newborns developed *KP* BSI, 9 of which were by ESBL and 41 by Non-ESBL. Most of the *KP* isolates (Both ESBL and Non-ESBL) were resistant to amoxicillin-clavulanic acid, third generation cephalosporin, piperacillin and quinolones. ESBL *KP* isolates were also resistant to gentamycin, amikacin but showed average sensitivity to cefta+clav, carbapenems and good sensitivity to colistin. Non ESBL *KP* showed average sensitivity to gentamycin, amikacin, cefta+clavulanic acid and carbapenems and good sensitivity to

colistin.



Conclusions

Our study demonstrated high level of resistance among *KP* to commonly used antibiotics. For ESBL producing *KP* BSI carbapenems and colistin are the only options available whereas for non-ESBL *KP* aminoglycoside or cefta+clav may be considered first before shifting on to carbapenems or colistin. Local bacterial surveillance and microbial susceptibility pattern is essential to promote prudent use of antibiotics.

13B. SCIENCE: INVASIVE VIRAL INFECTIONS

ESP17-0167

INFLUENCE OF ENTEROVIRAL MENINGITIS ON TOTAL TAU, AMYLOID B1-42 AND PROTEIN S100B CONCENTRATIONS IN CSF

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Background

Recent studies report that cerebrospinal fluid (CSF) profile of Alzheimer's disease biomarkers is differently influenced by various central nervous system (CNS) infections. The mechanisms responsible for the relation remain unclear and may include axonal damage, decreased production or increased elimination of biomarkers. We aimed to evaluate concentrations of total tau (t-tau), amyloid β_{1-42} ($A\beta_{1-42}$) and protein S100B in homogenous group of children with enteroviral meningitis.

Methods

CSF t-tau, CSF $A\beta_{1-42}$, CSF S100B, CSF leucocyte count, CSF protein and serum C-reactive protein were measured in 48 children hospitalized with enteroviral meningitis (EM). The control group comprised 38 children without CNS infection who underwent lumbar puncture to rule out meningitis.

Results

CSF t-tau and $A\beta_{1-42}$ were lower in EM group (315.6 ± 283.4 vs 521.3 ± 445.4 pg/mL, $p=0.002$ and 514.3 ± 337.7 vs 1329.5 ± 805.2 pg/mL, $p<0.001$, respectively). CSF S100B did not differ between the groups. CSF total leukocyte count correlated with t-tau ($R=0.45$, $p=0.001$), but not with $A\beta_{1-42}$ and S100B. There was a correlation between the number of mononuclear cells in CSF and $A\beta_{1-42}$ ($R=0.31$, $p=0.04$). Polymorphs in CSF were correlated with t-tau ($R=0.46$, $p=0.002$). CSF S100B was inversely correlated with t-tau ($R=-0.38$, $p=0.008$) and $A\beta_{1-42}$ ($R=-0.47$, $p=0.001$).

Conclusions

Enteroviral meningitis is associated with a decrease in both t-tau and $A\beta_{1-42}$ concentrations in CSF. Relation between S100B, t-tau and $A\beta_{1-42}$ suggests that astrocyte damage may be involved in this process. However no significant increase in S100B levels in EM group indicates that enteroviral meningitis does not cause severe CNS injury.

Clinical Trial Registration (Please input N/A if not registered)

22A. SCIENCE: OTHER

ESP17-0171

MANAGEMENT OUTCOME OF NEONATAL HYPERBILIRUBINAEMIA TREATED BY PHOTOTHERAPY AND BLOOD TRANSFUSION.

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Background

Neonatal jaundice is a common problem & many a times it needs intervention like phototherapy , exchange transfusion, IV Ig administration, sun bath etc. This study is designed to asses the management outcome of neonatal hyperbilirubinaemia treated by phototherapy & small volume blood transfusion without exchange transfusion.

Methods

Study design – Cross sectional study.

Study place:-

Study done in Neonatal unit of Community Based Medical College Hospital, Mymensingh, Bangladesh

Study period :-During the period of July 2013 to July 2014.

Study population :-

37 neonates admitted with Neonatal Jaundice & with other problems.

Inclusion criteria :- With Total serum bilirubin 18mg/dl to 28 mg/dl, irrespective of gestational age , birth weight & causes of hyperbilirubinaemia.

Exclusion criteria :- Congenital obstruction or anomalies of biliary tree.

All 37 neonates were treated by intermittent conventional phototherapy plus small volume (15 ml/kg) whole blood transfusion 1-3 times in an individual patient depending upon the response. Total serum bilirubin was estimated prior to & on every day while on treatment. Meticulous physical examination was done every day on day light. Nutrition was provided offering breast milk, who were able to suck. Some were given expressed breast milk through nasogastric tube & some were on IV fluid.

Results

All patients showed remarkable improvement with in 48- 72 hours of the therapy. None of them needed exchange transfusion. Hospital stay was short. Subsequently they were followed up closely for 12 months & found no further problem.

Conclusions

Instead of exchange transfusion, intermittent phototherapy with blood transfusion may be an alternate , effective easy process to treat neonatal hyperbilirubinemia.

Clinical Trial Registration (Please input N/A if not registered)

N/A

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-0172

THE PREDICTIVE UTILITY OF PRIOR POSITIVE URINE CULTURE IN CHILDREN WITH RECURRENT URINARY TRACT INFECTIONS

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Background

Urinary tract infection (UTI) is a common pediatric disease, and recurrence of UTI is not uncommon. There is limited data regarding the predictive value of prior urine culture results, especially in children, relative to the interval between collected cultures. The purpose of this study was to examine the ability of a prior urine culture to predict the identity and susceptibility profile of a subsequent urine culture in children with recurrent UTI.

Methods

The study was performed in Shaare Zedek Medical Center, a university-affiliated general hospital. The medical records of 175 children who arrived to the emergency room or the pediatric nephrology clinic, and who had two positive urine cultures with time interval between the cultures ranging from two weeks to one year, were retrospectively reviewed. Demographic, clinical, and laboratory data were collected from the medical records of all children younger than 18 years.

Results

Organism identity was found in 50% of the cultures pairs. The time laps between cultures were not predictive of accordance. This was also applicable when taking in account the patients' demographics and underlying medical conditions, and use of prophylactic antibiotic treatment between the two cultures. The susceptibility profile of the organism growing in the second culture could not be predicted by the susceptibility profile in the first culture.

Conclusions

Prior urine culture results in children are not beneficial in predicting organism identity and susceptibility profile in a subsequent culture, and should not necessarily influence empiric treatment selection in children with recurrent UTIs. Larger prospective studies are required in order to help optimal selection of empiric treatment in these cases, and to identify specific sub-populations in which prior cultures can still predict the results of subsequent cultures.

05B. EDUCATION: PREGNANCY AND THE NEONATE

ESP17-0173

INFANT OUTCOMES OF ANTENATAL MATERNAL HEPATITIS B TREATMENT DURING PREGNANCY

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Background

EASL (2012) and AASLD (2016) had advocated treatment of maternal hepatitis B carrier mothers with high viral load of more than 2×10^5 IU/ml with antenatal viral treatment during the last trimester of pregnancy to reduce mother to child transmission.

We aim to review the outcomes of pregnancies treated with antenatal viral treatment with controls who were hepatitis Be antigen (HBeAg) positive without treatment to determine the risk of transmission, maternal viral response and also neonatal outcomes in Singapore. **Methods**

HBeAg positive mothers were prospectively recruited since 2009 with both maternal and infants outcomes collected. Group 1 are 62 HbeAg positive women who did not received any treatment. Group 2 are 5 women were on chronic hepatitis B treatment prior to pregnancy and 6 women had treatment (tenofovir 300mg) started at a mean of 32.5 weeks gestation.(Group 3)

Results

Comparing group 2 vs 1, those on treatment had no detectable viral load (<1.13 IU/ml) vs 7.30 IU/ml ($p < 0.05$). The infants had similar birth weight (3.00 kg vs 3.20 kg) and gestation (38.3 vs 39.2 weeks) and their anti-HBs titres were similar after vaccination (547 ± 385 vs 332 ± 409 IU/L). Comparing group 1 vs 3, mean maternal viral load was lower at 4.35 IU/ml prior to delivery ($p < 0.05$). The infants had similar birth weight (3.00 vs 2.88 kg), gestation (38.4 vs 37.9 weeks) and anti-HBs titres (551 ± 393 vs 533 ± 475 IU/L). 2 out of the 62 (3.2%) vs none in those treated had vertical transmission. There is no increased risk of need for operative delivery for the mothers who were treated.

Conclusions

Maternal treatment with antivirals during pregnancy is safe for both mother and child and can help to reduce vertical transmission in those mothers with high viral load

09B. EDUCATION: HOST-PATHOGEN INTERACTION

ESP17-0175

LEUKEMOID REACTION IN THE PEDIATRIC POPULATION: ETIOLOGIES AND VARIABLES ASSOCIATED WITH LEUKEMIA

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Background

The term "Leukemoid Reaction" has been used to describe a high leucocyte count, indicative of various medical conditions, mostly infectious. So far, there has not been an extensive review of a large pediatric population with leukemoid reaction at presentation, nor has the analysis of their unique characteristics and the required work-up in these children.

Methods

The study is based on data from a tertiary pediatric center, from January 2009 to December 2014. From the electronic database of the admitted patients, children with at least a single white blood count (WBC) $\geq 30,000/m^3$ were identified and consisted the study group. Demographics, clinical details and laboratory findings were extracted. A control group was established, using consecutive admittance numbers to the hospital with a leucocyte count $< 30,000/m^3$

Results

The most common diagnosis in children hospitalized with a leukemoid reaction was pneumonia, with 5.5 fold increase in pleuropneumonias compared to the control group. Patients presenting with a leukemoid reaction had a longer average hospital stay (7.5 vs. 5.5 days). In patients presenting with a WBC $> 50,000$ the prevalence of leukemia was much higher (6-fold more) than in the group with $50,000 > WBC > 30,000$ or the control group. In this group, a significant association between specific variables - platelet count, uric acid, LDH, CRP - and a diagnosis of leukemia was found.

Conclusions

A child presented with a leukemoid reaction has a greater risk of having pneumonia, especially pleuropneumonia, a longer hospital stay, and in the highest range examined (WBC $> 50,000$), a 6-fold higher risk of leukemia. Several variables were found to be significantly associated with the diagnosis of leukemia, and we believe that these factors should increase the clinical suspicion of leukemia in these children.

16A. SCIENCE: PUBLIC HEALTH: MOLECULAR EPIDEMIOLOGY AND OTHER ASPECTS

ESP17-0177

IS ACHROMOBACTER RUHLANDII ST36 THE GLOBAL DISTRIBUTED EPIDEMIC STRAIN?

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Background

Achromobacter ruhlandii ST36 (AruhST36) – Russian epidemic strain – was active spread among CF patients after the outbreak in the last 1990 in the children hospital. 38.4% of *Achromobacter spp.* infected patients have this strain, including the pairs of siblings. Constant surveillance for AruhST36 demonstrated new cases of infection without the other patients' contacts. Detailed study of this strain and searching of alternative infection sources were the aim of our investigation.

Methods

AruhST36 genome sequencing and assembling was performed by 454 Roche technology. A set of bioinformatic tools was used for genome annotation and investigation. Whole and draft genomes from GenBank were used for comparative analysis.

Results

AruhST36 genome sequence was registered with Accession Number CP017433. Huge resistome and a lot of virulent factors were revealed in AruhST36. In spite of 17.6% of strains submitted in *Achromobacter* MLST database belong to *A. ruhlandii* species there are only four incomplete genomes of this species in GenBank (LVKM01, LVKP01, LVK001, LVKN01). All strains were isolated from Brazilian CF patients and one strain had ST36. Whereas the complexity of *Achromobacter* taxonomy we analyzed all *Achromobacter* whole genomes by *Achromobacter* PubMLST server. Three strains were identified as *A. ruhlandii*: *A. xylosoxidans* strains MN001 (CP012046.1) and FDAARGOS_162 (CP014065.1), isolated from USA CF patients, and *A. denitrificans* USDA-ARS-USMARC-56712 (CP013923.1) isolated from *Bos taurus* with respiratory disease. Strain MN001 had ST36 too.

Conclusions

CF patients of three continents: Eurasia, North and South America, are infected by *A. ruhlandii* ST36, so this strain can be named the global distributed epidemic strain. The natural sources of AruhST36 need to be further investigated.

Clinical Trial Registration (Please input N/A if not registered)

N/A

04E. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0179

ORAL VITAMIN D₃ SUPPLEMENTATION FOR CHILDHOOD PNEUMONIA

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Background

Although results have been inconclusive, physicians have used Vitamin D as an adjunct therapy for pneumonia in children. We therefore evaluated the efficacy of oral vitamin D₃ as add-on therapy for children with severe pneumonia.

Methods

This is a randomized controlled, double-blind clinical trial conducted in a tertiary government hospital. We enrolled children aged 3-60 months diagnosed with severe pneumonia based on clinical classification by the Philippine Pediatric Society. Children were randomly allocated to intervention (VitD) and control groups. Both groups received the standard of care based on established local guidelines. Children in the intervention group received oral Vitamin D₃ (1000 IU) once a day for 7 days. Time elapsed for improvement of clinical outcomes were determined using temperature, respiratory rate, peripheral oxygen saturation, and hospital stay as parameters.

Results

A total of 126 patients were enrolled and allocated equally between VitD and control. Baseline characteristics were similar between two groups. Baseline serum vitamin D levels were also similar between intervention and control groups (26.9 ± 4.9 ug/dL vs 26.8 ± 5.0 ug/dL, p 0.50). VitD had shorter durations of febrile episodes compared to control (10.7 ± 11.4 h vs 22.4 ± 29.4 h, p 0.14). However, the time until improvement of respiratory rate (36.8 ± 24.8 h vs 36.0 ± 24.8 h, p 0.88) and oxygen saturation (34.6 ± 19.2 h vs 41.8 ± 26.6 h, p 0.31) were similar between VitD and control. Finally, VitD and control had similar length of hospital stay (5.40 ± 1.7 days vs 5.44 ± 1.7 days, p 0.93). No patients exhibited adverse effects towards the intervention.

Conclusions

There is insufficient evidence to support the use of oral Vitamin D₃ in severe childhood pneumonia.

Clinical Trial Registration (Please input N/A if not registered)

MMerc-T no. 2014-02

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-0180

EPIDEMIOLOGY OF CULTURE-CONFIRMED PULMONARY INFECTION OF STREPTOCOCCUS PNEUMONIAE AND NASOPHARYNGEAL CARRIAGE IN CHILDREN AND HOUSEHOLDS IN TAIWAN

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Background

The 13-valent pneumococcal vaccine (PCV13) was included in national immunization program in 2015 in Taiwan. We conducted this prospective, observational study to investigate the carriage prevalence and serotype distribution of *Streptococcus pneumoniae* in both children and their care givers during the PCV13 era in Taiwan.

Methods

From March 2014 to March 2015 a total of 500 healthy children and their households (631 adults) were enrolled from two large medical centers for nasopharyngeal carriage survey. Clinical isolates were prospectively collected from June 2012 to May 2015 at Chang Gung Memorial Hospital. Multiplex polymerase chain reaction in addition to culture were used to detect *S. pneumoniae*.

Results

In nasopharyngeal survey, *S. pneumoniae* was isolated from 12.0% of the children and 3.6% of the households. In the children cohort 23.3% of the isolates belonged to PCV13 serotypes, and the most frequently detected was 6A/B/C/D (6.7%); the most frequently detected non-vaccine serotypes were 15A/F and 15B/C (both 13.3%). In the household cohort, 21.7% belonged to PCV13 serotypes. Clinical analysis of culture-confirmed pneumococcal infection showed that pulmonary infection caused by PCV13 serotypes decreased from 83% in 2012–2013 to 44% in 2014–2015, while those by non-PCV13 serotypes increased from 17% to 56%. Among the carriage isolates, significantly higher percentage belonged to serogroup 15 compared to serogroup 19 (26.6% vs 6.66%, 2014-2015; $p=0.003$). Moreover, clinical isolates belonging to serogroup 15 were more than serogroup 19 (44.1% vs 32.3%, 2014-2015; $p=0.318$).

Conclusions

Pneumococcal carriage rates in children (12%) in PCV13 era are similar to the PCV7 era. However, serotype replacement is observed. The isolation of non-vaccine serotypes and unknown serotypes after the introduction of PCV13 in children highlights the importance of continued surveillance for emerging serotypes.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0182

LOW SENSITIVITY OF RAPID DIGNOSTIC TEST KITS FOR MALARIA IN A HIGH ENDEMICITY SETTING

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Background

Malaria remains a major cause of child morbidity and mortality, affecting over 97 countries and territories; with over 3 billion people at risk. 80% of cases and 90% of mortality occur in Sub Saharan Africa. The World Health Organization's strategy is to test all suspected cases of malaria prior to treatment; giving an important role to rapid diagnostic tests. This study determined the prevalence of malaria among children aged 2 to 10 years, and sensitivity analysis of rapid diagnostic kits in Sokoto state, Northwestern Nigeria.

Methods

The study was conducted in Sokoto, Northwestern Nigeria. It has a Sudan Savanna vegetation and local steppe climate. It is a high malaria endemicity area. The study was conducted in April, a low transmission month and included children aged 2 to 10 years. Blood was taken for rapid diagnostic test for malaria using carestart® kits, and microscopy. Sensitivity, specificity, positive and negative predictive values were calculated using SPSS version 22

Results

507 subjects were enrolled, with a prevalence of 20.1% using microscopy. Details of true and false positives are as shown in the table. Sensitivity of RDT kits used in the study was 87%, specificity was 96% with positive and negative predictive values of 85% and 97% respectively. Mean parasite density was 1,040 per microliter, with a range of 40 to 232,000 parasites per microliter.

Conclusions

There was lower than expected sensitivity of malaria RDT, kits with high specificity; in a usually high endemicity area probably due to low parasite counts which occurs seasonally. This will require a second look at the possibility of using RDTs all year round as a substitute for microscopy for diagnosis of malaria under the WHO policy particularly in Sub Saharan Africa.

03A. EDUCATION: GROUP A STREPTOCOCCUS

ESP17-0183

MENINGITIS-ASSOCIATED TOXIC SHOCK SYNDROME: A RARE PRESENTATION OF INVASIVE S. PYOGENES INFECTION

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Title of Case(s)

MENINGITIS-ASSOCIATED TOXIC SHOCK SYNDROME: A RARE PRESENTATION OF INVASIVE S. PYOGENES INFECTION

Background

Streptococcus pyogenes is a major pathogen causing skin and mucosal infection in children. Toxic shock syndrome (STSS) is a severe and potentially fatal complication following invasive GAS infections, but rarely associated with meningitis. We describe a non-fatal case of STSS following bacteremia and meningitis, resulting in permanent neurologic sequelae.

Case Presentation Summary

A previously healthy 28 months-old was admitted at the ER with a 6-days complain of fever (38.5°C), cough and coryza, then developed a scarlatiniform rash, and progressive vomiting, sleepiness and dizziness the 2 days before admission. Vomiting persisted and unilateral acute otitis media, neck stiffness and petechial rash in lower limbs was first observed, and then reduced level of consciousness subtly developed, requiring mechanical ventilation and vasoactive agents at high doses under intensive care. Severe and refractory shock established, resulting in hepatic and renal failure (which required peritoneal dialysis) and disseminated intravascular coagulation. Empirical high-doses ceftriaxone was started at the ER, and then clindamycin was added after STSS was recognized. Group A beta-hemolytic streptococci was recovered from blood and CSF – pneumococcal, *Haemophilus influenzae* type B and meningococcal invasive infection was ruled out by molecular diagnosis. Clinical stability was achieved after 8 days of treatment, despite not having received intravenous immunoglobulin. However, the patient remained with bilateral homonymous hemianopsia and peripheral facial palsy as neurologic sequelae.

Learning Points/Discussion

Despite its rarity as a causative agent of meningitis, GAS is well known associated to toxic shock syndrome, death and sequelae among survivors. Prompt diagnosis and management is crucial to reduce morbidity and mortality.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0184

DESCRIPTION OF SCHISTOSOMIASIS' DIAGNOSIS AND TREATMENT IN OUR AREA. OPTIMIZE HOSPITAL RESOURCES, PRIORITIZE PRIMARY CARE CENTERS

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Title of Case(s)

Retrospective descriptive analysis of all patients (pediatric and adults) studied for Schistosomiasis by microbiological analysis of urine, in a tertiary care centre during 5years(2010-2015)

Background

Schistosomiasis is a parasitic disease caused by the trematode *Schistosoma haematobium*. It is endemic in many countries in Africa and the Middle East. It is an emerging disease in Europe due to the increase in the number of immigrants and tourism, with a peak of age between 10 and 19 years old, male predominance. We intend to study the epidemiological characteristics of patients with schistosomiasis in our environment to optimize hospital resources.

Case Presentation Summary

Samples from a total of 80 patients were analyzed. Mean age 29.8 years old (SD 19.5). 10 samples were positive (12.5%), mean age 15.4 years old (SD 8.7), all positive samples belonged to sub-Saharan males.

In pediatric samples 23% were positive (6), and in adults, 7.5% (4). 77.5% of the studies were performed from hospital, 22.5% from the primary care center. Of the positive samples, 40% (4) came from the primary care center, 60% (6) from hospital. All patients were treated with 1 single dose of Praziquantel. 2 patients (20%), 9 and 19 years, had to repeat the treatment after 1-2 months. No differences were found between the groups studied from primary or tertiary care centers, nor seasonal predominance.

Learning Points/Discussion

Schistosomiasis mainly affects males. In our environment the suspicion is higher in adulthood, but it is more prevalent in childhood. Before a suspicion (macroscopic hematuria of several months of evolution in patients from endemic areas and sterile urine culture), the study and treatment can be performed from the primary care centre, without need for referral to hospital. The urine study should be repeated 1 month after the treatment to assure its effectiveness and re-treat if needed.

06B. SCIENCE: DIAGNOSTIC TOOLS

ESP17-0185

CYTOKINES THAT CORRELATE WITH RSV DISEASE SEVERITY IN CHILDREN: SYSTEMATIC LITERATURE REVIEW

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Background

Respiratory Syncytial Virus (RSV) infects almost all children by the age of two with clinical manifestations ranging from mild upper respiratory tract infection to severe pneumonia. Worldwide RSV is the second most common cause of death in children less than 1 year old. It is currently not possible to predict which infants will develop more severe disease. This review aimed to identify cytokines associated with RSV disease severity in children to help inform sample analysis in an ongoing study of RSV biomarkers.

Methods

A systematic search was performed on the following databases: Ovid Medline, Embase, Global health, Scopus and Web of Science in November 2016. After review, 23 articles were included from the 10820 initially screened. Two authors independently assessed the studies' quality and extracted data. The studies showed marked heterogeneity.

Results

We identified 14 cytokines in blood and 23 in respiratory samples that are associated with RSV disease severity. In blood, G-CSF, IL-13, PDGF-BB, sCD25, TLR4, VEGF and IL-4/IFN- γ ratio were positively associated; CCL-5 and MIP-1 α negatively associated and studies of IFN- γ , IL-6, IL-8, IL-10, IL-12 and TNF- α gave conflicting results. In respiratory tract samples, CXCL8, EGF, GM-CSF, HGF, IFN- α , IL-15, MIP-1 α and IL-4/IFN- γ ratio were positively associated; FGF-b, PDGF-BB and SP were negatively associated and studies of IFN- γ , IL-1b, IL-1r- α , IL-2, 4, 6, 7, 8, 10, 17, MCP-1, MIP-1b and TNF- α gave conflicting results.

Conclusions

We have highlighted numerous blood and respiratory tract cytokines that are associated with RSV disease severity. The limitations of this review depend on the heterogeneity, study design and small samples sizes of the studies included. Future studies investigating biomarkers of RSV disease severity should attempt to replicate and validate these findings.

Systematic Review Registration (Please input N/A if not registered)

N/A

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0186

PROSPECTIVE STUDY OF ORAL TREATMENT IN PEDIATRIC OSTEOARTICULAR INFECTIONS. COMPARISON WITH INTRAVENOUS TREATMENT

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Background

The approach to acute osteoarticular infections(OAI) has been modified, with initial intravenous antibiotics and quick step to oral treatment. Entirely oral treatment has not been investigated. This is a prospective study with a series of children with exclusively oral treatment and comparison with the intravenous classical group.

Methods

Prospective study(September/2015-September/2016) performed in the Spanish Network of OAI. One single center offered oral treatment to the patients. Inclusion criteria: children <4 years with diagnosis of OAI, with well appearance, oral tolerance and possibility of close, diary control as outpatients. Oral group treatment was compared with the remaining patients in the network.

Results

25 outpatients were compared with 228 hospitalized. Two patients not included started oral treatment but they were hospitalized in the first 24h due to oral intolerance. Groups were comparable in terms of age, sex, fever, ESR value, C-reactive protein, and diagnosis (osteomyelitis OM 15(60%), septic arthritis SA 7(28%), osteoarthritis OA 2(8%), spondylodiscitis SD 1(4%)). Oral group had less proportion of *Staphylococcus aureus*(8% vs 26.4%, $p=0.06$) and higher proportion of *Kingella kingae* isolation(24% vs 9%, $p=0.017$). Complications were only present in intravenous group(23.6% vs 0%, $p=0.006$), and no patients had sequelae at six months of follow-up in the oral group(6.3% in hospitalized group). Arthrocentesis was performed in all SA. Antibiotic treatment in the oral group was cephalosporins(44%), amoxicillin-clavulanate(48%) and clindamycin(8%). Two patients needed a second antibiotic because side effects and 1 case because slowly improvement. None of them needed surgery.

Conclusions

In a selected group of children with OAI, well appearing, with close follow up, with a high percentage of *K.kingae*, an initial oral treatment was established with a favorable clinical outcome. Further prospective and larger studies are warranted to confirm these results.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0189

PAEDIATRIC FOCAL INTRACRANIAL SUPPURATION: A UK SINGLE-CENTRE COHORT STUDY

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Background

Paediatric focal intracranial suppurative infections are rare but cause significant mortality and morbidity. There are no uniform guidelines regarding antibiotic treatment. This study reviewed local management in a tertiary healthcare centre in the United Kingdom and considers suggestions for empirical treatment.

Methods

A retrospective, single-centre cohort review of 95 children with focal intracranial suppurative infection admitted between January 2001 and June 2016 in Newcastle upon Tyne, United Kingdom.

Results

Estimated annual incidence was 8.79 per million. Age was bimodally distributed. Predisposing factors were identified in 90.5% of patients, most commonly sinusitis (42.1%) and meningitis (23.2%). Sinusitis was associated with older ($p < 0.001$) and meningitis with younger children ($p < 0.001$). The classic symptoms triad was present in 14.0%.

43.8% of 114 isolates were Streptococci most commonly *Streptococcus milleri* group organisms. Twelve older teenagers had anaerobes.

31 empirical antibiotic regimens were used, most often a third-generation cephalosporin plus metronidazole and amoxicillin (32.2%). 90.5% would have sufficient cover with a third generation cephalosporin plus metronidazole. 66.3% converted to oral antibiotics. Median total antibiotic treatment duration was 92 days (IQR, 59-119 days).

Mortality was 3.2%. 38.0% had short-term and 23.9% long-term neurological sequelae.

Conclusions

Paediatric focal intracranial suppurative infection has a higher regional incidence than predicted from national estimates and continues to cause significant mortality and morbidity. Optimal duration of antibiotic treatment remains unclear. Most important predisposing factors are sinusitis and meningitis. We recommend a third generation cephalosporin plus metronidazole as first-choice empirical treatment. In infants with negative anaerobic cultures metronidazole may be discontinued.

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-0192

UNILATERAL RECTUS SUPERIOR MUSCLE PARESIS IN LYME BORRELIOSIS

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Title of Case(s)

Unilateral rectus superior muscle paresis in Lyme borreliosis

Background

Lyme disease is a zoonotic disease transmitted by Ixodes ricinus tick. The disease is a growing epidemiological problem due to the geographical spread of the vector. Clinically it is manifested in three stages. The second stage becomes apparent in 10 to 15% of patients who show symptoms of central and/or peripheral nervous system infection: mononeuritis, polyradiculitis and aseptic meningitis. If the patient is given antibiotic treatment, the symptoms of the second stage of the disease are usually reversible. Here, we report a case of a patient with monoparesis of the rectus superior muscle as a part of Lyme disease.

Case Presentation Summary

A previously healthy 11-year-old girl complained of double vision when gazing upward for two months prior to admission at our pediatric ward. She reported no other symptoms and denied being bitten by a tick. Clinical status showed a right eye upper gaze paresis with the rest of the clinical status within normal limits. After a comprehensive workup, only serology testing for B.burgdorferi came up positive (IgG titer > 240, western blot +). No pleocytosis or intrathecal production of specific Borrelia burgdorferi antibodies were detected in the cerebrospinal fluid. We concluded that a peripheral mononeuritis (second stage Lyme disease) of a oculomotorius nerve branch was causing the paresis. The girl was treated with ceftriaxone for 14 days and tetracycline for additional 14 days, after which a partial regression of symptoms occurred.

Learning Points/Discussion

The girl had an isolated paresis of the upper straight muscle of the right eye as the part of the Lyme disease without the cardiovascular, musculoskeletal and central nervous systems being affected.

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-0194

PREVALENCE OF MULTI - DRUG RESISTANT (MDR), EXTENSIVELY - DRUG RESISTANT (XDR) AND PAN - DRUG RESISTANT (PDR) ACINETOBACTER ISOLATED FROM PEDIATRIC BURN PATIENTS

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Background

Burn wound infection is a major cause of morbidity and mortality in burn victims. Acinetobacter species are common organisms complicating burn wounds. Presence of MDR, XDR, PDR Acinetobacter species are serious condition in the treatment of burn affected children. As a result, we aimed to determine the prevalence of MDR, XDR, PDR Acinetobacter isolates from burn wound tissue cultures of children with burn injury

Methods

In this descriptive observational study, 116 samples were collected from burn patients and screened by culture on suitable media for isolation of Acinetobacter that were identified by culture characteristics, gram stain, and biochemical reactions.

The susceptibility of the isolates to commonly used antibiotics in pediatric burn patient was performed using the disc diffusion method.**Results**

The mean age was 5.2 ± 3.5 , with higher rate of isolation among males (60%) and in children below 7 years old (62%). Out of the 116 Acinetobacter isolates, (58) (50%) were MDR, (46) (39.6%) were XDR and (12)(10.4%) were PDR.

Conclusions

It is suggested to choose an appropriate antibiotic regiment based on the antibiogram pattern of the strains. Increased morbidity, mortality and also high treatment costs are consequences of considerable burn wound infections which should be addressed in future studies with larger sample sizes.

22A. EDUCATION: OTHER

ESP17-0196

AN EVALUATION OF DOCTORS AND MEDICAL STUDENT'S KNOWLEDGE OF PAEDIATRIC VACCINATIONS IN PAKISTAN

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Background

Doctors and medical students now have decreased exposure to Vaccine Preventable Diseases (VPDs) as successful vaccination programs have decreased their prevalence. This combined with the media's negative portrayal of vaccines may cause misconceptions and misinformation. The aim of this study was to explore doctors and student's knowledge of paediatric vaccinations, highlight knowledge gaps, identify training needs and make recommendations for future training.

Methods

Vaccination knowledge of doctors from four Pakistani hospitals and medical students from one medical school was assessed by an anonymous, self-administered, cross-sectional, internet-based survey from 14 April 2015 to 14 July 2015. Questions addressed vaccine guidelines, schedules, administration, handling, contraindications and adverse events. Analysis included comparison of proportions with the use of descriptive statistics. Ethical approval was obtained from King's College, London.

Results

In total, 103 doctors participated and the most correctly answered question was related to the ideal age of BCG vaccine administration. This was answered correctly by 98/103 (95.1%) of doctors. The most poorly answered question was whether a 5 week old baby is too young to receive primary vaccinations. This was answered incorrectly by 90/103 (87.4%).

29 medical students participated and the most correctly answered question was related to the ideal age of administration of the BCG vaccine. This was answered correctly by 29/29 (100%) students. The most poorly answered question was whether children's vaccines can be frozen and all 29 students either answered incorrectly.

Conclusions

This study identifies gaps in knowledge and the findings form a platform upon which to develop educational interventions to integrate into educational curriculum. Recommendations include developing up-to-date core competencies and tailor-made continuing medical education activities. Teaching methods used in various institutions should be analysed and compared to determine the most effective strategies.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0197

RISK ASSESSMENT FOR CANDIDA PARAPSILOSIS INFECTION IN A TERTIARY NEONATAL INTENSIVE CARE UNIT

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Background

Fungal colonization has been detected in Neonatal Intensive Care Units (NICUs), especially among preterm and very low birth weight (VLBW) neonates. *Candida* colonization precedes candidemia, the third most common cause of late onset sepsis in NICU. During last decades *Candida albicans* remains the most common species. However, there is a trend towards higher prevalence of non-*albicans* species such as *Candida parapsilosis*. The main purpose of our study was to assess the risk of *C. parapsilosis* infection in a Level 3 NICU.

Methods

A Qualitative Risk Assessment based on the WHO protocol was performed and followed by a prospective study for the evaluation of risk factors. Random Samples from selected Critical Control points were collected on four different times in a three months' period and analyzed according standard microbiological protocols for *C. parapsilosis* and *C. albicans*. Samples were collected from members of the staff (hands, nails), the environment (NICU room, doctor's office, staff resting room, equipment storage room, kitchen and toilet-room air and contact surfaces) as well as the inpatient neonates.

Results

C. parapsilosis was isolated in 8/109 (7.3%) samples, one from staff nails, six from neonates and one from equipment. A spot risk assessment Geographic Information System (GIS) map of the NICU was also developed. The risk for the presence of *C. parapsilosis* is estimated as moderate and an outbreak is likely to occur if no additional measurements are taken.

Conclusions

The risk of *C. parapsilosis* infection in this NICU is moderate which is mainly attributed to understaffing. Infection control policies and strict compliance with the WHO hand hygiene recommendations can additionally minimize the risk

22A. EDUCATION: OTHER

ESP17-0198

HUMAN HERPESVIRUS-6 ENCEPHALOPATHY IN WESTERN FIVE YEARS OLD IMMUNOCOMPETENT PATIENT

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Title of Case(s)

HHV-6 Encephalopathy in Western Five Year Old Immunocompetent Patient

Background

Human Herpes Virus 6 (HHV-6) encephalitis is a rare condition of the central nervous system caused by this pathogen. It has been described in healthy children under three years of age, especially in Japanese origin due to their genetic predisposition, and as reactivation in immunocompromised patients.

We consider this publication of interest due to the current inability to demonstrate the existence of encephalitis in healthy Western five years old children to date due to HHV-6.

Case Presentation Summary

A 5 year old female patient with no background history, initiates encephalitis clinic manifestation over the last 24 hours. During the first days of her hospitalization, despite empirical treatment with antibiotics, the evolution is unfavorable. With a positive PCR for HHV-6 in CSF, it is decided to initiate treatment with endovenous Gancyclovir. At this time, the patient presents Glasgow of 8 with complete aphasia, swinging non-coordinated lateralized movements that provoke skin excoriations, slight connection with the environment, drowsiness, bilateral osteotendinous hyperreflexia, and inferior muscle clonus. The patient was discharged after 21 days of treatment with Gancyclovir, with complete recovery.

Regarding complementary testing, multiplex PCR analysis and IgM was positive for HHV-6 during first days, and became negative five weeks after treatment. IgG was negative in both periods. All studies, including immunological and metabolic ones, were negative.

Learning Points/Discussion

It is important to consider a false positive of the PCR as a result of the chromosomic integration of the virus into the host's genetic material. This occurs when the virus acquires a quiescent state inside the nuclear DNA of cells. There is no relation with pathogenicity. Viral load is consistently high without modification throughout treatment. It can be transmitted.

22A. EDUCATION: OTHER

ESP17-0199

AN EVALUATION OF DOCTORS AND MEDICAL STUDENT'S ATTITUDES AND BELIEFS OF PAEDIATRIC VACCINATIONS IN PAKISTAN

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Background

Doctors and medical students now have decreased exposure to Vaccine Preventable Diseases (VPDs) as successful vaccination programs have decreased their prevalence. This combined with the media's negative portrayal of vaccines may cause misconceptions and misinformation. The aim of this study was to explore attitudes and beliefs of paediatric vaccinations, identify training needs and make recommendations for future training.

Methods

Vaccination attitudes of doctors from four hospitals and one medical school was assessed by an anonymous, self-administered, cross-sectional, internet-based survey from 14 April 2015 to 14 July 2015. Questions related to the importance of vaccination, effects of multiple vaccines, reasons for parental refusal and perceived barriers to vaccination. Data were analysed qualitatively for themes and sub-themes. Ethical approval was obtained from King's College, University of London.

Results

103 doctors and 29 medical students from Karachi, Pakistan participated. The majority of doctors (83/102 (81.4%)) and students (25/29 (86.2%)) agree/strongly agree that parental refusal to vaccinate is a form of neglect. 63/102 (61.8%) of doctors and 11/29 (37.9%) students disagree/strongly disagree that unvaccinated children should be excluded from school. 89/102 (87.3%) of doctors and 14/29 (48.3%) of students disagree/strongly disagree that multiple vaccines weaken a child's immune system. 51/52 (98%). 90/102 (88.2%) of doctors and 13/29 (44.8%) of students disagree/strongly disagree that natural immunity is better than vaccines.

Conclusions

This study identifies attitudes towards children's vaccines and the findings form a platform upon which to develop interventions to integrate in educational curriculum. Recommendations include developing up-to-date core competencies and increasing student's practical exposure in vaccination clinics. Continuing medical education should be tailor-made to suit individual departments and teaching methods used in various institutions should be analysed and compared to determine the most effective strategies.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0201

GERMAN PEDIATRICIANS FOLLOW RECOMMENDATIONS ON VARICELLA VACCINATION

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Background

In Germany, 1-dose vaccination against varicella was recommended by the Standing Committee on Vaccination (STIKO) since 2004 for children aged 11-14 months and a second dose since 2009 at age 15-23 months. In 2011, the former preference for the quadrivalent vaccine against measles, mumps, rubella and varicella (MMRV) was changed to separate 1st-dose vaccines (MMR and V). We investigated the effect of this recommendation on countrywide varicella and measles vaccination coverage (VC).

Methods

We calculated 1st- and 2nd-dose varicella and measles VC in birth cohorts 2008-2014 at age 12, 24, 36, 48 months until December 2015, and the proportion of monovalent among all 1st-dose varicella vaccines, based on claims data of physicians for statutory health insured persons (~85% of the population).

Results

For children born 2008, varicella 1-dose VC was 50/85/89/90% at age 12/24/36/48 months and 1/62/76/80% for 2 doses. For children born 2014/2013/2012/2011, 1-dose VC was 56/89/91/91%, and 2-dose VC 1/69/80/82% at 12/24/36/48 months.

Measles-VC was about 4-11%-points higher than varicella-VC in each corresponding cohort and age group. Varicella 1-dose VC was 5%-points (12 months) and 2%-points (24 months) lower in cohort 2011 compared to cohort 2010. The difference diminished with older age and for 2-dose VC. With cohort 2012, VC continued to increase in subsequent cohorts. The use of monovalent varicella vaccines at 1st dose increased from 5% in cohorts 2008-09 to about 70% in cohorts 2011-2014.

Conclusions

German pediatricians followed the recommendations on varicella vaccination. The increasing trend of measles and varicella VC was temporarily discontinued in one cohort, particularly in children up to 24 months, who received these vaccinations at later age. The changed recommendations had only a minor but no permanent effect on countrywide VC.

12B. EDUCATION: INVASIVE FUNGAL INFECTIONS

ESP17-0203

NOSOCOMIAL CANDIDAEMIA IN PAEDIATRICS-A 12 YEAR RETROSPECTIVE ANALYSIS OF SPECIES DISTRIBUTION, ANTIFUNGAL SUSCEPTIBILITY AND EPIDEMIOLOGY

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Background

Blood stream infections (BSI) caused by *Candida* species are responsible for significant morbidity and mortality in hospitalised infants and children. Studies in candidaemia in adults far outweigh those in paediatrics, and the paediatric population presents a unique host with specific risk factors. Identification of *Candida* to species level is useful in predicting antifungal susceptibility patterns, and the determination of Minimum Inhibitory Concentrations (MICs) to antifungal agents informs further therapeutic options.

Methods

We performed a comparative analysis over two 6 year periods (01/01/04-31/12/09 and 01/01/10-31/12/15) of all episodes of candidaemia at our hospital, extracting data from the laboratory database and patient electronic notebook. Centers for Disease and Control and Prevention/National Healthcare Safety Network (CDC/NHSN) 2016 surveillance definitions were applied, and broth microdilution (Sensititre®YeastOne) used to determine MICs.

Results

There was an overall decrease in number of isolates, episodes and patients in the second time frame, but evidence of epidemiological shift with more *C. glabrata* and *C. lusitanae*. There were no episodes of *C. krusei* in either timeframe. *C. parapsilosis* was the most prevalent species, followed by *C. albicans*, for both timeframes, and all isolates in the 12 year analysis showed susceptibility to Amphotericin B. For both periods, candidaemia was more common in infants and babies than in older children, with most having central venous catheters, and underlying haematological or oncological disease.

Conclusions

The emergence of non-*albicans* species of *Candida* in BSI has now been documented worldwide in both adults and paediatric patients, and in our study *C. parapsilosis* continues as most prevalent causal species of candidaemia. Although all isolates remain sensitive to Amphotericin B there is evidence of reduced susceptibility to certain antifungal agents, therefore continued vigilance is required to detect any changing trends.

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-0204

INFECTION WITH PSEUDOMONAS PUTIDA RESISTANT TO CARBAPENEMS, IN NEONATAL REANIMATION

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Title of Case(s)

Infection with *Pseudomonas putida* resistant to carbapenems, in neonatal reanimation

Background

Pseudomonas putida is a nonfermenting gram-negative rod found in soil and moist environments. Infections caused by *P. putida* are rare and mostly reported in immunocompromised patients. This is the first description of an infection with a carbapenems resistant *P. putida* in a neonatal child.

Case Presentation Summary

A premature child at 31 SA was admitted to 20 days of life in neonatal reanimation for an ulcerative necrotizing enterocolitis. She was treated with a tri-antibiotherapy associating cefotaxime, metronidazole and amikacin initially. Nine days later, cefotaxime was replaced with imipenem. The child presented, 23 days later, a febrile episode with turbid urines. The ECBU showed the presence of a carbapenems resistant *Pseudomonas putida* (10^6 UFC/ml). The disk diffusion method showed that the isolate was resistant to all β -lactams and all other antibiotics tested routinely except levofloxacin and ciprofloxacin. The EDTA test revealed that carbapenem resistance was related to the presence of a metallo-enzyme. The PCR amplification showed the presence of *bla*_{IMP} encoding an IMP-type enzyme and sequencing allowed to characterize the *bla*_{IMP-13} gene. This gene was carried by a class 1 integron of about 2300 bp. The cassette upstream of the *bla*_{IMP} gene possessed a resistance gene for aminoglycosides (tobramycin, netilmicin, amikacin) encoding an *aacA7*. Plasmid extraction and transformation experiments did not show a plasmid localization of this gene.

Learning Points/Discussion

This work allowed us to characterize the *bla*_{IMP-13} gene in this isolate. This observation highlights the fact that *P. putida*, even if it is rarely isolated, can sometimes cause nosocomial infections difficult to treat in seriously ill patients and encourages the prudent use of carbapenems.

18D. SCIENCE: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0205

THE EFFECTIVENESS OF ALBENDAZOLE PLUS VITAMIN A VERSUS ALBENDAZOLE PLUS PLACEBO IN PREVENTING ASCARIS LUMBRICOIDES RE-INFECTION IN SCHOOL-AGE CHILDREN: A DOUBLE BLIND RANDOMIZED CONTROLLED TRIAL

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Background

Soil transmitted helminth infection, including *Ascaris lumbricoides*, *Trichuris trichiura* and hookworms, are still highly endemic in developing countries with greatest burden occurred in school-age children. Deworming through large-scale use of anthelmintic drugs has been effective in reducing STH infections. However, studies have shown deworming alone is not sufficient enough to scale down the reinfection rates. There are some evidence that a combination of anthelmintic with vitamin A may protect children from acquiring STH infection. Therefore, this study aimed to investigate the effect of albendazole plus vitamin A versus albendazole plus placebo on preventing *A. lumbricoides* re-infection in school-age children.

Methods

The study was done in a primary school in Sikapas village, Mandailing Natal regency, North Sumatera province, Indonesia between April and June 2016. 141 children infected with *A. lumbricoides* alone were randomly assigned to receive single dose of 400 mg albendazole plus 200,000 IU of vitamin A ($n=70$) or 400 mg single dose albendazole plus placebo ($n=71$). Children with persistence STH infection at 1-week follow-up were excluded from the study. The primary endpoint was reinfection rate at 3 months following treatment.

Results

The efficacy of albendazole plus vitamin A and albendazole alone for *A. lumbricoides* infection at 1-week were 91.7% and 91.6% ($p>0.05$). 120 children were eligible for the 3-months follow-up. The overall reinfection rates at 3 months was 92.4% in children treated with albendazole plus vitamin A and 87.7% in albendazole plus placebo group ($p>0.05$).

Conclusions

Albendazole alone or in combination with vitamin A are effective in treating *A. lumbricoides* infection, however additional vitamin A to albendazole showed no superior effect in giving protection for *A. lumbricoides* reinfection compared to albendazole with placebo at 3 months follow-up.

Clinical Trial Registration (Please input N/A if not registered)

N/A

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-0206

SHOULD STREPTOCOCCUS PNEUMONIAE SCARE US?

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Title of Case(s)

An 18months old girl with Austrian Syndrome

Background

Austrian syndrome is a rare complication of hematogenous spread of *Streptococcus pneumoniae*, causing pneumonia, meningitis and endocarditis. We have only found 2 other cases of patients affected in the pediatric age described in the literature.

Case Presentation Summary

We present an 18-month-old infant girl, Down's syndrome, with corrected atrioventricular septal defect, with slight residual mitral and tricuspid insufficiency, and asplenia. She was seen in the emergency room for vomiting and fever up to 39.7 ° C of 2 days of evolution, associating skin rash on the face along with petechiae in arms and hands that appeared few hours before her arrival.

She was admitted directly into the Intensive Care Unit (ICU) with intravenous Cefotaxime, Vancomicine and vasoactive drugs, due to septic shock. CSF showed alterations compatible with meningitis. *S. pneumoniae* grew in the blood culture, and its CPR was found in the CSF. The patient improved clinically and was discharged from ICU on the 3rd day. A second chest X-ray was performed, showing incipient retrocardiac pneumonia. Echocardiography was also performed in which a vegetation was observed in the lower part of the mitral annulus, compatible with endocarditis, so the antibiotic treatment was maintained during 40 days intravenous. Good evolution afterwards.

Learning Points/Discussion

This triad of meningitis, pneumonia and endocarditis, with CSF and blood culture positive to *S. pneumoniae* is known as Austrian Syndrome. Now a days it is very rare, the prevalence is less than 1%, although its mortality remains very high, up to 50%. Invasive infection of *S. pneumoniae* is infrequent, mainly in children. The decrease in its incidence has been attributed to the use of antibiotics, as well as the widespread immunization with antipneumococcal conjugate vaccine.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0207

EPIDEMIOLOGICAL ASPECTS: THE CLUE POINT FOR THE DIAGNOSIS OF PAEDIATRIC SCHISTOSOMIASIS NON-ENDEMIC AREAS

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Title of Case(s)

EPIDEMIOLOGICAL ASPECTS: THE CLUE POINT FOR THE DIAGNOSIS OF PAEDIATRIC SCHISTOSOMIASIS NON-ENDEMIC AREAS

Background

Schistosomiasis is a parasitic disease affecting more than 230 million people worldwide. In non-endemic countries, Schistosomiasis is detected among travelers and immigrants from endemic areas.

We report all consecutive cases of pediatric (<18 years) Schistosomiasis diagnosed in a Unit of International Health in Barcelona (Spain) from 2010 to 2016. Case definition was: 1) detection of *Schistosoma* spp. eggs in stool, urine or tissues, 2) positive serology in symptomatic patients that had lived in an endemic zone and 3) positive serology in asymptomatic patients that had recently traveled to endemic zones.

Case Presentation Summary

We included 25 cases of paediatric Schistosomiasis: 18 immigrants, 4 tourists and 3 VFR (visiting friends and relatives). Median age was 11 years (3–17), and 72 % were male. All of them stayed or visited endemic areas in sub-Saharan Africa. Clinical symptoms (haematuria, abdominal pain and fever) were observed in 14/25 cases, and 11/25 asymptomatic patients underwent parasitic screening due to risk factors. Eosinophilia (>500 eosinophils/mm³) was detected in 16 patients. Two cases of urinary schistosomiasis presented without haematuria. Diagnosis was made by direct visualization of *Schistosoma* eggs in 14/25 cases (8 *S. haematobium*, 5 *S. mansoni*, 4 *S. intercalatum* – 3 patients were co-infected with two species of *Schistosoma* spp.-) and by serology in 11/25. Thirteen children were co-infected with malaria and/or other intestinal parasites. Abdominal ultrasonography showed bladder tumor in two children with urinary schistosomiasis. All patients were treated with praziquantel with good clinical and/or analytical response.

Learning Points/Discussion

Schistosomiasis should be ruled out in children visiting or travelling from endemic areas, even in absence of eosinophilia or hematuria. Coinfection with other parasites is frequent.

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0208

PAEDIATRIC PERTUSSIS AND TUBERCULOSIS PREVALENCE AMONG RURAL PATIENTS THAT ABANDONED HOSPITAL AFTER FIRST VISIT AND SURVEY OF PARENTS EDUCATION OF THE DISEASES IN KANO, NIGERIA

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Background

Potential spread of infectious diseases by paediatric hospital absconders is of public health concern in Nigeria. A study was undertaken to determine the prevalence of pertussis (PT) and tuberculosis (TB) among children that absconded hospital after submitting their samples for laboratory investigations and assess the education of parents with children of <15 years of age towards PT and TB.

Methods

One hundred each of already completed but unclaimed laboratory report sheets of first time visit patients selected at random from 2014–2016 were used for the study. Similarly, education of 100 parents (not necessary of the selected patients) on PT and TB, selected from the communities where the patients came from was sought through structured questionnaire.

Results

Result showed that 17.0% and 21.0% of the unclaimed laboratory sheets revealed confirmed case of PT and TB respectively, and 53% of them are male within 5-10 years of age. However, 76% and 72% of the parents recruited had previous knowledge of PT and TB, but only 34% of them could correctly differentiate between PT and TB. Surprisingly, 48% strongly believe that traditional medicine are better than orthodox and 58% believed vaccinations could help, even though only 28% of them had willingly took their children for vaccination before. Parents who had primary or higher education (52%) and those that lost someone as a result of cough related diseases (47%) are more willing to go hospitals and complete treatment even if symptoms subsided than others (26%). Further, about 33%, 21% and 37% of the parents gave reasons such as distance, unfair treatment of hospital personnel and feeling better respectively for not revisiting hospitals.

Conclusions

Paternal education, prompt government and non-governmental organizations intervention is needed to address the issue

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0209

PNEUMOCOCCAL INVASIVE DISEASE IN INFANTS YOUNGER THAN 90 DAYS

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Background

Routine vaccination with PCV10 was initiated in Brazil in 2010 in infants starting at 2 or 3 months. Our aim was to review the epidemiology and clinical outcomes of IPD in the population of infants younger than 90 days.

Methods

From 2000 to 2016 all *Streptococcus pneumoniae* strains isolated in sterile sites from infants under 3 months admitted in two different hospitals in Brazil were included in this study. Demographic, clinical, and laboratory data were collected from medical records. For analysis we divide in 3 periods : Period 1 2000-2005, Period 2 2006-2010 and Period 3 2011-2016

Results

Forty-six IPD episodes were identified that was 8.3% of the total pediatric cases. The diagnoses were meningitis (n=20; 43.5%), pneumonia (n=14; 30.4%), and bacteremia (n=11; 23.9%). Among the 44 serotyped strains 29 (65.9%) were included in PCV10, two (4.5%) were included only in PCV13 and 13 (29.5%) were not included in any conjugate vaccine. In the period 1 there were a total of 28 cases (4.6 cases/year). In the period 2 there were a total of 11 cases (2.2 cases/year) and in the period 3 there were 8 cases (1.3 cases/year). Comorbidity was present in 9 cases and lethality rate was 23% (11/46).

Conclusions

Pneumococcus should be considered in infants with suspected invasive bacterial disease during the first 90 days of life. This results suggest a reduction of the incidence of invasive pneumococcal disease in pediatric age. However, the effect in young age is going slower because this population was not fully immunized and need herd effect to be protected.

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0211

PERITONEAL TUBERCULOSIS IN PEDIATRICS.ON A CASE. A CHALLENGE IN DIAGNOSIS

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Title of Case(s)

PERITONEAL TUBERCULOSIS IN PEDIATRICS.A CHALLENGE IN DIAGNOSIS.

Background

The WHO estimates approximately 10 million of tuberculosis new cases during the year 2015, 1 million of which corresponds to a childhood population. The peritoneal location is the most frequent injury inside the abdominal forms. Its clinical presentation is non specific, its association with ascites simulates different pathologies and the rescue of the bacilli is difficult.

Case Presentation Summary

We presented a 12 years old girl that comes to the Hospital Adolescent Area because of one month of an abdominal distention, astenia and weight loss, without fever. During the physical examination, paleness, abdomen with spontaneous pain and, on palpation, tense ascites, hypopnea and tachycardia were evidenced. Admission laboratory work: mild anemia, rest of blood count and chemistry within normal values. Normal thorax XR, PPD 2UT negative. Abdomen and pelvis scan test that evidences ascites in abdominal cavity, irregular thickening of the parietal peritoneum and nodular images of ganglion aspect in both cardiophrenic angles. The pelvis MRI visualizes uterine body and annexes of kept form and structure. Tumor markers are negative except CA125 which is high (372U/ml). The ascitic fluid describes citrine yellow liquid characteristics of smear, without development in the culture for common germs and mycobacterium. Ziehl Neelsen taint and PCR for Mycobacterium Tuberculosis are both negative.

The biopsy of peritoneal laparoscopy was performed, the pathologic anatomy granulomatosis injuries are observed with central necrosis of tuberculous aspect. Tuberculostatic treatment is started and progressive clinical improvement was observed.

Learning Points/Discussion

The symptomatology of peritoneal tuberculosis is highly non specific and paucibacillary. Peritoneal biopsy is requiring for its diagnosis. The medical team must have a high index of suspicion to arrive at an early diagnosis and start a timely treatment.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0212

EPIDEMIOLOGY AND CLINICAL FEATURES OF SUSPECTED INFLUENZA AND MERS-CORONAVIRUS INFECTION IN TRAVELLERS RETURNING TO SINGAPORE WITH FEBRILE RESPIRATORY ILLNESS

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Background

Avian influenza A(H7N9) and MERS-coronavirus infection surveillance has focused on severe respiratory illness with potential global spread through travel. Singapore is a major travel hub. Previous influenza A(H1N1) and SARS coronavirus outbreaks have identified children and young adults with mild or atypical findings which may be missed by surveillance of severe infections.

Methods

A prospective observational study of children and adults presenting to a tertiary university hospital emergency department and health center, with fever >38°C and cough, sore throat, or rhinorrhea, within 2 weeks of return from travel between September 2013 and January 2017. Patient demographics, travel and exposure details, symptoms at presentation and 3-5 days later were recorded. Nasopharyngeal or throat swab specimens were tested for influenza and MERS-coronavirus by real-time reverse-transcriptase PCR.

Results

Of 67 specimens from 25 children; median age 60 months (range 12-180), and 42 adults; median age 31 years (range 22-62), none were positive for influenza A(H7N9) or MERS-coronavirus. 29 patients (43.3%) had confirmed influenza; 13 influenza A(H3), 9 influenza A(H1N1), 7 influenza B. Of these, 7 (24.1%) had received the influenza vaccine in the past year. Majority travelled for holiday (n=21, 31.3%) or religious pilgrimage (n=15, 22.4%). Mean travel duration was 8.5 days (range 1-36). 21 (31.3%) were unwell during their trip. 12 (17.9%) had live animal contact. Rhinorrhea and live animal contact were significantly associated with influenza infection (p=0.0058 and p=0.023 respectively). There were no serious sequelae noted on follow-up.

Conclusions

Seasonal influenza, and not influenza A(H7N9) and MERS-coronavirus, was seen in returned travellers with influenza-like illness, consistent with other surveillance studies showing limited evidence of widespread mild disease.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-0213

THE PUBLIC HEALTH IMPACT AND COST-EFFECTIVENESS OF SCHOOL-BASED VACCINATION WITH A 9-VALENT HPV VACCINE IN HONG KONG

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Background

This study aims to examine the public health and economic impact of a 9-valent human papillomavirus (HPV) – (6/11/16/18/31/33/45/52/58) school-based vaccination program for female adolescents in Hong Kong.

Methods

Using available data from Hong Kong public hospital and Cervical Screening Program, a previously validated HPV transmission dynamic mathematical model was adapted for a school-based 9-valent HPV vaccination program for 12-year old girls. This strategy was compared against screening only for clinical outcomes (incidence of cervical cancer (CC), CC mortality, pre-cancerous lesions and genital warts) and economic outcomes in Hong Kong. These outcomes were assessed over a 100 year horizon assuming a 95% vaccination coverage rate. Discount of 3% was applied on health and cost data. Sensitivity analysis with 30% and 50% vaccination coverage were also conducted. Strategies with an incremental cost-effectiveness ratio (ICER) below one per capita GDP (USD\$42,308 in 2015) were considered cost-effective.

Results

Over the next 100 years, the 9-valent HPV school-based vaccination program for 12 year old females (95% vaccine coverage) will result in additional reductions of 16/18/31/33/45/52/58 related CIN1 by 68.7%, CIN2/3 by 67.1%, CC by 52.5%, and CC mortality by 48.8%, compared to screening only. 6/11 related CIN1 will be reduced by 79.8%, genital warts will be reduced by 85.1% in women and 77.3% in men. Overall diseases management costs will be reduced by 28.4%, with 23.1% CC cost reduction. A vaccination coverage of 95% resulted in an ICER of USD\$7,361. A reduction in vaccination coverage to 30% resulted in an ICER of USD\$4,472.

Conclusions

The school-based 9-valent HPV vaccination strategy for 12 year-old females is very cost-effective compared to screening only, providing reductions in cervical cancer, cervical cancer deaths, pre-cancerous lesions and genital warts in Hong Kong.

01A. EDUCATION: ANTIMICROBIAL STEWARDSHIP

ESP17-0215

AGE GROUP ADJUSTED PATTERNS OF SYSTEMIC AB CONSUMPTION IN PEDIATRIC WARDS OF AN INFECTIOUS DISEASES UNIVERSITY CLINIC – BUCHAREST ROMANIA 2016

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Background

Majority of infections in preschool children are viral in nature.

Aim - to describe the pattern of systemic antimicrobials consumption adjusted by age groups of pediatric patients of two hospital wards, one dedicated to preschool aged patients (PAP) and another to school aged ones (SAP).

Methods

Included were patients consecutively admitted in each of the two wards in the first 5 days of each month of the 2016 year. For each patient included the age, duration of hospitalization, nature and quantity of systemic antimicrobials (AB) prescribed were extracted by retrieving the patient's chart. Consumption of systemic AB per ward was expressed as daily defined doses per 100 patient days (DDD/PD) and aggregated by selected Anatomic Therapeutic Chemical Classification (ATC) groups.

Results

Structure of consumption by ATC subgroups was similar in both age groups ($r^2 = 0.94$). AB consumption was 57.11 DDD/100PD in SAP group and 44.48 DDD/100PD in PAP group ($p < 0.001$). (see table below)

ATC subgroups*)	AB consumption by Wards <i>p</i> value		
PAP (n=518)	SAP (n=243)		
Betalactams Penicillins (J01C)	9.35	14.51	< 0.001
Betalactams other (J01D)	18.27	25.70	< 0.001
Macrolides (J01F)	9.02	11.62	< 0.05
Other J01 (J01E, J01G; J01M; J01X)	7.80	5.34	< 0.05
All J01	44.48	57.11	< 0.001

*) http://www.whocc.no/atc_ddd_index/

Conclusions

Although the structure of AB consumption was pretty similar by age group the magnitude was different being higher in all but one ATC subgroups of SAP. In our perspective this documents the clinicians' good orientation to proper empirically prescribing AB in preschool children.

06B. SCIENCE: DIAGNOSTIC TOOLS

ESP17-0216

INTEGRATED DNA AND RNA EXTRACTION USING MAGNETIC BEADS FROM VIRAL PATHOGENS CAUSING ACUTE RESPIRATORY INFECTIONS

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Background

RSV (RNA virus) and ADV (DNA virus) are both common viruses that cause pneumonia in children, these causative agents cannot be differentiated based on clinical symptoms alone. Therefore, the development of better diagnostic tools will have a tremendous impact on the treatment of these pathologies. The nucleic acid amplification protocols to detect RSV and ADV have become mainstream in diagnostic laboratories. The development of a method for the simultaneous extraction of DNA and RNA and a multiplex RT-qPCR method to detect these two different viruses are practical and significant goals.

Methods

We established a nucleic acid co-extraction method for two genera of respiratory viruses (ADV and RSV) from sputum based on magnetic beads and optimized the method by evaluating influencing factors, such as the guanidinium thiocyanate (GTC) and dithiothreitol (DTT) concentrations, magnetic bead amount, incubation temperature, lysis buffer pH and RNA carrier type. The feasibility of the simultaneous nucleic acid co-extraction method was evaluated by amplifying DNA and RNA viruses from a single clinical specimen with a multiplex RT-qPCR method.

Results

Both DNA and RNA were most efficiently extracted when the GTC and DTT concentrations were 2.0 M and 80 mM, respectively, 20 µl of magnetic beads were added, the incubation temperature was 80°C, the pH was 8 or 9, and RNA carrier A was used, and it has the same efficiency as TIANamp Virus DNA/RNA Kit for co-extracting RNA and DNA.

Conclusions

This co-extraction method based on magnetic particles from sputum combined with a multiplex RT-qPCR method can detect DNA and RNA viruses in a single clinical specimen quickly and precisely and has many advantages, such as saving time, low costs, without harmful chemicals.

Clinical Trial Registration (Please input N/A if not registered)

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-0218

MEASLES-MUMPS-RUBELLA-VARICELLA GSK COMBINED VACCINE: ITALIAN EXPERIENCE AFTER 8 YEARS OF CLINICAL USE AND ITS ROLE IN UNIVERSAL VACCINATION STRATEGY

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Background and Objective

Priorix-Tetra™ ([PT], GSK) is a quadrivalent-combined vaccine against measles, mumps, rubella and varicella (MMRV). The clinical development program of PT was carried out across different countries, including Italy. PT was also included in the clinical use in different regions across Italy since 2008. The present work summarizes the clinical experienced gained in Italy.

Methods

A comprehensive search to identify all relevant Italian reports of clinical trials and experience with PT was conducted.

Learning Points Discussion

All relevant publications were reviewed and clustered. Clinical trials: Five randomized controlled clinical trials (RCT) – targeting immune response or clinical efficacy - where PT was used either as 1st or 2nd dose or both across an age intervals of 2-6 years were retrieved. PT proved to be highly immunogenic for all components and clinical efficacy of 94.9 (97.5% CI: 92.4-96.6) against varicella was documented. Routine practice: five papers and several congress abstracts reporting the PT use within regional immunization calendars were obtained. PT was easily introduced in routine either alone or in co-administration with MenC-conjugated vaccines. PT effectiveness of 93.1% (95%CI: 90.4%-95.1%) against all varicella after 1st dose was measured. Safety: Seven papers and several congress abstracts reported and confirmed the acceptable safety and well-tolerated profile of PT. A recent observational study did report that there is no increased incidence of febrile convulsions following the administration of the first dose of PT when compared to the separated administration of MMR and V vaccines. In RCTs, PT showed high efficacy against varicella as confirmed in current clinical practice. Regional data confirm that PT can be safely introduced in the routine immunization programs. Overall, PT clinical profile in Italy is broadly documented.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0219

ECTHYMA GANGRENOSUM IN A PRETERM NEWBORN, AN ETIOLOGY DILEMMA

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Title of Case(s)

ECTHYMA GANGRENOSUM IN A PRETERM NEWBORN, AN ETIOLOGY DILEMMA

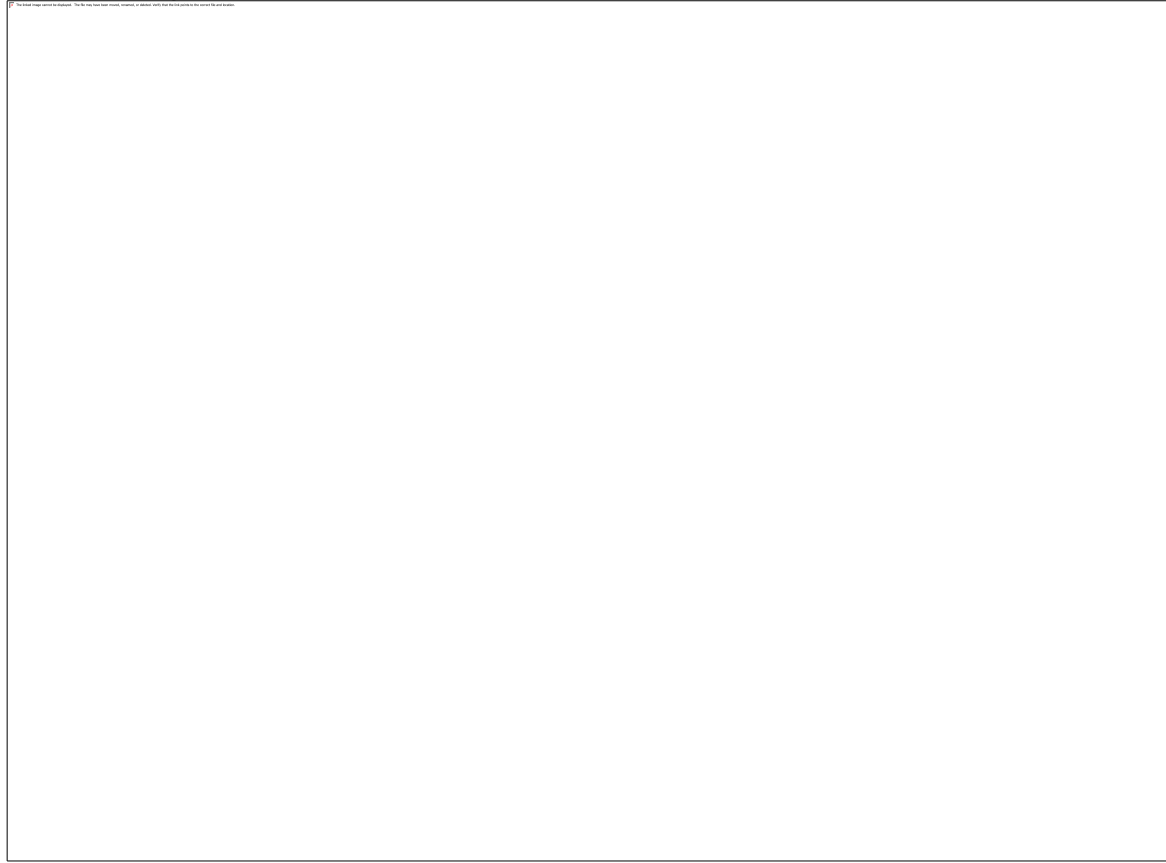
Background

Ecthyma gangrenosum (EG) is a rare skin infection usually caused by *Pseudomonas aeruginosa*. In 39% of cases it reflects a severe sepsis, being the skin its primary focus.

The typical clinical presentation is an erythematous macule that develops into a hemorrhagic vesicle and, finally, a necrotic ulcer. **Case Presentation Summary**

We report a case of a female newborn delivered at 25 weeks' gestation, that was under corticotherapy (D16-22) for weaning from mechanical ventilation. On D23, due to mucosanguineous discharge, antibiotic treatment was started. Laboratory results showed leukocytosis with neutrophilia and elevated C-reactive protein. Two days later an erythematous lesion appeared in the left arm where she had a peripheral venous catheter. Within 48 hours the lesion developed into a necrotic ulcer with a highly erythematous halo. The blood cultures from D23 isolated *Pseudomonas aeruginosa*. On D31 and D36 the culture of the exudates obtained from the lesion was positive for *Candida parapsilosis*. Topical miconazole and fucidic acid were added to the treatment with piperacilin-tazobactam and the lesion was covered with honey patches. The patient progressed favorably and the skin lesion

resolved leaving minor aesthetic sequelae.



Learning Points/Discussion

EG must be included in the differential diagnosis of ulcerous lesions in preterm infants. Its diagnosis is mainly clinical, however it must be confirmed by blood culture or cultures taken from the lesion. An early and adequate antibiotic treatment reduces the high mortality associated to *P aeruginosa* sepsis.

In this case we can discuss the EG etiology (*Pseudomonas* vs *Candida*). Although *Candida* was isolated in the lesion's exudates, it exists as a commensals on the skin and is a uncommon cause of EG-like lesion. Nevertheless the question remains.

06A. SCIENCE: DIAGNOSIS THROUGH HOST RESPONSE

ESP17-0220

BACTERIAL SUPERINFECTION BIOMARKERS, ANTIBIOTHERAPY AND GRANULOCYTE CD64 EXPRESSION IN CRITICAL BRONCHIOLITIS.

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Background

Flow-cytometry (FC) is an unknown technical tool for clinicians. The granulocyte CD64 expression (gCD64), constitutively expressed in monocytes (mCD64), could be a useful data in severe acute bronchiolitis (SBA) in order to obtain more data about a possible bacterial superinfection and antibiotherapy use. Its relation with classic bacterial superinfection biomarkers or its association with antibiotherapy has not been studied. The purposes of this preliminar study were

- 1) To assess the gCD64 and mCD64 in children with SAB.
- 2) To study the association between gCD64 and mCD64 with classic biomarkers of bacterial superinfection.
- 3) To compare gCD64 and mCD64 expression in patients with and without antibiotherapy.

Methods

Prospective study of children with SAB admitted to the Pediatric Intensive Care Unit (PICU) from october 2015 to february 2016. Clinical, analytical and management data were collected. A FC, using FACS Canto II, was done at PICU admission to obtain mCD64 and gCD64. After demonstrating normal distribution, parametric tests were applied in the statistical analysis.

Results

Thirty two patients were enrolled (median age 52,5±91,1 days and PICU stance 5±2,9 days); 23/32 received antibiotherapy. mCD64 and gCD64 values were higher, without signification, in antibiotherapy group (12158±3950 and 4808±2525 versus 10483,7±3247,5 and 3137±2069). gCD64 showed a positive correlation by bivariate analysis with procalcitonin (r=0,44; p=0,026), mCD64 (r=0,71; p=0,00) and percentage of CD64⁺ granulocytes (r=0,59; p=0,00). Also there was a non significative higher percentage of CD64⁺ granulocytes in antibiotherapy group (p=0,09).



Conclusions

The gCD64 appears to be higher in case of antibiotherapy and showed strong positive correlation with procalcitonin.
Antibiotherapy, considering clinical status and/or classical biomarkers, matches with the gCD64 at admission.
Larger clinical studies are necessary.

Clinical Trial Registration (Please input N/A if not registered)

N/A

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0221

RELATIONSHIP AMONG THE GRADE OF PREMATURITY IN CHILDREN AND RISK OF PERTUSSIS

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Background

Some earlier studies reported elevated risk of pertussis in children with birth weight < 2500g. The hazard of pertussis by scale of prematurity has not been established in a cohort survey.

Methods

A few records were attained from the Medical Birth Registry of Albania (2000-2010) and related to additional public registries. In general, 524000 children were involved in our study and pursued until 2 years of age. The occurrence rate ratios (IRRs) and confidence intervals (CIs) were appraised with Poisson regression.

Results

We recognized 820 reported cases of pertussis. We observed a higher rate of reported pertussis in preterm than in full-term infants, IRR = 1.65 (95% CI 1.32-2.07). Compared to full-term infants, the risk of announced pertussis in babies born at gestational age (GA) 35-36 weeks. Furthermore, preterm infants had an elevated rate of pertussis-linked hospitalization than whole-term infants (IRR = 1.84 (95% CI 1.38-2.65).

Conclusions

In this cohort survey preterm infants, involving those born at GA 35 and 36 weeks had augmented hazard of announced pertussis. The VE was similar in preterm and full-term infants.

Clinical Trial Registration (Please input N/A if not registered)

N/A

04A. EDUCATION: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-0222

THE EPIDEMIOLOGIC FEATURES OF PERTUSSIS AT PRESENT STAGE IN RUSSIAN FEDERATION

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Background

Despite of obvious success of mass immunization carried out for 50 years pertussis is still a serious problem for Russia.

Methods

For revealing of epidemiological features, the comparative retrospective epidemiological analysis of morbidity of pertussis in the whole population of Russia and in certain social and age groups has been conducted.

Results

In the pre-vaccination period in the years of cyclic rises, the morbidity of pertussis reached 470 per 100,000. After introduction of vaccination the morbidity rate decreased by almost 100 times that in its turn lead to decrease in mortality from pertussis.

Against the background of decreased morbidity of pertussis observed in 1998-2015 the highest rates were seen among the children less than 14 years of age, with the presence of cyclic rises having the cycle duration of 3-4 years. Starting from 2008 the fact of steady growth of morbidity of pertussis has drawn attention, first of all, in children aged 7-14.

Right now, the only one revaccination recommended in National immunization schedule is at 18 months of age.

Conclusions

At present time an epidemiologic situation with pertussis in Russia cannot be considered as favorable. The existent rise in morbidity, high incidence rates in infants, morbidity growth in children aged 7-14 point on active circulation of *B. pertussis*. Introduction of revaccination with acellular vaccine in children of 6 years and older as well as much wider use of molecular-genetic and other modern methods of pertussis diagnostics will enable to improve substantially etiological verification of diagnosis, efficiency of chemotherapy, and detectability of sources of the infection, which are all required for improvement of the existing system of epidemiological surveillance for pertussis.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0224

THE ASSESSMENT OF ADHERENCE TO VACCINATION AMONG THE POPULATION OF THE RUSSIAN FEDERATION

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Background

Without awareness of relevance of vaccination for health maintenance among the population it is not possible to achieve the appropriate level of inoculation. The goal of our research was to study the attitude of population towards the necessity of vaccination.

Methods

The survey about the attitude towards vaccination among different groups of population was held. In total there were 1209 respondents: 1031 students of medical, humanitarian and technical universities and 178 parents of children under 2.

Results

The most positive attitude towards vaccination was shown by medical students (77%) and parents (71%) and only 33% and 37% of humanitarian and technical students correspondently realize the significance of vaccination. It is worth noting that large number of people could not define their attitude to vaccination. The majority of respondents notices the lack of knowledge about vaccination wherein less than 50% of respondents get the information from doctors. The rest gets it from different sources mostly from the Internet. About 80% of respondents would prefer to get answers to their questions about vaccination in the Internet.

The site <http://www.yaprivot.ru> aimed at popularization and elimination of lack of information about vaccination among the population has been developed with the support of Ministry of Healthcare. This site has reduced the number of negative statements about vaccination in blogosphere.

Conclusions

The adherence of population of Russia to vaccination has a rather low level. The main reason for it is the lack of knowledge and availability of true information about vaccination. It is necessary to use diverse sources of information to provide the population with true facts about vaccination, its significance and safety via mass media and the Internet as well.

16A. SCIENCE: PUBLIC HEALTH: MOLECULAR EPIDEMIOLOGY AND OTHER ASPECTS

ESP17-0227

REAL-TIME PCR IN THE DIAGNOSIS OF INVASIVE MENINGOCOCCAL DISEASE IN THE CZECH REPUBLIC

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Background

Invasive meningococcal disease (IMD) causes peracute, life-threatening conditions. As effective treatment needs to be started as early as possible, it is of high diagnostic interest to use non-culture methods to test clinical specimens.

Methods

The National Reference Laboratory for Meningococcal Infections has been using not only culture methods but since the 1990s also non-culture molecular methods in the diagnosis of IMD. The diagnostic methods have been changing and evolving over time. Initially, the conventional PCR was used. At present, the leading method is rt-PCR. It has proved useful in the identification of *Neisseria meningitidis* based on the *sodC* gene as well as in serogrouping of N.m. A - *sacB*, N.m. B - *synD*, N.m. C - *synE*, N.m. W - *synG*, N.m. X - *xcbB*, and N.m. Y - *synF*.

Results

Over the last five years, around 50 cases (0.5/100 000) have been reported annually within the IMD surveillance programme in the CR. High-quality laboratory diagnosis has long been provided in the country. The rate of laboratory confirmed cases of IMD ranges above 90%. In 2015, 46% of cases were diagnosed by conventional methods, 32% of cases by rt-PCR, and 23% of cases by a combination of both types of methods. Serogroup B accounted for 65% of cases, serogroup C for 21%, serogroup W for 6%, serogroup Y for 2%, NG N.m. for 2%. In 2015, the percentage of IMD cases where the serogroup was not determined dropped to 4.2%.

Conclusions

Molecular methods are highly contributive to the diagnosis of IMD. More than 50% of IMD cases have been diagnosed by molecular methods in the CR.

Acknowledgement

Supported by grant No. 15-34887A from the Ministry of Health of the Czech Republic. All rights reserved.

Clinical Trial Registration (Please input N/A if not registered)

N

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0229

TUBERCULAR MENINGITIS MASQUERADING AS POST- TRAUMATIC INJURY HEADACHE

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¹dayanand medical college, pediatrics, ludhiana, India

Title of Case(s)

TUBERCULAR MENINGITIS MASQUERADING AS POST- TRAUMATIC INJURY HEADACHE

Background

Tuberculous meningitis (TBM) occurs mainly in developing countries where tuberculosis (TB) is more common. TBM is a devastating disease with about 30% mortality in the most severe forms; moreover, 50% of survivors have neurological sequelae despite apparently adequate administration of antibiotics. Early diagnosis and prompt treatment are crucial for reducing the risk of a negative evolution. We here in report a case of tubercular meningitis in a child who presented to us as a case of traumatic injury headache

Case Presentation Summary

A 12 year old previously healthy adolescent presented with complaints of headache 10 days, fever and altered sensorium 2 days prior to admission. There was a history of trauma head. Child's CT scan head showed small subarchanoid hemorrhage for which he was referred to a neurosurgeon. Child was managed conservatively. However the headache persisted and patient developed fever and altered sensorium and child was referred to our hospital. In past history child had intermittent headache for last one month for which he was being given some pain killer. On examination child was restless with GCS of E4V4M5 and unequal pupils (R – 2mmRL, L – 4mmNRL) with drooping of left eyelid. Signs of Meningeal irritation were present. MRI head showed multiple small nodular lesions with perilesional edema in bilateral juxta cortical and subcortical white matter with meningeal enhancement along ventral aspect of brainstem. CSF examination was consistent with tubercular meningitis. Patient was started on ATT and steroids and started improving

Learning Points/Discussion

Our case was earlier managed as a case of post-traumatic injury headache by a neurosurgeon but child's symptoms kept on worsening. A proper and detailed past history along with other timely investigations helped in clinching the diagnosis of tubercular meningitis.

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-0230

MENINGITIS AS MANIFESTATION OF TICK-BORNE RELAPSING FEVER IN CHILDREN.

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Title of Case(s)

Meningitis as manifestation of tick-borne relapsing fever in children.

Background

Tick-borne relapsing fever (TBRF) is a zoonotic disease caused by spirochetes of the genus *Borrelia*. TBRF is well recognized as an infection of the blood but not as an infection of the nervous system. Meningitis associated with TBRF remains underdiagnosed due to a low index of suspicion among clinicians, as well as to its difficult diagnosis. We report three cases of TBRF with meningeal involvement.

Case Presentation Summary

Twelve children were diagnosed of TBRF from 2002 to 2016 in our hospital.

Three (25%) of the them had developed meningitis during the relapsing fever.

The most common symptoms and signs were fever, chills, headache, vomiting, nausea, myalgia, abdominal pain, splenomegaly and stiff neck.

The main laboratory findings were elevated C-reactive protein and thrombocytopenia. Cerebrospinal fluid abnormalities were found in all of the three patients. Mononuclear pleocytosis, mild elevated protein level and normal glucose levels were also observed.

Borrelia spp. was visualized in peripheral blood smears in all of the cases.

Antimicrobial treatment was administered for 14 days. Penicillin G was selected in two cases and ceftriaxone in one case. No Jarisch-Herxheimer reactions were observed All children recovered without sequelae.

Learning Points/Discussion

We emphasize the importance of maintaining a high level of suspicion of meningeal involvement in patients with TBRF.

Prompt diagnosis and a correct therapy can prevent the appearance of potential complications and subsequent fever recurrences.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0233

ENVIRONMENTAL FACTORS, RESPIRATORY PATHOGENS AND THE FIRST WHEEZING EPISODE AMONG YOUNG CHILDREN

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Background

Wheezing during acute respiratory infection (ARI) is usually linked to respiratory virus infection. We assessed association between environmental factors, respiratory pathogens detected in nasopharyngeal aspirates (NPA) and wheezing detected upon physical examination among children with ARI and without previous episode of wheezing.

Methods

This prospective cross-sectional study enrolled children aged 6-23 months with fever, sneeze, runny nose, nasal blockage, or cough for ≤ 7 days between September 2009 and October 2013 at an Emergency Department in Salvador, Northeastern Brazil. Children transferred from other hospitals or reporting previous episode of wheezing were excluded. Data on complaints, physical examination findings, and NPA were collected upon enrollment. A custom-designed nCounter probeset containing 14 viral and 6 bacterial targets was tested in NPA. Multivariable logistic regression analysis by enter method was performed.

Results

Of 559 enrolled children, 92(16.5%) had wheezing found; 456(81.6%) and 558(99.8%) had at least one virus or bacterium detected, respectively. Overall, mean age was 11.4 \pm 4.5 months, 120(21.5%) and 88(15.7%) reported dog or bird at home, respectively. Rhinovirus (48.1%), Parainfluenza virus 1 (32.0%), and Adenovirus 2 (20.4%) were the most frequently found viruses. *Staphylococcus aureus* (98.0%), *Haemophilus influenzae* (97.1%), and *Moraxella catarrhalis* (79.1%) were the most common bacteria. By multivariable logistic regression, *H. influenzae* (AdjOR=0.32; 95%CI:0.11-0.93), dog (AdjOR=0.48; 95%CI:0.25-0.92) and bird (AdjOR=1.83; 95%CI:1.02-3.27) at home were independently associated with wheezing.

Conclusions

H. influenzae in NPA and dog at home independently protect against the first wheezing episode whereas bird at home is a risk factor for it among young children with ARI. Unlike other studies, this study recruited children with ARI with and without the first wheezing episode. Environmental factors were found to be positively and negatively associated with such episode.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0237

DECLINE OF ROTAVIRUS-CODED HOSPITALIZATIONS IN CHILDREN AGED LESS THAN 5 YEARS PRIOR TO NATIONAL IMMUNIZATION PROGRAM: A REPORT FROM JAPAN WITH SUBGROUP ANALYSIS BY AGE.

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Background

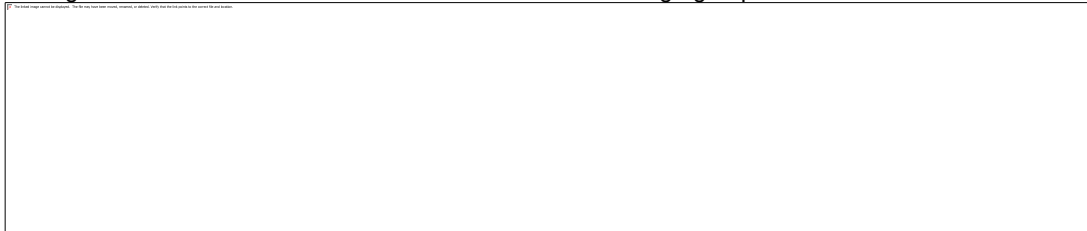
Rotavirus (RV) vaccines have been available in Japan, since November 2011. However, they have been not adopted in the routine national immunization program yet, and national vaccine coverage was estimated to be 45% in 2013. The objective is to describe the incidence trend of rotavirus-coded hospitalization in children aged <5 years in Japan before and after the introduction of rotavirus vaccines (prior to national immunization program).

Methods

This is a retrospective observational cohort study, with using an employment-based administrative claims database constructed by Japan Medical Data Center (JMDC; Tokyo, Japan). Incidence rate of hospitalization with RV gastroenteritis (defined by ICD-10 diagnosis code A08.0) in children aged <5 years during 2009 to 2015 rotavirus season was estimated, and incidence rate in each 2012 to 2015 season (post-vaccine introduction) was compared with the mean incidence rate during 2009 to 2011 seasons (pre-vaccine introduction). Age subgroup analysis was performed (<6, 6 to <12, 12 to <24, 24 to <36, 36 to <60 months).

Results

Claims-based incidence rate (per 1,000 person-years) of rotavirus-coded hospitalization is tabulated in the table. Overall reduction was estimated to be 71% in 2014 (ranged from 64% in <6 months to 76% in 12 to <24 months) and 61% in 2015 (ranged from 33% in 36 to <60 months to 73% in 6 to <12 months) compared to the pre-vaccine average. Reduction was observed even in the unvaccinated age group.



Conclusions

In the era prior to a national immunization program, rotavirus vaccination may have reduced hospitalizations for children with RV gastroenteritis.

Clinical Trial Registration (Please input N/A if not registered)

UMIN000024647

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0239

DEEP VEIN THROMBOSIS IN STAPHYLOCOCCAL DISEASE- AN INNOCENT BYSTANDER OR AN OMINOUS RED FLAG?

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Title of Case(s)

DEEP VEIN THROMBOSIS IN STAPHYLOCOCCAL DISEASE- AN INNOCENT BYSTANDER OR AN OMINOUS RED FLAG?

Background

Deep vein thrombosis (DVT) usually occurs in inherited or acquired coagulation disorders, as a complication of central venous catheterization or after prolonged immobilization. Here we report four children with DVT occurring in children with culture proven staphylococcal disease and no high risk factors.

Case Presentation Summary

Four children presented with pain in the hip joint with restricted mobility. Investigations confirmed osteomyelitis and DVT. Three of the four cases progressed rapidly over the next few days to have severe involvement of the lungs and a complicated clinical course requiring aggressive anticoagulant and antibiotic therapy as well as several surgical interventions. One case responded well to antibiotic therapy, debridement and placement of antibiotic impregnated beads. The three cases with a complicated clinical course had community acquired methicillin resistant staphylococcus (MRSA) grown in either blood or one of the body fluids while the child without severe complications grew community acquired methicillin sensitive staphylococcus aureus (MSSA). All four cases made good recovery eventually.

Learning Points/Discussion

Though DVT is rare in children, it must be actively sought out in children with unilateral swollen, tender limb as it may often coexist with musculoskeletal infections like osteomyelitis. This case series highlights the possibility that DVT, in suspected focal staphylococcal infections, may herald severe disseminated staphylococcal disease probably by acting as a continuous source for bacterial dissemination. Its occurrence should prompt rapid and aggressive measures like treatment with appropriate antibiotics (with initial empiric coverage for MSSA and MRSA), anticoagulation therapy and early surgical intervention to ensure a good outcome. The series also highlights the growing menace of community acquired methicillin resistant staphylococcal infections occurring in previously healthy children.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0242

11 YEARS OF THE PREGNANCY REGISTRY ON MATERNAL IMMUNIZATION WITH REDUCED TETANUS TOXOID, DIPHTHERIA TOXOID AND ACELLULAR PERTUSSIS (TDAP) VACCINE

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Background

In May 2005, GSK initiated a Pregnancy Exposure Registry for the reduced tetanus toxoid, diphtheria toxoid and acellular pertussis (Tdap) vaccine in the United States (US) as part of a program of enhanced pharmacovigilance.

Methods

The registry includes cases received from spontaneous and post-marketing sources in the US, and participation is voluntary. The objective is to prospectively collect safety data describing exposure to Tdap vaccine within 28 days before pregnancy or anytime during pregnancy.

Results

Cumulatively, since May 2005 until August 2016, 1125 reports of pregnancy exposure to Tdap vaccine were received from the US registry: 1085 prospective and 40 retrospective. From the prospective reports, 208 had known outcomes: 202 live infants without birth defects (BD), 3 spontaneous abortions without BD and 3 live infants with BD (2 minor structural defects and 1 undetermined defect). From the retrospective reports, 36 had known outcomes: 21 live infants without BD, 3 stillbirths without BD and 1 spontaneous abortion without BD; 1 stillbirth with BD (chromosomal with major structural defects) and 10 live infants with BD (5 major structural defects, 3 minor structural defects and 2 undetermined defects). The nature of the reported BD does not appear to concentrate in a single organ disorder and no clustering was observed with respect to the timing of exposure and the sensitive period of organogenesis.

Conclusions

Overall data generated from this registry show no evidence that vaccination with Tdap increases the risk of abnormal pregnancy outcomes including birth defects. Based on data reviewed so far, the benefit-risk profile for Tdap vaccine in this specific subpopulation remains favorable.

Funding: GlaxoSmithKline Biologicals SA

Clinical Trial Registration (Please input N/A if not registered)

ClinicalTrials.gov NCT02096276

20C. SCIENCE: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-0244

LABORATORY SURVEILLANCE OF INVASIVE PNEUMOCOCCAL ISOLATES FROM ADULT PATIENTS WITH KNOWN UNDERLYING CONDITIONS: IMPLICATIONS OF PCV 13 VACCINE COVERAGE IN SAUDI ARABIA

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Background

Pneumococcal vaccines has been recommended in Saudi Arabia for use in the adult population and in high risk groups, without a thorough study of the stereotype distribution and antibiotic resistance of prevalent Pneumococcal serotypes in adult populations in the country.

Methods

During 2012 – 2016, eighteen hospital clinical laboratories were asked to collect and transport Pneumococcal isolates recovered from normally sterile body sites along with patient demographic data. The mean age was 40 – 81 years with 47% from the ages 65 or older. Isolates from 210 cases of IPD were collected with underlying medical conditions. These conditions included chronic obstructive pulmonary disease, asthma, diabetics, splenectomy, congestive and chronic heart failure as a well as Liver and renal disease. Among the 210 IPD isolates 21.8% were found to be penicillin resistant (> 2ug/ml). Strikingly, resistant to > 3 antibiotics (Penicillin, erythromycin of Cefotaxime) were seen in 17.8% of the isolates. Isolates with multiple drug resistant was higher among patients aged > 65 years.

Results

The most common Pneumococcal serotypes isolated were 23F (30%), 19F (17%), 6A (12%), 14 (12%), 19A (11%) and 5 (9%). PCV13 offered 91% coverage against serotypes causing IPD in all age groups > 40 years and 96% among isolates from patients aged > 65 years.

Conclusions

Providing as many adult as possible access to PCV will decrease the overall number of hospitalizations, complications and deaths associated with IPD.

Clinical Trial Registration (Please input N/A if not registered)

N?A

16A. SCIENCE: PUBLIC HEALTH: MOLECULAR EPIDEMIOLOGY AND OTHER ASPECTS

ESP17-0246

INVASIVE STREPTOCOCCUS PYOGENES ISOLATES ANALYZED IN THE NRL FOR STREPTOCOCCAL INFECTIONS, PRAGUE, CZECH REPUBLIC IN THE PERIOD 2012 – 2013

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Background

During the studied period, 59 invasive *Streptococcus pyogenes* isolates were analyzed in the NRL in Prague,. The strains originated from the whole territory of the Czech Republic. All of the strains were isolated from the sporadic cases of the invasive disease.

Methods

The isolates were selected in accordance with the case definition as specified by the Working Group on severe Streptococcal Infections (JAMA, January 20, 1993 – Vol. 269). The vast majority of the strains were isolated from blood, four from other normally sterile sites, one both from blood and cerebrospinal fluid, four from nonsterile sites (cases with the diagnosis of septic shock specified unambiguously). The confirmative identification to the species level was performed with the use of PYR test and the Lancefield group antigen determination and additional phenotypic tests when necessary. For further characterization, *emm* sequence typing, T-protein agglutination pattern and toxigenic profile determination was performed in all the strains. *Emm* sequencing was performed according to the protocols published by the CDC *Streptococcus* Laboratory and the sequences acquired were sent there for the *emm* type assignation. Real-time PCR was used to determine the toxigenic profiles; *speA*, *B*, *C*, *F*, *G*, *H*, *I*, *J*, *K*, *L*, *M*, *Z*, *ssa* and *smeZ* genes were detected in each strain.

Results

The prevailing *emm* types determined during the period of interest were *emm* 1, 89, 12 and 28.

Conclusions

The surveillance of the invasive disease caused by *Streptococcus pyogenes* is not legislated in CZ and the strain administration to the NRL is not obligatory. During the period of interest, only isolates obtained from sporadic cases were administered to the NRL. The prevailing *emm* types determined do not differ essentially from the data published by other EU.

Clinical Trial Registration (Please input N/A if not registered)

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0247

CHILDHOOD BACTERIAL SEPSIS AND PRE-HOSPITAL ANTIBIOTIC EXPOSURE IN GAMBIAN CHILDREN

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²Medical Research Council Unit - The Gambia, Clinical Services, Banjul, The Gambia

Background

Childhood bacterial sepsis remains an important cause of hospital admissions in The Gambia. We aimed to determine the distribution of common bacterial pathogens, their antimicrobial susceptibility patterns and sero-types/groups. We also **determined the magnitude of pre-hospital antibiotics in the study population.**

Methods

Children with suspected sepsis were enrolled. Clinical features, isolated pathogen by blood culture, sero-types/groups and antibiotic susceptibility patterns were documented. With real-time PCR protocol, we used specific primers (***nuc, lytA, SodC and hpd3***) to target highly conserved regions in ***Staphylococcus aureus, Streptococcus pneumoniae, Neisseria meningitidis and Haemophilus influenzae*** respectively. Prior antibiotic exposure was determined using urine antibiogram assay.

Results

Sepsis was suspected in 279 patients with a median age of 3 years (IQR 1 to 5), 161 (57.7%) were males and an organism was identified in 73 (26.2%) cases. Real-time PCR detected *nuc* 36 (12.9%), *lytA* 54 (19.4%), *sodC* 10 (3.6%) and *hpd3* 10 (3.6%). The sero-types/groups recovered were: *H. influenzae* (a,b), *N. meningitidis* (W) and *S. pneumoniae* serotypes (5, 46, 1, 12F and 23A/F). Resistance to cotrimoxazole and penicillin was more common among the isolates tested.

58/79 (73.4%) had no history of antibiotic use in the preceding week while 50/79 (63.3%) had positive antibiogram results. There was moderate agreement (kappa 0.470) between history of antibiotic reports and antibiogram results.

Conclusions

The prevalence of *S. aureus*, *S. Pneumoniae*, *N. meningitidis* and *H. influenzae* in sepsis amongst Gambian children remains high indicating the need for availability of better childhood vaccines and antimicrobials. The high rates of pre-hospital antibiotic use make conventional microbiology a poor diagnostic tool in this setting.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0250

EPIDEMIOLOGICAL STUDY OF INFLUENZA B IN SHANGHAI DURING THE 2009-2014 SEASONS: IMPLICATIONS FOR INFLUENZA VACCINATION STRATEGY

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Background

A new quadrivalent influenza vaccine has been available for influenza B, which can pose a significant global health burden. This surveillance study aimed to understand the impact of influenza B in Shanghai in terms of age-related incidence and relative prevalence compared to other subtypes.

Methods

We conducted this retrospective epidemiological study of influenza B in the 2009–2014 seasons. Both lineages of influenza B and subtypes of influenza A were identified using real-time reverse transcription PCR. The antigenic characteristics of influenza B isolates were analysed by sequencing and reciprocal hemagglutinin inhibition assay.

Results

On average, 33.45% of influenza strains were influenza B, and 40.20% of strains isolated from children were influenza B. The incidence of influenza B was highest (12.52 per 100 ILI persons) in children ages 6 to 17 years and usually peaked in this age group at the early stage of an influenza B epidemic. Overall, both matched and mismatched influenza B strains co-circulated in Shanghai annually, and 44.57% of the circulating influenza B belonged to the opposite lineage of the vaccine strains.

Conclusions

Influenza B has caused a substantial impact in Shanghai and school-aged children play a key role in the transmission of influenza B. A quadrivalent vaccine inoculated in 6-17 years old group may improve the effectiveness of vaccine in Shanghai population.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0251

NEUMOCOCCAL CONJUGATE VACCINE QUASIEXPERIMENTAL STUDIES IN LATIN AMERICAN COUNTRIES: AN INTEGRATIVE REVIEW

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⁸Programa Nacional de Inmunización MINSAL, Pediatrics, Santiago, Chile

Background

The introduction of pneumococcal conjugate vaccines (PCVs) into national immunization programs in Latin America and Caribbean region (LAC) has been a public health strategy that contributed to reduce the incidence, morbidity and mortality associated to pneumococcal disease.

The purpose of this integrative review was to evaluate the different quasi-experimental study (QES) designs with respect to their ability to establish causal associations between the immunization program and outcome in LAC region.

Methods

An integrative literature review was conducted to identify QES published or grey literature (unpublished) from 2010 to 2016.

Results

A total of 69 studies met the inclusion criteria. The most frequent study design was uncontrolled before-after (63 studies), 3 studies used control group and 3 were interrupted time series designs. In terms of outcomes, the most commonly used were hospital admissions for pneumonia, meningitis or pleural effusion (n=44, 63.7 %), invasive pneumococcal disease incidence (n=19, 27.5%), serotype distribution (n=15, 22%) and death (n=10, 16%). Outcomes were non-excluding; many studies used a single outcome (n=52, 75.4%), 2 (n=14, 20.3%) or 3 (n=3, 4.3%).

Conclusions

We found different methodological approaches. Results suggest that both PCVs have a significant impact on the reduction of pneumococcal disease rates in LAC region children. In order to validate these initial assumptions we are planning to develop a data pooled analysis using a quantitative systematic review. In the meantime, this study provides clinicians with a more comprehensive source of information compared with individual studies.

Systematic Review Registration (Please input N/A if not registered)

N/A

22A. EDUCATION: OTHER

ESP17-0252

PHYSEAL SEPARATION AND COMPLETE RESORPTION OF FEMORAL HEAD ASSOCIATED WITH CHRONIC OSTEOMYELITIS OF FEMORAL DIAPHYSIS IN A YOUNG CHILD: RARE CASE REPORT

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¹*esi-pgimsr- model hospital- basaidarapur- new delhi-15, orthopaedics, new delhi, India*

Title of Case(s)

PHYSEAL SEPARATION AND COMPLETE RESORPTION OF FEMORAL HEAD ASSOCIATED WITH CHRONIC OSTEOMYELITIS OF FEMORAL DIAPHYSIS IN A YOUNG CHILD: RARE CASE REPORT

Background

Hematogenous osteomyelitis and septic arthritis in children can occur simultaneously. Approximately 20% of children (children under seven years old) with septic arthritis have adjacent osteomyelitis but about 50% of infants with infectious arthritis have associated osteomyelitis. Epiphyseal plate in older children acts as a barrier to prevent entrance of infection to the joint space but in children under two years of age, presence of transphyseal arteries can cause septic arthritis and other associated complications.

Case Presentation Summary

We report the case of a 2 ½ years old girl who presented with injury to the right thigh along with a discharging sinus in the midthigh region following a non-orthopaedic surgical procedure. Radiographs of the thigh revealed osteomyelitis of femoral diaphysis with pathological fracture. During follow up examination shortening was observed in affected limb alongwith complete separation of femoral epiphysis with partial resorption of femoral head. The hip spica was removed after 3 months following radiological confirmation of fracture healing and associated complete resorption of femoral head. The patient has been in follow up for 4 years after discharge (till date) and is currently doing well, except for limb length discrepancy of 3 cms and ipsilateral knee stiffness. She is able to undertake her activities of daily living.

Learning Points/Discussion

Treatment of these patients is controversial and the long term results are unknown but efforts must be made for early diagnosis and anatomic reduction of femoral epiphysis in order to prevent long term functional and anatomical consequences.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0253

OSTEOMYELITIS/ARTHRITIS CAUSED BY *MYCOBACTERIUM INTRACELLULARE*: AN UNDERESTIMATED DIAGNOSIS?

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Title of Case(s)

OSTEOMYELITIS/ARTHRITIS CAUSED BY *MYCOBACTERIUM INTRACELLULARE*: AN UNDERESTIMATED DIAGNOSIS?

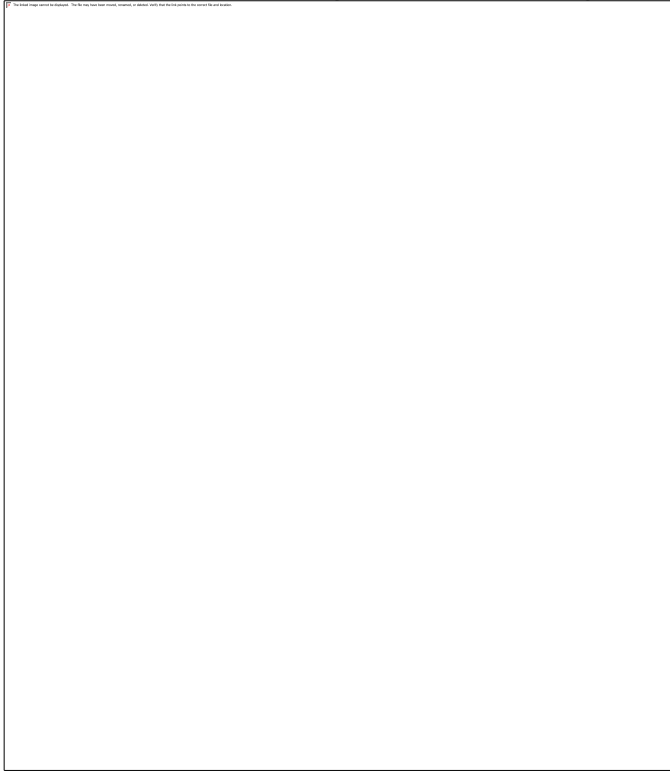
Background

Mycobacterium intracellulare belongs to non-tuberculous mycobacteria (NMT). In immunocompetent children infections with NMT are rare, excepting for cervical lymphadenitis. Osteomyelitis by NMT can be found in immunocompromised individuals.

Case Presentation Summary

We describe the case of a 9-years-old child presenting with fever and pain in the right lower limb. He had a past medical history of corticosteroids treatment for autoimmune thrombocytopenia. Magnetic resonance imaging revealed right hip joint effusion and edema of the anterior-medial portion of femoral neck. He was treated with oxacillin and ceftriaxone with partial benefit. Surgical biopsy was performed and the histopathology report showed an inflammatory reaction with granulation tissue. Polymerase Chain Reaction amplification on synovial fluid resulted positive for *Staphylococcus aureus*. Sinovial fluid culture identified *Mycobacterium intracellulare*. Tuberculin skin test and interferon-gamma release assays were negative. No impairment of the immune system has been documented. The isolates resulted sensible to clarithromycin but the other antibiotic sensitivity profiles were not available. He was treated with clarithromycin, rifampicin and ethambutol for six months with complete clinical remission. A magnetic resonance imaging at the end of treatment confirmed the healing of the edema of

the anterior-medial portion of right femoral neck with signs of bone remodeling.



Learning Points/Discussion

We reported the first case of *Mycobacterium intracellulare* arthritis/osteomyelitis in an immunocompetent child with a medical history of corticosteroids treatment. There are only two previous cases of *Mycobacterium intracellulare* osteomyelitis reported in literature. Our case highlights the need for a high index of suspicion of NMT infection in children with osteomyelitis with specific risk factors. More data are needed to establish the antibiotic sensitivity thresholds of *Mycobacterium intracellulare* in order to clarify the antimicrobial susceptibility of isolates.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0254

ESTABLISHMENT OF A THIRD NATIONAL SERUM BANK FOR POPULATION BASED SEROPREVALENCE STUDIES IN THE NETHERLANDS

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Background

Mass vaccination changes the epidemiological dynamics of infectious diseases. Regular seroepidemiological studies are an informative tool to evaluate the long-term impact of routine vaccination.

Methods

In 2016-2017, a third national population-based cross-sectional seroepidemiological study is performed (0-89 years). Like previous studies (1995-1996 and 2006-2007), an additional sample was drawn within low vaccination coverage areas to have access to orthodox reformed individuals that refuse vaccination. Like in 2006-2007, non-Western migrants were oversampled. Persons were asked to give a blood sample, oral fluid sample and to fill in a questionnaire. Informed consent included check of vaccination history in national vaccination database. Optionally, persons could also donate nasopharyngeal and oropharyngeal swabs and a faecal sample (antibiotic resistance). This group gives also permission to retrieve information on their medication history and to approach them for follow-up research. A small subset was asked to donate an extra blood sample for cellular immunity analyses and to fill in a diary about contact patterns.

Results

Interim reports show that after visiting 29 of the 49 municipalities, 3,498 out of 19,434 persons were included in the study (response 18% (range 13-23%)). A major proportion of the participants (74%) also donated one or more samples for the purpose of additional research.

Conclusions

The study results will enable the continuous optimization of the vaccination strategy in the Netherlands. We are able to answer questions such as the effect of pneumococcal vaccination (2006) on antibody levels in children and whether we have to introduce an adolescent booster vaccination for meningococcal type C. Furthermore, linking the results to other data sources, more insight can be gained in the relation between environment, lifestyle, chronic diseases and risk behaviour with the protection against infectious diseases.

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0255

RARE OCCURRENCE OF POST-TRAUMATIC TUBERCULOSIS: ANKLE JOINT WITH MID-FOOT INVOLVEMENT

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Title of Case(s)

post-traumatic tuberculosis

Background

Even after continued dedicated research and advancements in the field of tuberculosis, musculoskeletal TB is becoming more and more common with atypical presentation and symptoms. Because of the same reason, musculoskeletal TB is difficult to diagnose early and leads to delay in the initiation of correct treatment and unwanted complications. Post-traumatic musculoskeletal tuberculosis is a very rare occurrence with very few reports available in literature.

Case Presentation Summary

A 13 year old female had pain and swelling left ankle due to ankle twist injury while climbing stairs. No apparent bony injury seen on radiographs. Patient advised rest, analgesics and ankle immobilization for two weeks. On follow up, patient had increased swelling and tenderness around left ankle, painful restriction of left ankle joint. Aspiration of swelling was done from two sites of maximum fluctuation. Aspirated sample report came out to be sterile. Patient was managed conservatively on oral broad spectrum antibiotics for two weeks. Patient developed two discharging sinuses over the previous needle aspiration sites. Fresh radiographs revealed osteopenia of bones around ankle joint with a soft tissue shadow. MRI final impression was infective arthritis in ankle joint, inter-tarsal and tarso-metatarsal joint with collection around ankle joint more likely due to tubercular/fungal aetiology. patient planned for open biopsy. Biopsy results compatible with tuberculosis. With final diagnosis of post-traumatic tuberculosis left ankle joint and mid-foot, patient was started on multiple drug anti tuberculosis therapy. At one year follow-up, patient becomes completely sign and symptom free with near normal painfree ROM left ankle joint.

Learning Points/Discussion

Tb should always be kept in differential when patient develops swelling and non-healing discharging sinuses after trauma and open biopsy should be a part of protocol for managing such patients.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0256

POPULATION-BASED INCIDENCE OF HOSPITALIZATION FOR COMMUNITY-ACQUIRED PNEUMONIA (CAP) AMONG RESIDENT CHILDREN IN SUZHOU, CHINA

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Background

CAP is one of the leading causes of morbidity and mortality in children, especially in developing countries. This study aimed to estimate the population-based incidence of hospitalization due to all-cause clinical CAP (CCAP) and chest radiograph-confirmed pneumonia (RCAP) among children from downtown Suzhou, China.

Methods

This was a 5-year retrospective (2010-2014) review of medical charts from residents of downtown Suzhou, 29 days to 15 years of age, hospitalized at Soochow University Affiliated Children's Hospital (SCH) with a discharge diagnosis encoded between codes ICD-10 J09 to J18 and J20 to J22. Children who were ≤ 28 days or ≥ 15 years of age, admitted for the same ICD-10 coded disease within 30 days, and those whose medical charts were unavailable were excluded from the analysis. Medical chart and chest radiograph report (reviewed by a radiologist) were reviewed for all children included in the study to verify the diagnosis.

Results

Among 108,263 resident children admitted to SCH during study period, 31,320 (28.9%) were identified as CCAP, and 24,233 (77.4%) confirmed as RCAP. CCAP hospitalization occurred all year round but peaked during winter and early spring. The overall population-based incidence of CCAP hospitalization was 3,237 (95%CI: 3,209-3,266) / 100,000 and RCAP was 2,505 (95%CI: 2480-2530) / 100,000. Among children younger than 5 years old, the incidences per 100,000 were: CCAP; 6,961 (95%CI: 6,818-7,103) and RCAP; 5,436 (95%CI: 5,308-5,563). Highest incidence per 100,000 was observed in age group 29 days to <6 months: CCAP; 11,226 (95%CI: 11,049-11,403) and RCAP; 9,225 (95%CI: 9,062-9,387).

Conclusions

There is a considerable burden of CAP in Suzhou children. These data provide valuable information to monitor CAP trends over time in Chinese children in Suzhou China.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0259

NEUROLOGICAL MANIFESTATIONS OF ENTEROVIRUS IN A SECONDARY HOSPITAL IN SEGOVIA (SPAIN)

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Title of Case(s)

NEUROLOGICAL MANIFESTATIONS OF ENTEROVIRUS IN A SECONDARY HOSPITAL IN SEGOVIA (SPAIN)

Background

Enterovirus (EV) can affect central nervous system presenting different neurological manifestations. The most common EV serotypes associated with neurological complications are: EV-A71, EV-D68, Poliovirus, and some Echovirus. The aim of the present study is to describe the clinical features, test findings (Magnetic Resonance Imaging (MRI) and cerebrospinal fluid (CSF) characteristics) and clinical progress in patients with suspected enterovirus infection.

Case Presentation Summary

Nine children were suspected to present EV infection in our hospital between September and October 2016. Only six patients fulfilled the criteria for EV infections with neurological involvement. The children median age was 2,2 years (range, 1,6 to 6,8 years). The patients were classified into 3 clinical groups: brainstem encephalitis (n=2), meningoencephalitis (n=1), and encephalomyelitis (n=3). The most common symptoms included: fever (83%), lethargy (100%), vomiting (66%), tremor (50%), limb weakness (50%), cranial nerves palsy (33%) and ataxia (33%). CSF analysis were performed in all children, five (83%) showed pleocytosis. All patients underwent an MRI: 4 (67%) present brainstem affection, one of them also with myelitis. Five patients (83%) had confirmed EV infection (four EV-A71 and one EV-D68) with positive nasopharyngeal or stool samples. All children received antiviral therapy (with acyclovir and in three of them also with fluoxetine) and antibiotics (cefotaxime). Corticoids were administered only in patients with brainstem affection and one patient underwent plasmapheresis. Five patients recovered completely without any neurological deficits; 1 patient has ongoing motor dysfunction (arms paresis and mild cranial nerve dysfunction).

Learning Points/Discussion

Brainstem encephalitis is the most critical presentation of neurological involvement in enterovirus infection. Antiviral therapy is currently ineffective. It is important to recognize this entity to avoid unnecessary test and treatments.

14B. SCIENCE: NON-INVASIVE GASTROINTESTINAL AND MUCOSAL INFECTIONS

ESP17-0261

THE EFFECT OF FIRST GIARDIA INFECTION ON THE PRESENTATION OF SUBSEQUENT GIARDIA INFECTIONS AMONG CHILDREN IN BANGLADESH

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Background

Giardia lamblia's (Giardia) role as a cause of pediatric diarrhea in endemic settings has come into question. Giardia's association with diarrhea may be diminished during a child's second or subsequent infections, due to immunity developed during the first infection. Using data from the Interactions of Malnutrition & Enteric Infections: Consequences for Child Health and Development (MAL-ED) cohort in Bangladesh, we examined the prevalence of diarrhea associated with first, compared to subsequent, Giardia infections.

Methods

Methods: Children were enrolled at birth from February 2010 to February 2012. Stool was collected monthly and during diarrheal episodes until 24 months of age. Giardia was identified by enzyme linked immunosorbent assay. New infections were defined by the first positive sample after two consecutive negative samples collected at least one month apart. The prevalence of diarrhea at first and subsequent Giardia infections were compared using Generalized Estimated Equations models with a binomial link. The child's age and head of household's education were included in the model as confounding variables.

Results

Results: The parent study enrolled 265 children. The incidence rate of Giardia infection was 30.6 per 1000 child-months. Forty children had at least two Giardia infections. The crude prevalence of diarrhea at first compared to subsequent infections did not differ (OR: 0.93, 95%CI: 0.39 to 2.26, p-value: 0.88) and was not altered by adjustment for confounders (aOR 1.22, 95% CI: 0.42 to 3.54, p-value: 0.71).

Conclusions

Conclusion: We found no significant evidence that the risk of diarrhea during a child's first Giardia infection was higher than during subsequent infections. Given the estimate's wide confidence intervals, larger studies should re-examine the role of repeated infections in Giardia symptomology. This may help inform Giardia intervention and vaccine development.

Clinical Trial Registration (Please input N/A if not registered)

20A. EDUCATION: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0263

A REVIEW OF THE HEALTH AND ECONOMIC BURDEN OF VARICELLA IN EASTERN EUROPE

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Background and Objective

To characterize the epidemiology and economic burden of varicella in Eastern European (EE) countries where limited use is made of varicella vaccines.

Methods

A systematic electronic search was conducted in Embase[®] and MEDLINE[®] from database inception to January 2016. Government websites and European surveillance programs were searched to identify publications in English on epidemiology (incidence, complications, mortality) and economic (direct/indirect costs, healthcare resource use) burden related to varicella.

Learning Points Discussion

Data were identified from 14 EE countries; the most comprehensive evidence was available for Poland and Slovenia. Latvia has a one dose vaccination recommendation (funded) while Cyprus and Hungary have two dose vaccination recommendations (unfunded). Across 11 countries for which data were available (2000-2010), the highest reported incidence was 643/100,000 in Slovenia (2009) and the lowest reported incidence was 164/100,000 in Latvia (2010) (Figure). Higher numbers of varicella cases were reported among children and adolescents, with the highest incidence among 1-4 year olds. A seasonal pattern of infection was also observed with incidence peaking during winter (Poland, Slovenia). Seroprevalence data were available for four countries (Albania, Croatia, Poland, Slovenia), all showing at least 80% varicella positive by age 20. Available hospitalisation rate per 1,000 varicella cases ranged from 1 in Estonia to 30 in Latvia (Figure) with an average hospital stay of 7 days in Poland. The most common complications reported among hospitalised patients were respiratory, skin and neurological. No economic data and limited mortality data (Slovenia, Croatia) were identified.

The limited information available on burden of varicella in EE is a barrier to understanding the potential public health impact of varicella vaccination particularly as the surveillance data underestimate the true burden when compared to seroprevalence data.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0264

POSTNATAL GROWTH IN CHILDREN WITH CONGENITAL CYTOMEGALOVIRUS INFECTION

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Background

Congenital cytomegalovirus (cCMV) infection is the most common congenital infection, and while antenatal growth retardation and microcephaly are well described features, little is known about postnatal growth. Case based observations suggest a failure to thrive also exists in their first years of life. This study aimed to describe postnatal growth of children with congenital CMV infection.

Methods

40 children who presented with cCMV infection to the Great North Children's Hospital, Newcastle upon Tyne, UK between February 2005 and July 2016 were included, 34 symptomatic and 6 asymptomatic patients. Z-scores for weight and length/height for the first 3 years and head circumference for the first 1.5 years of life were compared to the WHO Growth Reference Data.

Results

Symptomatic patients had significantly lower weight until the age of 2 years (mean z-score = -0.9509 p= 0.021). The minimum mean z-score for weight was -1.65 at the age of 6 weeks, after which the mean z-score gradually increased over the years. Symptomatic patients were also significantly shorter until 2.5 years of age (mean z-score = -1.3825, p= 0.004) with a significantly smaller head circumference until 1.5 years of age (mean z-score= -2.0000 p= 0.002). There were no significant differences between the asymptomatic group and the WHO Growth Reference Standard regarding weight, length and head circumference at any age.

Conclusions

Symptomatic patients in our cohort were significantly lower in weight and height until the ages of 2 years and 3 years respectively. Catch up growth was observed beyond this age. Results can be used to inform parents and community paediatricians about what to expect regarding growth and weight gain in patients with cCMV.

20A. EDUCATION: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0265

AN ASSESSMENT OF CHILD IMMUNIZATION COVERAGE AND ITS DETERMINANTS IN SINANA DISTRICT, SOUTHEAST ETHIOPIA

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Background

Immunization remains one of the most important public health interventions and cost effective strategies to reduce child mortality and morbidity associated with infectious diseases. It is estimated to avert between 2 and 3 million deaths each year worldwide. The objective of study was to assess complete immunization coverage and its associated factors among children aged 12 to 23 months.

Methods

A cross-sectional community based survey was conducted from December 2012 to January 2013. A total 591 children aged 12 to 23 months and their mothers were included. Bivariate analysis was employed to identify factors associated with full immunization coverage and multiple logistic regression analysis was performed and significance of all tests were decided at p-value of 0.05.

Results

More than three fourth (76.8%) of children aged 12 to 23 months were fully vaccinated by card plus history. Factors significantly associated with full immunization were ANC follow up (AOR=3.7; 95% CI: 2.3, 5.9), being father with secondary and above educational level (AOR=3.1; 95% CI: 1.3, 7.4), having household family income greater than 52 USD (AOR= 3.2; 95% CI: 1.4, 7.4), and those whose average walking time from home to health facilities is less than an hour (AOR=3.1; 95% CI: 1.5, 6.3).

Conclusions

Even though, immunization coverage of children in Sinana district showed improvement over national coverage, yet it is below governmental plan to increase coverage i.e. 90%. Maternal health care utilization and knowledge of mother about vaccine and vaccine preventable diseases are main factors associated with complete immunization coverage. It is vital that local programmatic intervention should be strengthened to upgrade awareness of community on importance of immunization, ANC and working on advancing economic status of community is way to optimize children's immunization coverage.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0266

THE ACCURACY OF TWO NON-INVASIVE SERUM BIOMARKERS IN DETECTION OF FIBROSIS AND STEATOSIS IN CHILDREN WITH CHRONIC HEPATITIS C

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Background

Liver biopsy (LB) is a gold standard for evaluation of fibrosis in children with chronic hepatitis C (CHC). However, there is a need for alternative non-invasive methods. The aim of this study was to evaluate the accuracy of two serum biomarkers: Aspartate Transaminase to Platelets Ratio Index (APRI) and FibroTest (FT) in detection of fibrosis and steatosis in children with CHC.

Methods

30 children aged 9.4±3.7 years (14 male, 16 female) with CHC underwent LB. Fibrosis was scored using a 5-point METAVIR scale (0 – no fibrosis, ≥2 – significant fibrosis, 4 – cirrhosis). In all children the APRI was calculated, and in 10 of them the FT was performed. The area under the receiver operator characteristic curve (AUROC) was calculated for both methods to detect significant fibrosis (METAVIR ≥2) and steatosis with LB as a reference standard.

Results

In histopathological evaluation, 22/30 (73%) patients presented with fibrosis, in 7/30 (23%) fibrosis was significant. Steatosis was detected in 8/30 (27%) of patients. There was no association between APRI and FT ($p=0.73$) and between FT and METAVIR F score ($p=0.72$), whereas a trend towards an association between APRI and METAVIR F was observed ($p=0.06$). Steatosis was positively associated with APRI ($p=0.01$), but not with FT ($p=0.32$). For the detection of significant fibrosis, the cut-off was 0.656 for APRI and 0.23 for FT, with corresponding AUROCs 0.752 (0.56-0.890) and 0.548 (0.222-0.845), respectively. For detection of steatosis, the cut-off for APRI was 0.389 with AUROC 0.768 (0.575-0.903) and for FT the cut-off was 0.23 with AUROC 0.786 (0.408-0.974).

Conclusions

APRI and FT may be considered as an alternative to the LB, however, their accuracy is not excellent and should be confirmed in larger populations.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0268

MULTIPLEX PCR FLUORESCENT ASSISTED FRAGMENT ANALYSIS (MPCR-FAF) TYPING: A NOVEL MOLECULAR ASSAY FOR IDENTIFICATION, SEROTYPING AND MULTIPLE CARRIAGE DETECTION OF PNEUMOCOCCI IN NASOPHARYNGEAL SAMPLES

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Background

Identification and continued monitoring of pneumococcal serotypes is essential to assess pathogenicity, vaccine efficacy and drug resistance. Development of accurate and rapid serotyping methods is of importance as presently used methods are error-prone and time-consuming with limited serotype coverage. This study was designed to develop and evaluate a high-throughput molecular assay to address the problem.

Methods

In the first step, qmPCR was carried out using *ply*, *lytA* and *pspA* primers. Subsequently a single multiplex PCR with 39 fluorescently labeled primers (www.cdc.gov) using Qiagen Multiplex PCR Plus kit was performed for qmPCR positive samples. *cpsA* gene common to all pneumococcal serotypes is used as internal control. Sizing of PCR products was performed on ABI PRISM 3130xl Genetic Analyzer to determine the serotype.

The assay was compared with conventional blood culture and Quellung reaction for its specificity and sensitivity. 70 pneumococcal reference strains and 325 nasopharyngeal samples were analyzed.

Results

mPCR-FAF typing assay detected serotype of 82 qmPCR positive nasopharyngeal samples which included 22 culture positives and 60 culture negatives. The results showed 100% correlation with Quellung test for reference strains and clinical isolates. Multiple serotype carriage was observed in 10 nasopharyngeal samples (2 types in 9, 3 types in 1) which included 2 culture positive and 8 culture negative. Among the two culture positive samples, single serotype was determined by Quellung while mFAF-Typing detected 2 serotypes.

Conclusions

The study reveals the usefulness of mPCR-FAF typing for direct detection and serotyping of *S.pneumoniae* from culture and culture negative samples. An added advantage was the detection and typing of multiple serotypes. The use of this simple and high-throughput method in pneumococcal surveillance will improve the accuracy of detection and coverage of strains.

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0270

3-YEARS-OLD GIRL WITH SINGLE CHUBBY CHEEK:WHAT'S WRONG WITH HER?

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Title of Case(s)

3-years-old girl with Single Chubby Cheek:What's wrong with her?

Background

Tuberculosis is a potentially fatal infectious disease caused by M.Tuberculosis.It most commonly involves the lungs,although it can involve any organ system in the body.Involvement of the parotid gland in the pediatric age group is rare.

Case Presentation Summary

3-years-old girl presented to the ENT,Head&Neck Surgery Department of Songklanagarind Hospital with developing mass on her left cheek.3 months ago she had high grade fever for 3 days.Following week a mass started to appear.Later on it has started to grow and the skin become red.There was no pain or ear symptom,no fever,cough or fatigue.Her past medical history is clear,immunization is up to date.A month later,a pus came from the child's left cheek with mild pain but no fever.On physical examination;general appearance,ear was normal,no facial palsy,on her left cheek mass2x2cm,left periauricular mass3x3cm with fistula tract and purplish skin,pus discharge,warm and mild tender and bilateral cervical lymphadenopathy was observed.PPD:7 cm,Anti-HIV:normal,CXR:normal,fungal culture:negative,Melioidosis Ab:titer1:40.AFB:positive6 cell/100fields,FNAC has performed.PCR for TB pus LT parotid:M.tuberculosis complex positive INH-R and RIF-R is not detected and cytology:Granulomatous inflammation.Mumps present with fever,headache and pain but no pus and discharge, infectious condition like;atypical mycobacteria,TB,Melioidosis,Malignancy:mucoepidermoic carcinoma and branchial left anomalies.With a right laboratory culture investigations easy to put diagnosis.Treatment has started with HRZE but her condition was progressive after 4 months.Partial parotidectomy has performed, necrotic tissue

was removed. The patient recovered well after surgery.



Learning Points/Discussion

The diagnosis is difficult on this case because the swelling resembles tumors and non-tuberculous bacterial or mycobacterial infections. Hence the use of PCR has the added advantage of confirmation. FNAC has sensitivity and specificity for diagnosing parotid tuberculosis. A negative Mantoux test may be helpful. In our case, complete resolution with HRZE did not happen, surgery was performed.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0279

EPIDEMIOLOGICAL AND CLINICAL CHARACTERISTICS AND PREDICTORS OF PCR POSITIVITY OF POST PANDEMIC, SEVERE SWINE ORIGIN H1N1/A (S-OIV) PNEUMONIA IN CHILDREN REQUIRING INTENSIVE CARE ADMISSION.

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Background

RT-PCR is widely not available in India and even if available, results are often retrospective. Therefore treatment of children with SO-H1N1/A infection is mainly empirical. This has led to widespread over as well as under-use of oseltamivir. We aimed to investigate epidemiological and clinical characteristics of post pandemic severe SO-H1N1/A pneumonia in children, and identify the predictors of H1N1 positivity so that inadvertent outcomes related to delay or overuse of therapy may be avoided.

Methods

We prospectively collected the data of all consecutive children admitted to PICU with suspected and treated (with oseltamivir) SO-H1N1/A pneumonia in whom RT-PCR was done. We compared demographic, clinical, radiological and laboratory data of RT-PCR positive vs. negative cases. Univariate analysis was done to identify the predictors for RT-PCR positivity. Significant variables were subjected to multi-variate analysis to identify independent predictors.

Results

Of forty-six enrolled children between Jan-2015 to Oct-2015; twenty were PCR-positive. The mean(SD) age was comparable (33 ± 20 vs. 24.5 ± 24 months). LOS-ICU was longer in positive patients (5.96 ± 6 vs. 3.4 ± 2.3 days; $p=0.010$) and also severe respiratory distress/failure (45% vs. 19%; $p<0.001$). Mean(SD) days of oseltamivir after admission initiation was 1.5 ± 0.8 . High grade fever ($p=0.016$), leucopenia (4811 ± 2245 vs. 12270 ± 7182 ; $p<0.001$), lymphopenia (2271 ± 1179 vs. 4945 ± 2474 ; $p<0.001$), thrombocytopenia (1.98 ± 1.17 vs. 3.35 ± 1.8 ; $p=0.011$), severe radiological abnormalities ($p=0.019$) were significantly associated with PCR positivity. Multi-variate analysis showed; leucopenia ($p=0.006$; OR 0.99, 95% C.I. 0.99-1.01), lymphopenia ($p<0.001$; OR 1.007, 95% C.I. 0.996-1.018) and thrombocytopenia ($p=0.023$ OR 1.023 95% C.I. 0.419-2.497) were independent predictors of PCR positivity. AUC-ROC were; 0.90 (leucopenia), 0.85 (lymphopenia), and 0.73 (thrombocytopenia)

Conclusions

SO-H1N1/A infection in children in India in post pandemic era is occurring throughout year with no seasonality. PCR positive cases had severe radiological abnormalities, i.e., consolidation, ground glass opacity and white-out lungs. Leucopenia, lymphopenia and thrombocytopenia were independent predictors of PCR positivity.

08C. EDUCATION: HIV/AIDS

ESP17-0283

RESULTS OF VACCINATION ON HIV INFECTED CHILDREN - IMMUNE RESPONSE

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Background

HIV infection has a known effect on B-cell function. Lower immunological response to vaccines and more rapid waning of protection in HIV infected children has been shown. A better knowledge on the factors that influence this immunological response will allow achieving optimal seroprotection.

Methods

Twenty-seven HIV infected children followed at CMIN Immunodeficiency clinic were evaluated for antibodies for pneumococcus (n=19), tetanus (n=19) and hepatitis B (n=23). History of pertussis was elicited. The national vaccination registry was consulted to confirm vaccine administration. All patients had at ≥ 2 booster doses for tetanus, conjugated and polysaccharide pneumococcus immunization, 3 doses of hepatitis B and at ≥ 2 boosters for pertussis before immunological response was tested.

Results

Specific antibodies for tetanus were detected in 63.2%, specific IgG anti-pneumococcus was positive in 89.5% and 21.7% had anti-HBs ≥ 10 UI /mL. Eleven percent (n=3) had lab confirmed pertussis, 2/3 were not immune to tetanus (no relation found between having pertussis or the immune response to tetanus, $p < 0.05$).

There was no significant difference ($p < 0.05$) between immunological response and age at diagnosis, age at beginning of antiretrovirals or clinical stage.

Tetanus and pneumococcal responses in this series were similar to other published series. Immune response for hepatitis B vaccine was lower than previously described in literature.

Conclusions

In this series, HIV infected children presented deficient immune response to vaccines, particularly for hepatitis B. We found no correlation with age of diagnosis, clinical stage or beginning of antiretrovirals.

These findings favor a systematic evaluation of response to vaccines in this group of patients particularly for hepatitis B, as additional booster doses may be required for better protection of vaccine preventable diseases.

22A. EDUCATION: OTHER

ESP17-0285

ISOLATED BILATERAL PALATAL PALSY A RARE COMPLICATION OF ACUTE TONSILLITIS: A SERIES OF 2 CASES

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Title of Case(s)

Isolated bilateral palatal palsy a rare complication of acute tonsillitis: a series of 2 cases

Background

Isolated palatal palsy is a rare neurological condition in which palatal movements are affected. This is commonly seen to occur after infection. The exact pathophysiology is not known and the condition has been attributed to various viral infections.

Case Presentation Summary

There have been few cases of unilateral palatal palsy reported but bilateral palatal palsy is an extremely rare and only one case has been reported in the literature that too in an adult. Here we report first 2 cases of bilateral isolated palatal palsy following acute tonsillitis in children. These were treated with supportive therapy.

Learning Points/Discussion

Our cases are very unique as the temporality of the palatal palsy following acute tonsillitis was established thus giving an insight on the patho-physiology of the condition.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0286

FEBRILE, FLUCTUANT CONSCIOUSNESS WITH FALCIPARUM: CEREBRAL MALARIA OR MENINGITIS?

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Title of Case(s)

Febrile, fluctuant consciousness with falciparum: cerebral malaria or meningitis?

Background

Cerebral malaria is uncommon in the UK with non-specific clinical signs making the diagnosis challenging for clinicians. Berkley et. Al (1999) found that 4% of children with impaired consciousness and malarial parasitaemia had definite bacterial meningitis, with a dual or unclear diagnosis in at least 13%. We discuss the differential diagnosis and optimal management of febrile, obtunded children with malarial parasitaemia.

Case Presentation Summary

A 15-year-old boy, presented with a five day history of fever, headache, lethargy and abdominal pain. He had returned from his Nigerian boarding school three weeks previously. He was unwell, with marked tachycardia, fluctuating conscious level, clinically jaundiced with intermittent rigors and tenderness of the right upper quadrant.

Investigations: Malaria antigen detected, Plasmodium falciparum seen on film with parasitaemia of 1.8% (peak 6%). Metabolic acidosis with raised lactate and hypoglycaemia. CRP 94mg/L. Haemoglobin dropped from 126 to 87g/L over 36 hours. Initial platelet count $71 \times 10^9/L$. CT head – no acute intracranial pathology. No fundoscopy done.

Differential Diagnosis: Cerebral Malaria, Meningo-encephalitis, Bacterial septicaemia

Management: Total 40ml/kg of rapid fluid boluses, IV ceftriaxone and IV artesunate.

Outcome: Completed three days of IV artesunate then switched to oral artemether-lumefantrine. IV ceftriaxone stopped after two negative blood cultures. Discharged home on Day 4.

Learning Points/Discussion

1. WHO guidelines for cerebral malaria advise performing a lumbar puncture, if there are no contraindications, to exclude bacterial meningitis.
2. In endemic regions, malaria parasitaemia may be a coincidental finding reflecting parasite immunity.
3. Fundoscopy is a useful diagnostic tool as the findings of malarial retinopathy are unique to cerebral malaria.
4. The FEAST trial demonstrated increased mortality in febrile children with impaired circulation treated with rapid fluid boluses. Conversely, UK guidelines advocate the use of rapid fluid boluses.

22A. SCIENCE: OTHER

ESP17-0287

COST-EFFECTIVENESS COMPARISON OF TWO PNEUMOCOCCAL CONJUGATE VACCINES IN TURKISH CHILDREN

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Background

Vaccination against *Streptococcus pneumoniae* is a part of the Turkish National Immunization Program (NIP) since 2009. The first introduced 7-valent pneumococcal conjugate vaccine (PCV7) was replaced with a 13-valent pneumococcal conjugate vaccine (PCV13) in 2011. We performed a cost-effectiveness analysis (CEA) to compare the health economic outcomes between Pneumococcal non-typeable *Haemophilus influenzae* protein D conjugate vaccine (PHiD-CV) and the current PCV13 in Turkey.

Methods

A previously published Markov cohort model, with monthly cycles, was used to assess the health benefit and economic impact of each vaccine regarding invasive pneumococcal disease (IPD), suspected pneumococcal pneumonia and acute otitis media (AOM) over a 10-year time horizon. Local vaccine administration schedule, incidences and costs from a public payer perspective were considered. Input parameters were obtained from published sources and expert consultations. An annual discount rate of 3% was used for both benefits and costs. The outcome was the difference in accumulated cases, costs and quality-adjusted life-years (QALYs).

Results

Under base-case assumptions, vaccinating a birth cohort of 1,325,783 infants (2015) with PHiD-CV or PCV13 in Turkey would have a similar impact on IPD and pneumonia. However, PHiD-CV would lead to a greater reduction of AOM related general practitioners visits and hospitalizations, by 34,956 and 624 respectively. Assuming an equal price of the vaccines, PHiD-CV showed dominance by accumulating 152 more QALYs and saving €795,984 to the public payer. Result robustness was extensively tested using different scenarios, one-way and a probabilistic sensitivity analysis.

Conclusions

The prevention of pneumococcal diseases with PHiD-CV is expected to be dominant in Turkey compared to PCV-13. PHiD-CV introduction could save the public payer a substantial budget which can be used to implement other life-saving interventions.

Funding

GlaxoSmithKline Biologicals SA (HO-16-17262)

Clinical Trial Registration (Please input N/A if not registered)

N/A

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0290

MOLECULAR EPIDEMIOLOGY OF INFLUENZA B VIRUS DETECTED FROM EPIDEMIOLOGICAL SURVEILLANCE, SOUTHERN BRAZIL

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Background

Epidemiological indicators have shown how the impact of influenza B is substantial, both on the number of childhood deaths, and in the development of severe acute respiratory infection (SARI). In Brazil, the vaccine provided by the National Immunization Program is trivalent, consisting of only one of the two Flu B lineages. This study aimed to characterize the Flu B detected from epidemiological surveillance laboratory, to evaluate clinical profile and the match between prevalent lineage and vaccine strain.

Methods

It was characterized 379 FluB virus collected from 2013 to 2016. Flu B lineages: Yamagata- (B/Yam) and Victoria-like (B/Vic) were identified by qPCR.

Results

In the period both lineages B/Yam and B/Vic co-circulated in an alternating pattern with a frequency of 47% and 53%, respectively. B/Yam infected both genders equally while B/Vic was predominant in females (71%). The median age of patients infected by B/Vic (23y; 11-35) was lower than the infected by B/Yam (32y; 12-50). Mismatching between the vaccine and circulating strain was observed in 2013 season, with a high concentration of SARI cases in this year (Fig.1). B/Vic was related to more cases of the SARI (62%) while B/Yam to ILI cases

(61%). In the same period, there were differences in the strains circulation within the state of Paraná.



Conclusions

Despite the vaccine in 2012 and 2013 are composed of Yamagata-like strain, the circulation in the region of this lineage was only observed after 2014. The identification of circulating strains in the community is a great benefit, providing information for a wide discussion on the need for the use of a quadrivalent vaccine in the region, as well as the population of risk that should be covered by it.

20C. SCIENCE: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-0291

A CROSS-SECTIONAL STUDY TO COMPARE HEPATITIS B IMMUNITY IN HIV INFECTED AND UNINFECTED KENYAN CHILDREN FOLLOWING PRIMARY IMMUNIZATION AGAINST THE HEPATITIS B VIRUS.

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Background

Children infected with HIV have been reported to show poor primary immune responses to vaccination. Additionally, their immune responses to vaccination wane more rapidly when compared to HIV uninfected children. This study was designed to evaluate presence of protective antibody levels against hepatitis B surface antigen (anti-HBs) in HIV infected children compared to HIV uninfected children.

Methods

This was a cross-sectional study at the Gertrude's Garden Children's Hospital, Kenya. A total of 531 children who had received the three doses of hepatitis B vaccine during infancy according to the recommendation by the Ministry of Health, Kenya were enrolled into the study. Anti-HBs levels were evaluated in serum samples on a Gemini Compact Microplate Processor while HIV sero-status was confirmed retrospectively from the individual hospital records.

Results

Study participants were aged between 0.3 and 15 years with a mean age of 1.9 years for HIV infected children and 0.9 years in the HIV uninfected group; 191 were HIV infected and 340, HIV uninfected. A total of 18.3% (35/191) from the HIV infected group and 74.4% (253/340) from the HIV uninfected group had protective levels of anti-HBs above 10mIU/L. This difference was statistically significant ($p < 0.0001$) and was observed across all age groups.

Conclusions

Majority (72%) of HIV infected children aged up to 15 years had no protective antibodies to HBV following immunization in infancy. There is need to review and develop an effective (HBV) immunization program for HIV infected children in this setting.

Clinical Trial Registration (Please input N/A if not registered)

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0292

XPert-MTB/RIF ASSAY USING IN RURAL HEALTH FACILITIES IN GAMBO HOSPITAL, SOUTHERN ETHIOPIA

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Background

Tuberculosis(TB) is the leading cause of morbidity and mortality in Ethiopia. The diagnosis in children presents important challenges due to paucibacillary character of the disease. Xpert-MTB/RIF is considered as a breakthrough on conventional smears in the diagnosis of TB and MDR-TB. WHO approved the Xpert.MTB/RIF in 2010 for use in countries with limited resources. Ethiopia is one of 21 receiving countries to implement the TBXpert-Project. The "Implementation Guide for the GeneXpert-MTB/RIF Test" is being carried out by the Ethiopian Ministry of Health in June 2014. We describe the performance of Xpert-MTB/RIF assay on children, with suspected of tuberculosis in health facilities that refer to samples to a regional reference laboratory.

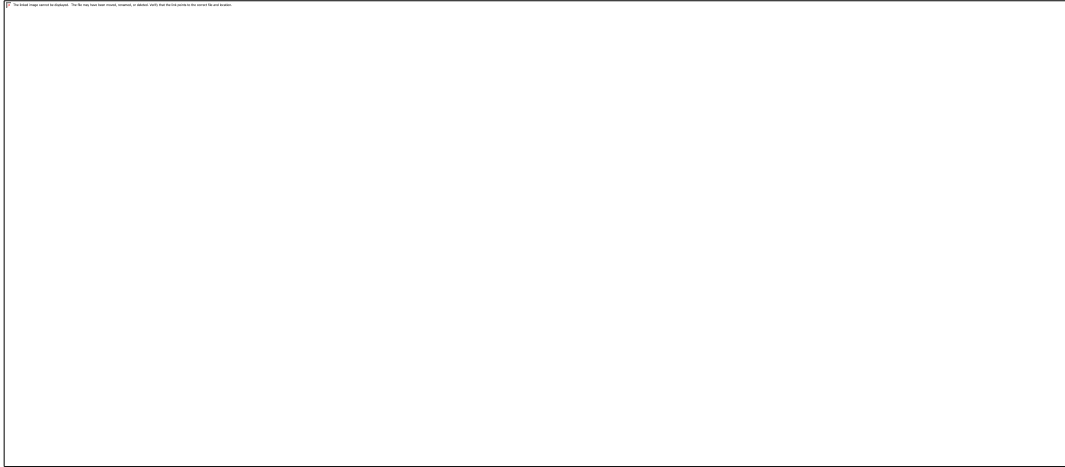
Methods

A cross-sectional study was conducted on patients with suspected Tuberculosis since 09/2015 to 09/2016. The study was conducted at Gambo-Hospital, Ethiopia. The samples send to Referral laboratory were according National Protocols: Diagnosis of TB and MDR-TB in Children with Presumptive TB.

Results

137 samples of children less than 14 years,(only one sample for patient) were studied. 53%boys. Median age was 4 years. The sample more common analyzed was gastric aspiration:100 (73%), follow by sputum:25(18%), lymph-node (LN):3(2%), pleural-effusion:1, CSF:2, Abscess:4, Ascetic-effusion:1. The results was positive for TB by Xpert in 27%. None case was resistant to rifampicin. The Xpert MTB/RIF was positive in 27% of gastric

aspiration, in 28% of sputum, 2 of LN and 1CSF. Table-1



Conclusions

In our group, Xpert facilitates the diagnosis of TB, with microbiological confirmation, in 27% of cases. Compared with studies of children from similar areas, where no cases were confirmed, because culture of mycobacteria is not available. The gastric aspirate was the most useful sample.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0293

DIRECT AND INDIRECT EFFECTS OF ROTAVIRUS VACCINATION ON ROTAVIRUS HOSPITALIZATIONS AMONG CHILDREN IN MALAWI FOUR YEARS AFTER PROGRAMMATIC INTRODUCTION

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Background

Despite widespread vaccine use, rotavirus remains a major cause of acute gastroenteritis (AGE) in low-income countries. We describe rotavirus prevalence and hospitalisation in Malawi pre and four years post vaccine introduction; provide updated vaccine effectiveness (VE) estimates; and assess rotavirus vaccine indirect effects.

Methods

Children under five years presenting to a referral hospital in Blantyre with AGE were recruited. Stool samples were tested for rotavirus using Enzyme Immunoassay. Rotavirus prevalence was evaluated using Poisson regression. Time series analysis was used to investigate trends in prevalence over time. VE was estimated using logistic regression. Indirect effects were estimated by evaluating rotavirus prevalence in unvaccinated children over time, and by comparing observed reductions in incidence of rotavirus hospitalisation to those expected based on vaccine coverage and trial efficacy estimates.

Results

2,320 children were included. Prevalence of rotavirus in hospitalised infants (<12 months) with AGE decreased from 69/139(49.64%) prior to vaccine introduction to 197/607(32.45%) post-vaccine introduction (RR 0.67[95% CI 0.55, 0.82]). Prevalence in children aged 12-23 months demonstrated a less substantial decline: 15/37(40.54%) pre- and 122/352(34.66%) post-vaccine introduction, (RR 0.85, 95% CI 0.57, 1.28). VE was 61.09%(95% CI 26.54-79.39), but lower in children aged 12-23 months (31.69% [95% CI -139.03-80.48]). In hospitalised infants with rotavirus disease the observed effect of the vaccine was 11% greater than expected according to vaccine coverage and efficacy estimates. Rotavirus prevalence among unvaccinated infants declined post-vaccine introduction (RR 0.67[95% CI 0.53-0.84]).

Conclusions

Following rotavirus vaccine introduction in Malawi, prevalence of rotavirus in hospitalised children with AGE has declined significantly, with some evidence of an indirect effect in infants. Despite this, rotavirus remains an important cause of severe diarrhoea in Malawian children, particularly in the second year of life.

Clinical Trial Registration (Please input N/A if not registered)

N/A

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0294

NEURODEVELOPMENTAL EVALUATION IN INFANTS AFTER HUMAN CENTRAL NERVOUS SYSTEM PARACHOVIRUS INFECTIONS

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Background

Systemic human parechovirus (HPeV) infections are frequent in young infants. HPeV is usually detected in cerebrospinal fluid (CSF), although pleocytosis is uncommon. The severity of infections ranges from mild to severe encephalitis with seizures and which can result in neurological impairment. Although short time outcome is generally good, with total recovery of the children, longtime consequences have not been evaluated. Only one study has assessed the neurodevelopmental evolution in 13 children after severe HPeV encephalitis, finding important impairment in some of them. There are no published studies involving milder infections.

Our aim is to evaluate the psychomotor development of infants who have had an HPeV infection confirmed by PCR in CSF.

Methods

Participants were recruited amongst infants with confirmed HPeV neurological infection, who participated (2013-2015) in a Spanish National Multicenter study (Grant P112/00904). A neuropediatrician contacted the family for performing the Age and Stage Questionnaire (ASQ) previously validated in other studies.

Results

The cohort comprised a total of 43 infants; 31 of them were positive in CSF and were contacted; 15 (45%) answered the ASQ test. The mean age at diagnosis was 20(+13) days, and 23(+11) months at the time of the evaluation.

All assessed patients had ASQ test results in the normal range for their age. Two cases (2/15, 13%) near the cutoff, developed other neurological sequelae; one case of mild hypothyroidism, and another of spastic hemiparesis at 6-9 months of age (probably not related with the infection). Both had normal MRI or ultrasounds.

Conclusions

Our results show that mild infections by HPeV seem to have a favorable long term prognosis. Nevertheless larger prospective studies are necessary to determine the consequences of these infections, before the possibility of neurodevelopmental sequelae can be ruled out.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0295

THE YIELD OF NEONATAL TARGETED SCREENING FOR THE DETECTION OF SYMPTOMATIC CONGENITAL CYTOMEGALOVIRUS INFECTION

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Background

The incidence of congenital CMV infection in Israel is 0.7% (0.4-1%) and 10-15% are symptomatic. Recent studies have shown that Valganciclovir therapy may improve hearing and neuro-developmental outcomes in neonates with symptomatic congenital CMV infection (SCCMVI). Thus, early identification of infected infants is vital. While universal screening of newborns for congenital CMV infection is not currently accepted, targeted screening of infants who fail routine neonatal hearing screening or have clinical or laboratory findings suggestive of SCCMVI may be a cost-effective approach. The objective of the study is to assess the yield of a targeted screening for detecting newborns with SCCMVI.

Methods

A prospective observational study conducted during the years 2014-2015 at two Medical Centers in northern Israel. Included were all newborns who were tested in the first 3 days of life by PCR for urine CMV DNA (n=694), either for failure the hearing screening (n=539, 78%) or clinical or laboratory findings suggestive of SCCMVI (n=155, 22%).

Results

15,433 newborns were born in the two centers during the study period. The predicted rate of infection was 10-15% (symptomatic) of 0.7% of newborns, namely 0.07-0.105% or 10-15 infants. In fact, 15 infants (0.11%, 95% CI 0.066-0.175) were diagnosed with SCCMVI, 2/539 (0.37%) in the failed hearing group and 13/155 (8%) in the clinical/laboratory findings group. The incidence of SCCMVI was within the predicted range.

Conclusions

Targeted screening of only 4.5% (n=694) of newborns detected the predicted number of infants with SCCMVI in whom Valganciclovir therapy is recommended.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0296

VALIDITY OF A MINIMALLY INVASIVE AUTOPSY TOOL FOR CAUSE OF DEATH DETERMINATION IN STILLBIRTHS AND PAEDIATRIC DEATHS FROM SUB-SAHARAN AFRICA: AN OBSERVATIONAL STUDY

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Background

BACKGROUND

Over 2 million stillbirths and 5.8 child deaths occur annually. Limited and imprecise information on the cause of these deaths hampers progress in achieving global health targets. Complete diagnostic autopsies (CDA) -the gold standard for cause of death determination-, are difficult to perform in most high burden settings. Therefore, validation of simpler and more feasible methods is needed.

Methods

METHODS AND FINDINGS

We assessed the validity of the minimally invasive autopsy (MIA) approach in determining the cause of death in 18 stillbirths, 41 neonatal and 54 post-neonatal pediatric deaths in a referral hospital of Mozambique by comparing the results of the MIA with those of the CDA. Concordance between the categories of diseases obtained by the two methods was evaluated by the Kappa statistic and the sensitivity, specificity, positive and negative predictive values of the MIA diagnoses were calculated.

Results

A cause of death was identified in 15/18 (83.3%) of the stillbirths, 35/41 (85.4%) of the neonatal deaths and 52/54 (96.3%) of the post-neonatal deaths. Growth restriction, infections and malignant tumors accounted for the majority of diagnoses. The MIA categorization of disease showed a substantial concordance with the CDA categorization in the 3 different groups and sensitivity, specificity and overall accuracy were high. The MIA allowed the identification of the specific pathogens deemed responsible for the death in the most deaths of infectious origin.

Conclusions

CONCLUSIONS

The MIA showed a substantial performance for cause of death identification in this series of pediatric deaths in Mozambique. This minimally invasive approach, simpler and more readily acceptable than the disfiguring CDA could provide robust data for CoD surveillance specially in poor settings, which can be helpful to guide child survival strategies in the future.

Clinical Trial Registration (Please input N/A if not registered)

NA

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0297

LATE-ONSET SEPSIS: 10 YEARS OF EXPERIENCE

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Background

Late onset sepsis (LOS) results in considerable morbidity and mortality among newborns (NB) that require intensive and intermediate care. Aim: to evaluate clinical data of newborns with LOS and trends in causative microorganisms and their antimicrobial susceptibility.

Methods

LOS was defined by clinical signs and symptoms after 72hours of life with laboratory studies suggestive of infection (C-reactive protein >2mg/dL; WBC >30000/uL or <5000/uL, with or without an isolated organism). Period Study: January07– December16.

Results

There were 28075 live births (LBs); 2532 were admitted in neonatal intensive and intermediate care unit; 488/2532 (1.3%) were very low birth weight infants (VLBW). We identified 131 LOS. The overall incidence of LOS was 4.7‰ LBs, representing 5.2% of the admissions (24% for VLBW infants).

The median gestational age was 28 weeks and median birth weight 1056g. The symptoms started after the 1st week of life in 76%, and after the 2nd week in 37%. Respiratory distress with apnea and worsening of ventilatory parameters were the main signs identified. Necrotizing enterocolitis occurred in 15 cases, meningitis and pneumonia in 1 each. There were 86 positive blood cultures (65%). Fourteen percent required volume expansion and 11% required vasopressor support. Lethality occurred in 15 cases (11%).

Coagulase-negative Staphylococci (CoNS) predominated (54/85; 65%) followed by *E. coli* in 10/85 (12%) cases and *S. aureus* in 9/85 (11%). CoNS showed no resistance to vancomycin and *E. coli* was resistant to gentamicin in 1/10 (10%) case. *Methicillin resistant Staphylococcus aureus* was isolated in 4/9 (44%) cases. Main antibiotics used were vancomycin and 3rd generation cephalosporins.

Conclusions

CoNS remain the leading cause of LOS, as described in previous studies. *In vitro* susceptibility test of isolates showed low levels of resistance to commonly used antibiotics.

11A. EDUCATION: INFECTIONS IN THE ONCOLOGY PATIENT

ESP17-0299

CHRONIC CLOSTRIDIUM DIFFICILE OSTEOMYELITIS IN ACUTE LYMPHOBLASTIC LEUKAEMIA SURVIVOR

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Title of Case(s)

CHRONIC CLOSTRIDIUM DIFFICILE OSTEOMYELITIS IN ACUTE LYMPHOBLASTIC LEUKAEMIA SURVIVOR

Background

Extra-intestinal manifestations of *Clostridium Difficile* (*C. difficile*) infection are uncommon and reports of *C. difficile* osteomyelitis in the paediatric population are limited to children with sickle cell anaemia or prosthetic implants. We describe a case of chronic *C. difficile* osteomyelitis in an Acute Lymphoblastic Leukaemia (ALL) survivor.

Case Presentation Summary

Our patient, now 30 years old, was 10-year-old when she was first diagnosed with ALL. After completing initial chemotherapy, she relapsed at the age of 12 and required further intensification of chemotherapy. At the age of 14 while still on intensive chemotherapy, she developed osteomyelitis of her bilateral tibia requiring multiple surgical drainages. Intraoperative wound cultures were persistently positive for *C. difficile* for 3 months despite treatment with metronidazole; she eventually completed 6 months of metronidazole and improved. At the age of 23, 7 years after the completion of the treatment for her relapse, the *C. difficile* osteomyelitis recurred in her right tibia although she was in remission from ALL. She was again treated with metronidazole for 6 months. Although her symptoms improved, currently she continues to have intermittent purulent discharge from her right tibia requiring frequent Orthopedic review and repeated courses of metronidazole.

Learning Points/Discussion

Although our patient had several risk factors for *C. difficile* infection such as treatment with multiple courses of broad spectrum antibiotics for neutropenic fever and immunosuppressive therapy, she did not have classic risk factors for *C. difficile* osteomyelitis. Despite completion of chemotherapy and remaining in remission from ALL, our patient developed recurrence of *C. difficile* osteomyelitis suggesting inadequate immune reconstitution. This may suggest that survivors of childhood ALL could have long-lasting immunological deficiencies.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0300

SIX RULES TO DISTINGUISH BETWEEN BACTERIAL AND VIRAL MENINGITIS IN CHILDREN.

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Background

Differential diagnosis of bacterial and viral meningitis remains an important clinical problem. There is no single parameter useful for quickly establishing the aetiology of meningitis. A number of methods to assist in the diagnoses of meningitis have been developed, but none of them have been found to have high specificity with 100% sensitivity

Methods

We conducted a retrospective analysis of the medical records of 148 children (64 with viral and 84 with bacterial meningitis) hospitalized in St. Joseph Children's Hospital in Poznan. In this study, we applied for the first time the original methodology of dominance-based rough set approach (DRSA) to diagnostic patterns of meningitis data and representing them by decision rules useful in discriminating between bacterial and viral

meningitis.

Results

In a patient suspected of having meningitis:

1. If CRP level is ≥ 86 mg/l then the patient has bacterial meningitis.
2. If the number of leukocytes in CSF is $\geq 4481/\mu\text{l}$ then the patient has bacterial meningitis.
3. If the patient is in first month of life then it is bacterial meningitis.
4. If the symptoms last ≤ 2 days and CRP level is ≥ 76 mg/l then the patient has bacterial meningitis.
5. If CRP level is \leq than 19 mg/l then the patient has viral meningitis.
6. If CRP level is \leq than 84 mg/l and patient is 11 months old or older and leukocytes in CSF is $\leq 1100/\mu\text{l}$ then the patient has viral meningitis.

Conclusions

Using the theory of rough classification, we established the minimum set of attributes significant for high-quality classification of patients with meningitis. This is new set of rules which, although intuitively anticipated by some clinicians, has not been formally demonstrated until now.

22A. EDUCATION: OTHER

ESP17-0301

ATYPICAL PRESENTATIONS OF MYCOPLASMA PNEUMONIAE INFECTION – REPORT OF 3 CASES

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Title of Case(s)

Background

Mycoplasma pneumoniae (MP) is responsible for 15% - 40% of community-acquired pneumonia in children but is also known for several extrapulmonary manifestations. We report 3 cases of children with atypical and different presentations of MP infection.

Case Presentation Summary

CASE1: An 8-year-old male attended the ED with 5-day dry cough and fever. Chest xray showed bilateral pneumonia. He was discharged with Clarithromycin. He returned the following day with severe and progressive mucositis: mouth ulcers, conjunctivitis, genital erythema and blisters in the legs. He later showed right corneal ulcer and left coronary dilatation. IgM *M.pneumoniae* was positive. After Immunoglobulin there was significant improvement.

CASE2: An 8-year-old female with previous history of Cyclic Vomiting attended the ED with abdominal pain and vomiting for the past 3 days. Due to persistent symptoms laboratory examinations were performed: amylase (109U/L) and lipase (248 U/l), suggesting acute pancreatitis. During inpatient care amylase and lipase further increased. IgM *M.pneumoniae* was positive. Symptoms resolved with suspension of oral feeding and intravenous fluids.

CASE3: A 16-year old female attended the ED with acute and severe back pain, without fever or other symptoms. Chest xray was normal. WBC was 11900/uL (85.4% neutrophils) and CRP140mg/L. Urine sample was negative for nitrite test and WBC count, microscopic examination showed 150 RBC. Abdominal ultrasound revealed a thin left pleural effusion (5mm). She began Ceftriaxone and Clarithromycin. At day 6, due to worsening back pain and cough appearance, she repeated xray and ultrasound (both similar to previous ones). Serum adenosine deaminase 31.1U/L, sedimentation rate 61mm/h and IgM *M.pneumoniae* positive. *M.tuberculosis* infection was excluded. After 14 days of Clarithromycin there was resolution of back pain.

Learning Points/Discussion

We these cases we want to alert for atypical presentations of MP infections.

03A. EDUCATION: GROUP A STREPTOCOCCUS

ESP17-0304

INFECTIONS CAUSED BY STREPTOCOCCUS ANGINOSUS IN PEDIATRIC POPULATION. REVIEW OF CASES IN A TERTIARY HOSPITAL IN NINE YEARS OF FOLLOW UP

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Title of Case(s)

Infections caused by *Streptococcus anginosus* in pediatric population. Review of cases in a tertiary hospital in nine years of follow up.

Background

Streptococcus anginosus group (known as *S. milleri*) is a subgroup of *Streptococcus viridans* composed by other subtypes: *S. constellatus*, *S. intermedius* and *S. anginosus*. These bacteria are habitual colonizers of gastrointestinal and respiratory tract, being able to be pathogenic, with the special capacity of causing abscesses.

Case Presentation Summary

OBJECTIVES:

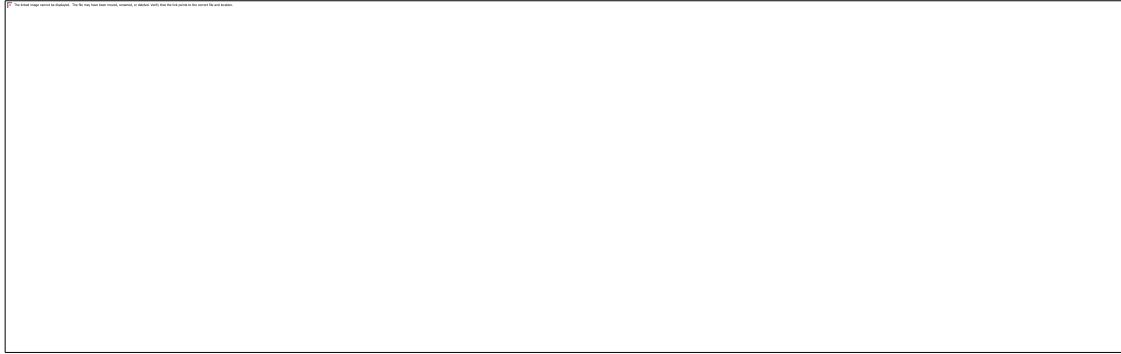
-Describe the presentation of infections caused by *S. Anginosus* in patients under 16 years old.

-Analyze the predisposing risk factors for *S. anginosus* infections.

-Analyze whether there is a relationship between the *S. anginosus* subtype and site of the infection.

DESIGN: Retrospective observational study including patients attended in a pediatric third-level hospital between January 1, 2007 and December 31, 2015; patients which a subtype of *S. anginosus* was isolated at bacteriological culture. Epidemiological and clinical data, microbiological samples and antibiotic treatment have been analyzed.

RESULTS: Bacteria of the genus *S. anginosus* were isolated in 152 bacteriological cultures. 122 samples come from peritoneal exudate. They were interpreted as habitual colonizer. Of the remaining 30 cases: 33.3% corresponded to hemoculture, 40% abscess and 16.7% to surgical wound. 40% corresponded to *S. anginosus*; 33.3% *S. intermedius* and 26.7% *S. constellatus*. The mean age observed was 7.5 years. 70% male. 63.3% did not present risk factors. The location and type of infection is shown in Table 1.



Learning Points/Discussion

S. anginosus in children could cause serious complications, particularly abscesses, and affectation of CNS and gastrointestinal tract. Complications due to *S. Anginosus* were not associated to any risk factors to appear. Most of the complications produced by *S. anginosus* group occurred after a localized infection in an area where these bacteria are commensals

06B. SCIENCE: DIAGNOSTIC TOOLS

ESP17-0305

DIAGNOSTIC ACCURACY OF PRESEPSIN, PROCALCITONIN, AND HIGH SENSITIVE C-REACTIVE PROTEIN AS BIOMARKERS FOR EARLY DIAGNOSIS OF PAEDIATRIC SEPSIS USING THE BIOSCORE MODEL

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Background

Paediatric sepsis remains a major public health problem with significant morbidity and mortality especially in developing countries. Clinical symptoms associated with sepsis are unreliable and laboratory parameters unspecific making early diagnosis of sepsis often difficult. The lack of definitive early diagnosis test for sepsis has further led to misuse of antibiotics. This study evaluated the diagnostic accuracy of procalcitonin (PCT), presepsin (sCD14-ST) and high sensitive C-reactive protein (hs-CRP) using a bioscore model.

Methods

In a case control study, a total of ninety paediatric subjects between the ages of zero to twelve (0-12) years were selected from the Paediatric Emergency Unit and the Mother and Baby Unit of Komfo Anokye Teaching Hospital. They consist of sixty clinically suspected sepsis cases and thirty subjects without sepsis as controls. Measurement of PCT, hs-CRP and presepsin were done by ELISA. The Statistical Package for Social Sciences (SPSS release 20.0, Copyright ©SPSS Inc.) was used for analysis

Results

Bacterial sepsis was diagnosed in 14 patients (23.3%) using blood cultures (BC). Significant elevations in PCT, sCD14-ST and hs-CRP levels were observed among cases in comparison to controls ($p < 0.0001$). Individually, PCT showed a better accuracy (AUC=78.7%) followed by hs-CRP (AUC=78.4%) and sCD14-ST (AUC=74.8%). Combination of PCT+hs-CRP had the highest accuracy (AUC =80.1%) followed by hs-CRP+ sCD14-ST (AUC =77.2%), PCT+sCD14-ST+hs-CRP (AUC=77.0%) and PCT+sCD14-ST (AUC=75.9%). Bioscore combination with the best significant odd ratios (OR) was PCT+sCD14-ST+hs-CRP at 15.8 followed by hs-CRP+sCD14-ST at 13.5, hs-CRP+PCT at 13.3 and PCT+sCD14-ST at 11.7.

Conclusions

PCT, hs-CRP and sCD14-ST are independent predictors of paediatric sepsis. Bioscore combination of these biomarkers were significantly associated with increasing odds of bacterial sepsis. The incorporation of these biomarkers into routine diagnostic tests will aid in prompt diagnosis of paediatric sepsis.

Clinical Trial Registration (Please input N/A if not registered)

N/A

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0309

NONTUBERCULOUS MYCOBACTERIAL LYMPHADENITIS IN CHILDREN: FIRST CASE OF MYCOBACTERIUM MARSEILLENSE DETECTION

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Title of Case(s)

NONTUBERCULOUS MYCOBACTERIAL LYMPHADENITIS IN CHILDREN: FIRST CASE OF MYCOBACTERIUM MARSEILLENSE DETECTION

Background

Nontuberculous mycobacteria (NTM) are pathogens commonly affecting humans, causing a wide pattern of diseases. In the paediatric population, the most frequent manifestation is an unilateral, painless, progressive cervicofacial lymphadenopathy, without constitutional symptom, and it occurs mainly in children below 4 years of age. 75% of mycobacterial lymphadenitis are caused by *Mycobacterium avium complex (MAC)* members. We report a case of NMT lymphadenitis caused by *Mycobacterium marseillense*, a newly described species belonging to MAC.

Case Presentation Summary

A 4 years old girl presented to our clinic for a one month lasting submandibular lymphadenitis, unresponsive to co-amoxiclav treatment. CRP values (53 mg/L) and ESR (31 mm/h) were slightly increased; serological tests for infectious disease did not show any ongoing infection. Tuberculin skin test resulted positive (10 mm infiltration diameter), quantiFERON-TB test and chest X-ray were negative. The neck ultrasound showed an enlarged lymph node with a subverted structure, hypoechogenic areas and an absent roundness index. Suspecting an NTM infection, therapy with clarithromycin and rifampicin was started and surgical exeresis was performed. The culture of the biopsy showed a *M. marseillense* strain, identified using a commercial kit (Hain Genotype Mycobacteria CM, Hain Lifescience, Germany) and sequencing the spacer region interposed between 16S and 23S rRNA genes. Therapy with ethambutol was than added because of a slow healing of the scar and the whole therapy was stopped after 5 month. At 12th month control, no relapse was reported.

Learning Points/Discussion

To the best of our knowledge, this is the first reported case of *M. marseillense* lymphadenitis. With the improvement of technologies, it is now possible to identify new pathogens, previously unknown, thus providing the best treatment to patients.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0312

ORALLY-TRANSMITTED ACUTE CHAGAS' DISEASE FROM A CASE IN A PUBLIC HOSPITAL IN BUCARAMANGA CITY, COLOMBIA

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Title of Case(s)

ORALLY-TRANSMITTED ACUTE CHAGAS' DISEASE FROM A CASE IN A PUBLIC HOSPITAL IN BUCARAMANGA CITY, COLOMBIA

Background

Chagas' disease, a zoonosis caused by *Trypanosoma cruzi*, is present in South America. Can be vectorborne, bloodborne and congenital infection. It shows tropism through smooth cardiac and gastrointestinal muscle, as well as nerve and reticuloendothelial tissue. Inoculation site evidence, prolonged fever syndrome, and general malaise lasting between 2 and 8 weeks characterize its acute phase. Diagnosis is reached through either direct parasitemia detection study or indirect serology. Most acute infections are not detected and confirmation of oral transmission is difficult. We report one case of acute Chagas associated with oral transmission.

Case Presentation Summary

Previously healthy school boy, with fever lasting 15 days, and facial edema. Antecedents along immediately preceding month: father, mother and pregnant sister showing acute fever syndrome associated with dyspnea with thick-drop testing positive for Chagas. Rural area dwellers of a cane and mud house. Admitted in hospital with no evidence of clinical deterioration, chagoma, cardiac or neurologic signs. Inpatient underwent treatment with benznidazol after negative malaria thick drop testing and positive micro-hematocrit by Strout method. Absence of adverse reactions, with normal hemogram, electrocardiogram, thorax X-ray and echocardiogram, followed three days later by positive ELISA: 0.63, positive immunofluorescence: 1:128 and positive PCR for Chagas. Patient left hospital to complete 60-day treatment, and follow-up by means of hepatic and renal function testing as well as hemogram.

Learning Points/Discussion

Chagas' disease is endemic in Colombia, with differential diagnosis in cases of protracted fever, in risk locations. Absence of entrance lesion in outbreak situation strongly suggests oral transmission.

01A. EDUCATION: ANTIMICROBIAL STEWARDSHIP

ESP17-0313

CUSTOMISING ANTIMICROBIAL STEWARDSHIP TO INDIAN HEALTH CARE

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Background and Objective

High rates of antimicrobial resistance have been reported from the blood cultures of Indian children and neonates to the WHO recommended first line antibiotics. There is an urgent need to apply antimicrobial stewardship (AMS) in the Indian health system to combat the problem. IDSA 2016 guideline on AMS is reviewed for the challenges of its practical implementation in the Indian healthcare scenario.

Methods

Literature review of Indian publications on AMS in past 5 years in pubmed was carried out to determine the existing practices in India. The key principles of currently available IDSA 2016 guidelines on AMS were reviewed in the Indian context.

Learning Points Discussion

There is paucity of publications on AMS from India. Recent survey shows absence of Infectious Disease physicians and clinical pharmacists across majority of the tertiary health care centres. The current international guidelines on AMS require time, personnel and resources which are limited in the Indian health care settings. There is an urgent need to customise these recommendations in the constraints of the Indian health care.

A national antibiotic guideline for paediatrics and neonates must be formulated on priority for uniformity. Microbiology services including point of care facilities need to be strengthened.

A possible solution towards customising AMS is establishment of a dedicated local governing body which can monitor the local antibiotic usage in the community, for both outpatient and inpatients, in both private and government settings and irrespective of whether the prescribing practitioner is trained in allopathy, ayurveda or homeopathy medicine. This body can liaise with existing network of polio surveillance to mandate 48 hour feedback after starting targeted antibiotic, provide online clinical pharmacology services for co-morbid conditions, and conduct regular training programmes for practitioners.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0314

DIAGNOSTIC YIELD OF BLOOD CULTURE IN CHILDREN EVALUATED FOR BACTEREMIA

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Background

Aim is to determine the

- 1) Incidence of Bacteremia
- 2) Blood culture Incubation time to positive growth of bacteria

Vaccination has significantly decreased the number of serious bacterial infections in children. Routine blood culture yield in these febrile children is low. Studies have shown in bacteremic cases blood culture is positive within 24hours in 91% cases, 96%in 36hours and 99% within 48hours of incubation. Continuing antibiotics for more than 24hours would capture only 1 additional patient for every 500-1200 patients.

Methods

Retrospective Auscare data review of all blood culture results collected over a six year period (01.01.2010-31.12.2015) from children aged 1 month-16 years, attending a non tertiary hospital in the Redland shire area of South-east Queensland, Australia. Data was analysed with Microsoft Excel Version to identify the frequencies of clinically significant and contaminant cultures and the prevalence of pathogens detected in culture. Ethics approval was obtained from Metro South Health District Human Research Ethics Committee (HREC/15/QPAH/503)

Results

49 out of 1007 blood cultures showed positive growth (4.8%). 8 different bacterial species were detected. Gram positive and Gram negative bacteria accounted for 92% and 8% of isolates, respectively. 100% of true positive blood cultures growth was within 24 hours. Group B streptococcus was the most pathogen isolated, coagulase negative staphylococcus was most common contaminant pathogen. Rate of contamination was 75% among all positive blood cultures.

Conclusions

Incidence of bacteremia in our study responsible for clinical illness is very low (1.2%). Blood culture was positive within 24hours of incubation in 100% of these bacteremic cases.

Data will educate our Clinicians about the low risk of serious bacterial infection in vaccinated children and help them to rationalise initiation and the duration of antibiotics and also improve blood culture collection technique to decrease contamination rate.

20B. SCIENCE: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-0315

SAFETY AND TOLERABILITY OF SEQIRUS EGG-BASED INACTIVATED INFLUENZA VACCINE IN CHILDREN 5 THROUGH 8 YEARS OF AGE

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Background

An unexpected increase in febrile reaction reports was observed in children <8 years, especially in those <5 years, following administration of Seqirus' seasonal influenza vaccine in the 2010 SH season, compared to previous seasons. Seqirus has commenced a staged paediatric clinical program with influenza vaccine manufactured with higher concentration of splitting agent, which was shown in scientific studies to be key in addressing the increased reactogenicity.

Methods

In a safety and tolerability study in which 292 children 5 through 8 years received Seqirus trivalent influenza vaccine (TIV) and 98 children received reference vaccine Fluzone® QIV (NCT02212106), fever reactions were evaluated for 7 days post-vaccination. In an immunogenicity and safety and tolerability study (NCT02545543), children were randomized 3:1 to receive Seqirus QIV (n=1709) or US-licensed Fluarix® QIV (n=569). Solicited and unsolicited adverse events were assessed for 7 days and 28 days post-vaccination, respectively.

Results

In the TIV study, the fever rate was 8.2% (95% CI: 5.3, 12.0) in the Seqirus TIV group and 9.2% (95% CI: 4.3, 16.7) in the Reference vaccine group. In the QIV study, fever rates in children 5 through 8 years old were 4.5% (95% CI: 3.2, 6.1) and 3.6% (95% CI: 1.8, 6.6), for Seqirus QIV and Fluarix QIV, respectively.

Conclusions

Data from the two clinical studies demonstrate that in children aged 5 through 8 years, fever rates following vaccination with Seqirus inactivated influenza vaccine manufactured with higher concentration of splitting agent were lower than historical TIV fever rates. The data also demonstrate that the safety and tolerability profile of the Seqirus inactivated influenza vaccine was acceptable in children 5 through 8 years, paving the way for a clinical program in the lower age group.

Clinical Trial Registration (Please input N/A if not registered)

NCT02212106, NCT02545543

22A. EDUCATION: OTHER

ESP17-0316

CLINICAL SIGNIFICANCE OF EXTENDED- SPECTRUM BETA-LACTAMASE PRODUCING BACTERIA IN CHILDHOOD FIRST FEBRILE URINARY TRACT INFECTION AND ITS DIFFERENCES BETWEEN AGE GROUPS

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Background

Extended-spectrum beta-lactamase(ESBL) producing bacteria induced urinary tract infection(UTI) is increasing in frequency and resistant to most of penicillins and cephalosporins, need more potent antibiotic such as carbapenem. Previous results of ESBL(+)-UTI in children were different in severity and outcomes, and there was no report of ESBL(+)-UTI comparing between age groups. The aim of this study were to evaluate clinical significance of ESBL(+)-UTI under 5-year-old children for selecting proper antibiotics and finding out prognostic factors of outcome, and also comparing differences between age groups.

Methods

We retrospectively studied 288 patients with first febrile UTI under 5-years-old children. Patients were divided into ESBL(+)-UTI and ESBL(-)-UTI. Clinical characteristics and outcome were compared, and also young infants group(onset age<3months) were compared with older age group.

Results

The mean age of patients was 6 months and M:F ratio was 7:3. The incidence of ESBL(+)-UTI were 11%. ESBL(+)-UTI had more pre-onset admission history($p=0.02$) and recurrence of UTI($p=0.045$). In antimicrobial susceptibility test(AST), 3rd cephalosporin were all resistant in ESBL(+)-UTI, but 98% responded clinically. Results of susceptibility were 100% for amikacin and 81% for gentamycin. In young infant group(<3months), ESBL(+)-UTI were 13% in incidence, had more pre-onset hospitalization history ($p=0.002$), prenatal hydronephrosis($p=0.015$), higher CRP($p=0.04$) and recurrence of UTI($p=0.02$) than older age group.

Conclusions

ESBL(+)-UTI need more attention because of high recurrence rate. Infants(< 3 months) with pre-onset history of admission had more severe infection and recurrence rate, so we should select antibiotics carefully. The 3rd cephalosporins showed resistance in AST, but can be used as first-line empirical antibiotics because of its high clinical response rate. In ESBL(+)-UTI resistant to 3rd cephalosporine, we can consider aminoglycoside as a second-line antibiotics before start carbapenem.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0320

THE INFECTIOUS AND NON-INFECTIOUS ETIOLOGY, CLINICAL PICTURE AND OUTCOME OF NEW NEUTROPENIA IN IMMUNOCOMPETENT HOSPITALIZED CHILDREN

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Background

Acquired neutropenia in immunocompetent children is common and its differential diagnosis ranges from benign causes to life-threatening diseases. We report on the etiology, clinical picture and outcome of new neutropenia in immunocompetent children assessed in the emergency department and hospitalized at our medical center during 2010-2012.

Methods

Previously healthy children <18 years with neutropenia (absolute neutrophil count [ANC] <1500 x 10⁹/L) were included. Severe neutropenia was defined as an ANC <500 cells x 10⁹/L. Patients with previous history of neutropenia were excluded from the study. Serious bacterial infections (SBI) were defined as culture-positive blood, urine, CSF, articular fluid or stool infections, pneumonia, Brucellosis and Rickettsiosis.

Results

601 patients were enrolled; 3 (0.5%), 48 (8%), 165 (27.5%) and 385 (64%) had ANCs <200, 201-500, 501-1000 and 1001-1500 x 10⁹/L, respectively. Associated leukopenia and thrombocytopenia were diagnosed in 186 (39%) and 71 (11.8%) patients. 316/601 (52.6%) and 519/601 (86.4%) were <2 or 36 months of age, respectively. Fever at admission was present in 27.6% patients. SBIs were diagnosed in 108 (18.0 %) patients. Brucellosis and Rickettsiosis were diagnosed in 8/52 (15.4%) and 9/39 (23.1%) tests obtained. RSV was diagnosed in 17/33 (51.5%) nasal washes. An infectious etiology was determined in 181 (30.1%) patients. Acute leukemia was diagnosed in 6 patients. A significant correlation was found between correction of neutropenia and its severity, patient age and an infectious etiology.

Conclusions

1. Severe neutropenia was rare; 2. More than half of patients were <2 months of age; 3. An infectious etiology was diagnosed in a high number of patients and SBIs were frequent; 4. *Brucella* spp. and rickettsial infections were frequent etiologies associated with neutropenia.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0321

EPIDEMIOLOGICAL AND CLINICAL ANALYSIS OF COMMUNITY-ACQUIRED MYCOPLASMA PNEUMONIA IN CHILDREN FROM A SPANISH POPULATION

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Background

Mycoplasma pneumoniae (MP) is one of the most common etiological agents of community-acquired pneumonia (CAP) in children. We aimed to describe the clinical and epidemiological characteristics, treatment and follow up of patients diagnosed with community-acquired *Mycoplasma pneumoniae* (CAMP) in a hospital in Valencia, Spain.

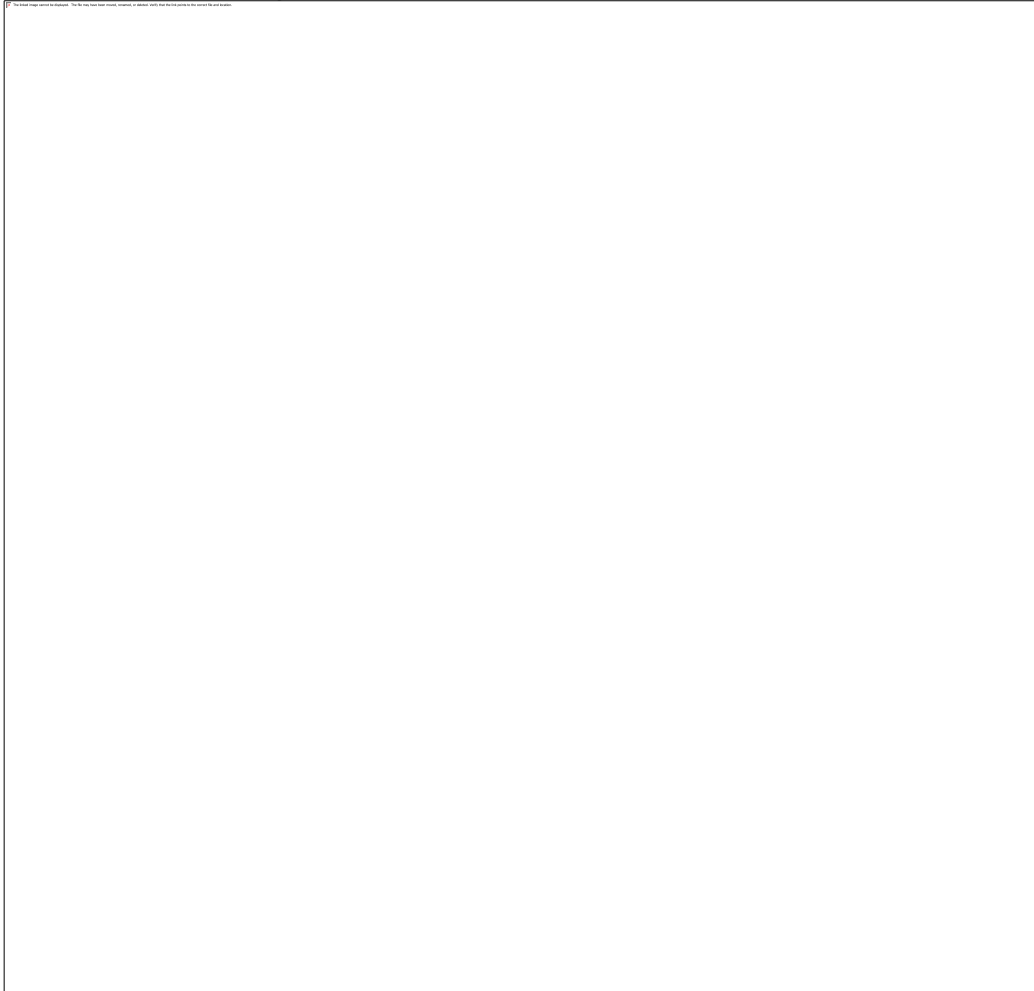
Methods

Children <14 years with CAMP were retrospectively reviewed from January 2010 to December 2015. Patients with radiological evidence of pneumonia and microbiological confirmation of MP (nasopharyngeal swab PCR and/or serum specific IgM) were considered CAMP.

Results

162 patients were diagnosed with CAMP, median age was 6 years (IR: 4-9) and 84 (51.9%) were girls. The proportion of positive MP tests performed in CAP patients progressively increased with age as well as empirical use of macrolides (table). There was an incidence peak in 2011 and later in 2015, with an increase of cases in July, August, November, and December. The most common symptom was cough (92.6%), followed by fever (85.8%) and rhinorrhea (45.1%). The most frequent radiological pattern was segmental infiltrate (62.3%). Twenty-two patients (13.6%) presented with pleural effusion. It is noteworthy the low clinical-analytical involvement, with the following medians (IR): maximum fever 39°C (38.5-39.5), leukocytes 10200/mm³ (8000-12900), neutrophils 6400/mm³ (4850-9950), PCR 3 mg/dl (1,5-6), procalcitonin 0.1 ng/ml (0.1-0.4). Overall, 14.2% children had no fever, and 32.7% associated bronchospasm. A macrolide was empirically initiated in 68.5% cases. After the MP result was known, the treatment was modified in 68 children (42%). Hospital admission rate was inversely

proportional to patient's age.



Conclusions

Knowledge of the local epidemiology of this infection, with the patient's age and analytical results, if available, is essential to guide the etiology of pneumonia and to improve its treatment.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0325

NEONATAL BACTEREMIC CELLULITIS DUE TO KLEBSIELLA PNEUMONIAE AFTER PERIPHERAL VENOUS CATHETER INSERTION

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Title of Case(s)

Background

Infections due to *Klebsiella pneumoniae* are usually hospital-acquired and affect mainly immunosuppressed patients. Main clinical syndromes are pneumonia, urinary tract infection and sepsis usually in newborns. However, cellulitis after peripheral venous catheter insertion is rare. We report two cases of cellulitis associated with catheter use in newborns.

Case Presentation Summary

CASE 1: A 2 days old full-term infant was admitted due to hemolytic disease of the newborn due to anti-B antibodies, requiring intravenous immunoglobulin administration. On the 8th day of life she developed progressive left-hand inflammation, on the site of peripheral catheter placement. Patient was afebrile. Blood tests results: leukocytes 14,500/mm³ (neutrophils 33% lymphocytes 44%), C-reactive protein (CRP) 33.5 mg/L. procalcitonin: 1.16 ng/mL. Ultrasound examination revealed a subcutaneous abscess that required surgical drainage. Blood and pus culture grew *K. pneumoniae*. Cerebrospinal fluid and body surface cultures were sterile. Patient received cefotaxim for 2 weeks with full recovery.

CASE 2: A small for gestational age neonate, born at 35 weeks of gestational age, was admitted after delivery due to immediate infant respiratory distress syndrome, requiring CPAP and pulmonary surfactant. On the 7th day of life he presented with clinical deterioration, bradycardia and right-foot inflammation, where he had a peripheral catheter placed. Patient was afebrile. Blood tests results: leukocytes 16,500/mm³ (neutrophils 49% lymphocytes 34%) CRP 68 mg/L. Blood culture grew *K. pneumoniae*. Cerebrospinal fluid and body surface cultures were sterile. Amikacin was administered for 10 days with full recovery.

Learning Points/Discussion

Klebsiella pneumoniae infection should be included in the differential diagnosis of cellulitis after peripheral venous catheter insertion in newborns. Empirical antibiotic therapy should include agents active against gram-negative bacteria.

03D. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0328

THE CLINICAL BURDEN OF INVASIVE MENINGOCOCCAL DISEASE: A SYSTEMATIC REVIEW

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Background

Despite advanced medical technology and antibiotic treatment, invasive meningococcal disease (IMD) is still a leading infectious cause of death in childhood in developed countries. This review aims to identify and review all published evidence of fatal and long term outcomes and describe the clinical burden of IMD.

Methods

A systematic literature review was conducted using the PubMed and Embase databases and The Cochrane Library. Gray literature available online was searched for relevant conference abstracts. Articles published in English between January 2000 and August 2016 that reported the clinical burden of IMD were identified.

Results

Of 2548 citations retrieved, 104 studies assessed clinical outcomes of IMD in 38 countries including 13 developing countries. The target population varied markedly between studies including IMD as a whole, meningococcal sepsis, meningococcal meningitis, unsuspected IMD, severe meningococcal septicaemia, meningococcal septic shock, or meningococcal serogroup B/C/W cases, or IMD cases in certain age groups or admitted to Intensive Care Units. National case fatality rates ranged from 4.1% to 21.4%. The most commonly assessed sequelae were hearing loss (1.2% - 12.9%), seizures/epilepsy (1.4% - 13.9%), other neurological sequelae, amputation (0.3% - 4.7%), skin grafting and/or scarring (1.5% - 18.0%), and cognitive deficit. Since the study population, follow-up duration and definitions of sequelae were too heterogeneous, meta-analysis was not performed and results were summarised descriptively.

Conclusions

This systematic review outlines fatal and long-term outcomes beyond the phase of acute admission. A better understanding of the clinical burden of IMD is important for supporting healthcare resource allocation and decision making especially when considering new vaccines for inclusion on the publically funded immunisation programs.

Systematic Review Registration (Please input N/A if not registered)

PROSPERO CRD42016043213

20B. SCIENCE: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-0330

SERUM BACTERICIDAL ANTIBODY RESPONSES TO A MENINGOCOCCAL CAPSULAR GROUP B VACCINE (4CMENB) IN INFANTS, AFTER PRIMARY AND BOOSTER DOSES USING A REDUCED IMMUNISATION SCHEDULE

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Background

Capsular group B meningococcal disease (Men B) is a severe condition with high morbidity and mortality. Serum bactericidal activity (SBA) is considered the correlate of protection for meningococcal vaccines, but immunogenicity data on reduced schedules, as used in the UK programme, are limited.

Methods

Healthy infants were randomised to receive 4CMenB vaccine with routine immunisations (test group) at 2,4 and 12 months of age or to receive 4CMenB after routine vaccines (control group) at 6,8 and 13 months. SBA assay was performed at 5 (test group) or 6 (control group) and 13 months of age (both groups) against a capsular group B meningococcal reference strain (44/76-SL)

Results

187 infants were recruited, 94 were randomised to the test group and 93 to the control group. After the primary series of vaccines, SBA results were available from a total of 147 infants. Infants with an A SBA titer ³ 4 were considered responders. After the booster dose, SBA titers were available in 153 infants.

The proportion of responders according to the SBA titers and the SBA geometric mean titers (GMT) per group at different time points will be analysed. We will present the results of the analysis at the time of the meeting.

Conclusions

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Clinical Trial Registration (Please input N/A if not registered)

NCT02080559

03D. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0335

THE ECONOMIC BURDEN OF INVASIVE MENINGOCOCCAL DISEASE: A SYSTEMATIC REVIEW

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Background

New meningococcal serogroup B vaccines are being considered for inclusion on publically funded immunisation programs in several countries and as such warrant further investigation into financial costs of invasive meningococcal disease. This review aims to identify and review the evidence on economic costs of IMD.

Methods

A systematic literature review was conducted using the PubMed and Embase databases, The Cochrane Library, health economic databases and electronically available conference abstracts. Articles published in English between January 2000 and August 2016 that reported the clinical and economic burden of IMD were identified. Reported direct and indirect costs were converted to 2014 international dollars (I\$).

Results

Initial searches of the literature retrieved 2548 potential citations for inclusion. Fourteen primary studies reporting economic burden of IMD in 7 countries, were included for data extraction and review. Most studies (n=12) were conducted in high-income countries. Two outbreak studies were undertaken in low income countries (Brazil and Colombia). Minimum and maximum initial admission costs were found in Colombia (I\$1,800) and the United States (I\$48,145), respectively. The mean length of hospital stay ranged from 6 – 14 days. The average costs were reported from I\$934 to I\$15,908 for readmissions. Key variables included infants and presence of sequelae and complications, associated with higher hospitalisation costs and longer inpatient stay. No studies estimated out-of-pocket health expenditures and productivity loss.

Conclusions

Resource utilisation and medical costs associated with IMD can be considerably high, depending on age of illness and disease outcomes. Due to a paucity of IMD costing data, economic parameters such as long term follow-up and indirect costs used to populate economic models in the literature were mainly based on assumptions.

Systematic Review Registration (Please input N/A if not registered)

PROSPERO CRD42016043213

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0337

NEWBORN BABIES BORN WITH RISK FACTORS IN THE PERIOD FROM 2014 TO 2016 IN BITOLA

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Background

According to world literature, annually 3-4% of children are born with risk factor. They may have serious difficulties in the adaptation during their whole life. The aim of this paper is to show the incidence of children born with risk factor in the last three years in Bitola, to show the most common risk factors and their association with certain demographic characteristics: gender, birth order and mother's age.

Methods

The survey was conducted in the Office for preventive health care of pre-school children in Bitola. A total number of 3277 patients' health files were analyzed for the children born in the period 2014 – 2016.

Results

Out of 3277 newborns, 239 children were born with risk factors, or 7.29%, with no statistical significance in terms of gender. The most common risk factors were: asphyxia (24.69%), SGA (18.83%) and prematurity (10.46%) from 33 to 36 g.w. Most of the children were firstborn, or 67.78%, lived in a city and 50.63% of their mothers were aged 21-30 years.

Conclusions

The number of children born with risk factor increases. Prenatal care for pregnant women, especially regular gynecological checkups and reducing exposure to harmful factors are essential prerequisite for reducing the incidence of these children.

Clinical Trial Registration (Please input N/A if not registered)

N/A

08C. EDUCATION: HIV/AIDS

ESP17-0338

ASSESSMENT OF HPV AND OTHER VACCINES COVERAGE IN HIV-INFECTED GIRLS AND YOUNG WOMEN IN BRAZIL

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Background

Human Papillomavirus associated anogenital disease occurs more frequently in HIV-infected patients. Since 2014, the Brazilian Ministry of Health offers HPV vaccination for HIV-infected females aging 9 to 26. Influenza, PPSV-23, Men-C and Hepatitis A vaccines are offered to HIV-infected girls and women, but not to all healthy children. There are no current data on the vaccine coverage in Brazilian HIV-infected patients. Our aim is to evaluate vaccine coverage in São Paulo and assess factors associated with non-vaccination.

Methods

We reviewed patient charts of HIV-infected girls and young women in four HIV clinics in São Paulo, and collected demographic, clinical and laboratorial data, as well as how many HPV, Influenza, PPSV-23, Men-C and Hepatitis A vaccine doses each patient received. Parents or adolescents themselves signed an Informed Consent Form. The Research Ethics Committee approved the study.

Results

We assessed 37 HIV-infected females between 9 and 24 years of age, currently receiving cART, and classified according to the US-CDC, being 10.8% N; 16.2% A; 37.8% B; 35.2% C; and 64.8% class 1; 32.4% class 2; 13.6% class 3. HPV vaccine coverage was 59.5% for three doses, 18.9% for one or two doses and 21.6% received none. Influenza vaccine coverage was 28.6% in the last three years. Men-C, PPSV-23 and Hepatitis A vaccine coverage was 100%.

Conclusions

Our data show that HPV vaccine coverage was higher than in general population, but still insufficient. Comparing it to other vaccines, we found a major discrepancy, since these presented full coverages. A cognitive bias can exist regarding HPV-caused neoplasia, since pediatricians do not commonly treat anogenital neoplasia, thus do not have it in memory. This shows the importance of awareness campaigns directed to physicians responsible for treating HIV-infected patients.

04E. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0342

COMPARISON OF RISK FACTORS AND CLINICAL SIGNS AMONG CHILDREN WITH RSV PNEUMONIA VERSUS OTHER VIRAL PNEUMONIA AS WELL AS NON-VIRAL PNEUMONIA.

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Background

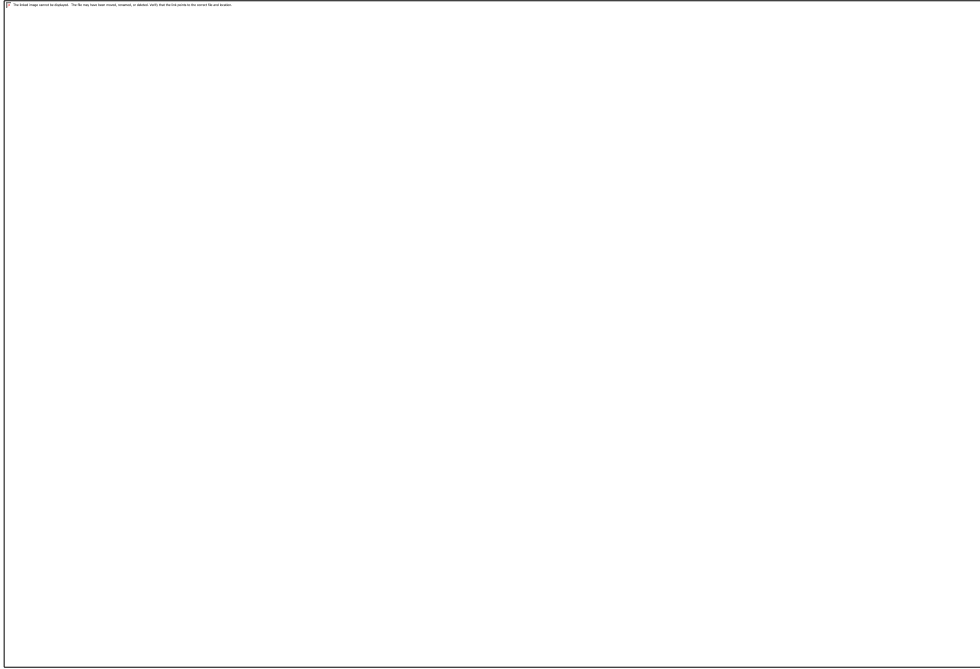
Most studies on childhood pneumonia generally compare viral versus non-viral pneumonia, but do not specifically compare Respiratory Syncytial Virus (RSV) pneumonia versus other viruses. This study was designed to examine the clinical findings and risk factors for RSV pneumonia compared to other viruses, as well as non-viral pneumonia, in a developing country setting.

Methods

Nasopharyngeal aspirate (NPA) samples were examined for respiratory viruses by PCR in a cohort of 584 children (1mo-5y) with pneumonia (WHO IMCI definition). Demographic features, clinical features, and risk factors were evaluated among children whose NPA showed RSV versus other respiratory viruses versus no virus.

Results

The 584 cases were grouped as non-severe (68), severe (431) and very severe (85) pneumonia. 246 (42.1%) infants were less than 6 months old. Viruses were recovered in 343 (58.7%) cases. These included RSV (150), Rhinovirus (102), Parainfluenza (36), human MPV (34), Bocavirus (7), Influenza (4), Adenovirus (1) and Combinations (9). There were no significant differences between RSV (150), other virus (193) and non-virus (241) cases in terms of demographic features, or presenting symptoms. However, duration of symptoms was almost 1 day less among RSV cases. Retractions and crackles were less frequent among RSV cases (Fig1A). Among 7 risk factors, exposure to tobacco smoke increased odds of RSV infection compared to other viruses (OR 2.88, 95% CI 1.85, 4.49) or no virus (OR 3.14, 95% CI 2.05, 4.79). Cases with other viruses were comparable to non virus cases (OR 1.09, 95% CI 0.73, 1.61). None of the other risk factors showed any differences(Fig1B).



Conclusions

Exposure to tobacco smoke significantly increases risk of RSV pneumonia compared to pneumonia caused by other respiratory viruses and non-viral pneumonia.

Clinical Trial Registration (Please input N/A if not registered)

Not applicable

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0343

EXISTENCE OF BACTERIA IN NATIVE LIVER OF BILIARY ATRESIA PATIENTS IS ASSOCIATED WITH SUBSEQUENT BACTERIAL INFECTIONS POST TRANSPLANTATION

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Background

Biliary atresia (BA) is a major indication for pediatric liver transplantation (LT). Post-transplant infection is common and is associated with unfavorable outcome. A report shows microbes are occasionally detected from the native liver removed from recipients, although its clinical significance is unclear. We aimed to evaluate the association between the microbes from the native liver of BA patients and post-LT infections.

Methods

This study targeted 197 cases who underwent LT for BA at the largest pediatric LT center in Japan between 2005 and 2016. The following information was extracted from medical records; patients' demographics, liver tissue culture (LTC) results, and clinical course including bacteremia and peritonitis that occurred within 28 days post-operation. The organisms causing post-operative infection were compared with LTC results.

Results

LTC was performed in 177 (90%) cases. Median age was 15 months and 72% were female. The majority of the patients received cefotaxime and ampicillin as perioperative antibiotics. Thirty (17%) of the LTC were positive for at least one organism. The details of these organisms were shown in Table 1. *Enterococcus* spp (n=11, 37%), *Pseudomonas aeruginosa* (n=5, 17%) and coagulase negative *staphylococci* (n=5, 17%) were commonly identified. Among patients with positive LTC, post-operative infections occurred in 14 (47%); five with bacteremia and nine with peritonitis. Interestingly, the identity of the isolates from the post-operative infections matched those from LTC in eight (57%). Most of these infections occurred within 14 post-operative days (n=13, 93%).

Conclusions

The existence of bacteria in the native liver of patients with BA was associated with post-operative infection.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0344

SECONDARY HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS DUE TO VISCERAL LEISHMANIASIS

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Title of Case(s)

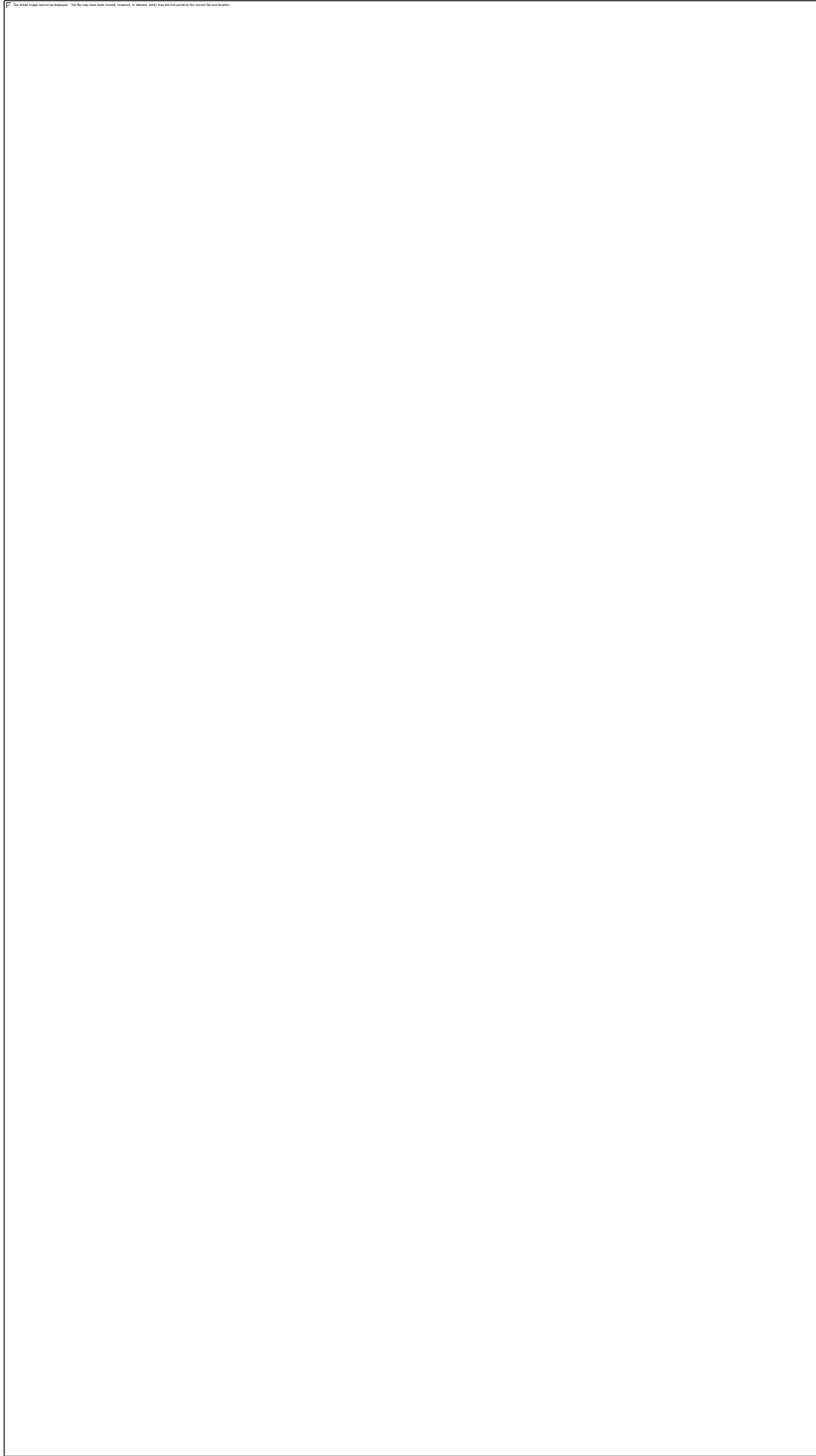
Secondary hemophagocytic lymphohistiocytosis due to visceral leishmaniasis

Background

Hemophagocytic lymphohistiocytosis (HLH) is a life-threatening condition, which may be primary or triggered by a number of infectious agents. We describe a case of HLH triggered by visceral leishmaniasis (VL), but initially misdiagnosed as a secondary to parvovirus B19 infection.

Case Presentation Summary

A previously healthy 3 year old girl was admitted to our hospital for investigation of intermittent fever for 3 months, associated with pancytopenia and splenomegaly. She was first seen at her hometown – an inland region of Minas Gerais province – and then in provincial Sao Paulo, with inconclusive evaluation. Due to elevated ferritin and triglycerides, HLH was promptly diagnosed despite normal myelogram. Infectious evaluation was unremarkable, except by a positive PCR for parvovirus B19 in plasma – considered then as the trigger for HLH. Chemotherapy was started and the patient was then discharged after partial clinical improvement. She was hospitalized several times during the following six months due to febrile pancytopenia, receiving broad-spectrum antibiotics and chemotherapy intending retreatment of HLH. During her last hospitalization, the PID team was contacted due to important and progressive splenomegaly despite adequate treatment. As reviewing patient's epidemiology, VL was suspected: a new myelogram was performed and amastigote forms of *Leishmania* were then identified. Liposomal amphotericin was administered for five days - fever ceased after two days and after 14 days the splenomegaly started to recede.



Learning Points/Discussion

Suboptimal response to treatment must call for a thorough reassessment of the patient's clinical condition, epidemiology and medical history, so a treatable infectious trigger of secondary HLH can be promptly identified.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0346

CEREBRAL VASCULITIS IN BACTERIAL MENINGITIS : RETROSPECTIVE STUDY OF 17 CASES

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Background

Cerebral complications in patients suffering from meningitis are well known : hydrocephalus, effusion and empyema, ventriculitis, venous thrombosis/infarction, arterial infarct, vasculitis. However, the latter complication has rarely ever been described as far as children are concerned. There is no such thing as therapeutic recommendation for it. Based on a series of 17 cases, we'll be discussing epidemiology, the clinical and para-clinical evolution, and the effect of the corticotherapy treatment in bacterial meningitis coupled with cerebral vasculitis.

Methods

This is a mono-centric study carried out at Montpellier university hospital which looks back at a 7-year study(2009-2016) and which takes an inventory of bacterial meningitis complicated cerebral vasculitis (with bacteriological confirmation: culture of cerebrospinal fluid, or blood culture). The diagnosis of vasculitis was confirmed by a radiologist specialised in neuropaediatrics after his re-reading of the head MRI. The cases were included based on the bacteriological data provided by the HDB (hospital data base). Tuberculous meningitis, meningitis in CSF shunt, and in patients having chemotherapy were disregarded.

Results

Seventeen patients, 9 boys, 8 girls were included, the average age was 5.4 months old. The germs found were the streptocoque pneumonia (9 cases), streptocoque B (4 cases), E. Coli (2 case), Neisseria meningitides (1case). 8 patients had corticosteroids pulses after the diagnosis of vasculitis, 5 had a corticostreoids on a low dose, 4 patients didn't have corticosteroid. There were 4 death, 4 patients had auditive or neurologic aftereffect, 9 patients didn't have any sequellae.

Conclusions

Streptococcus pneumonia is the most frequently involved germ. Vasculitis was diagnosed during the first week, it represents a severe complication, corticotherapy not seems to change the clinical outcome and patient prognosis.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0350

PERTUSSIS IN VENEZUELA IN THE 21ST CENTURY: THE NEW HERODES?

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Background

Pertussis is endemic around the world, estimated annually 50 million cases and 300,000 deaths; even in countries with high coverage of sustained vaccination, cases continue to appear. The incidence in the affected countries varies widely; in the Americas has had a major rebound, reason why is considered as a public health problem.

Methods

The objective of this secular study is to know the distribution and frequency of morbidity and mortality due to pertussis in Venezuela during the period (1995-2013).

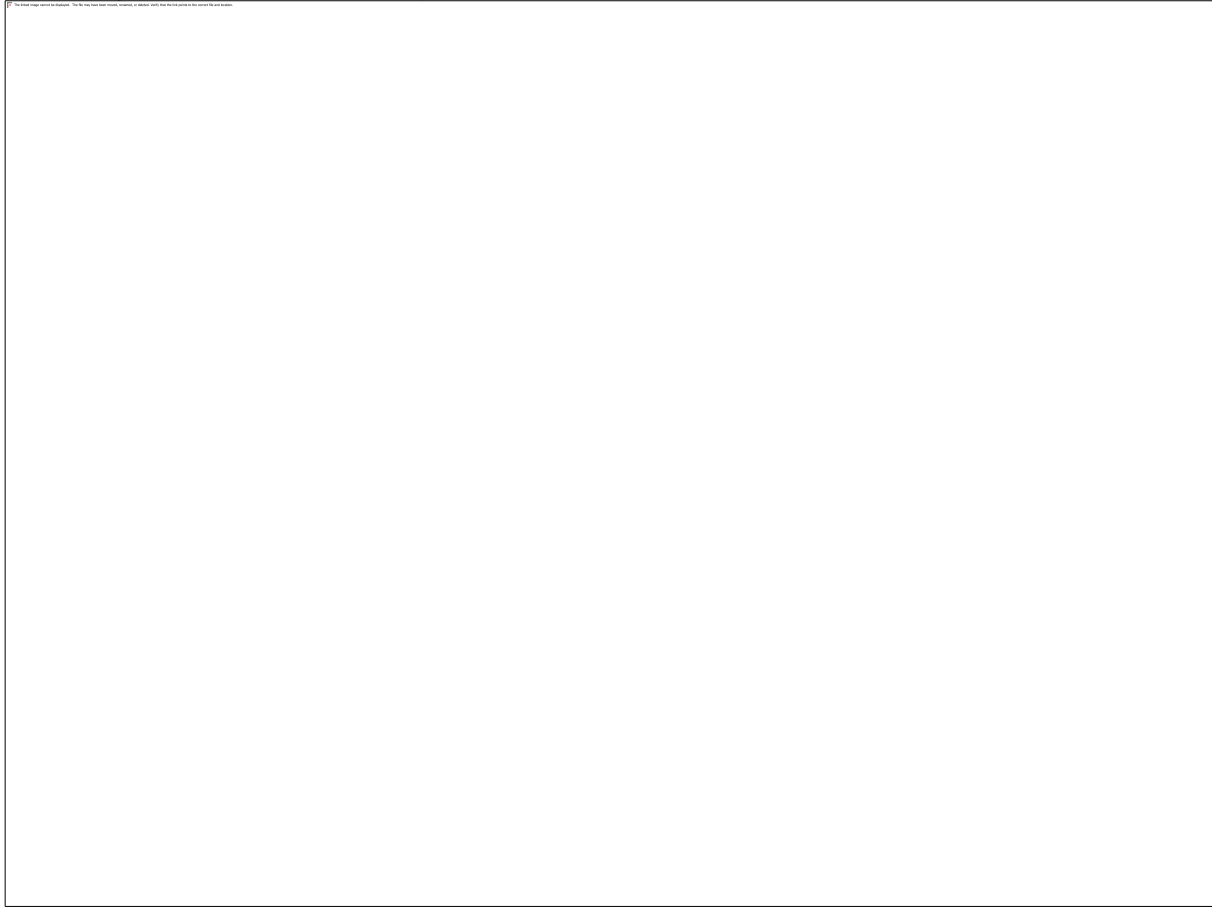
Epidemiological, chronological, retrospective study of official nation data published by the Ministry of Health, in various instruments: Bulletins, Yearbooks of Morbidity and Mortality. (last published official data)

Results

In the last 11 years (2003-2013), endemic to low frequency (n: 6886), with a clear predominance in children (n: 4624) 67.15%. There were a total of 636 deaths, 609 (97.75%) among infants <1 year.

The burden of disease is more evident in mortality, n: 347, of those 340 in infants <1 year, 97.98%; 106 in infants <2 months (31.17%), before the age of vaccination, 2 to 6 months n: 212 (62.35%) recommended age at national immunization program, and 7-11 months n: 12 (3.52%).

The average lethality rate in infants <1 year is 7.32.



Conclusions

This epidemiological review of data broad many reflections and learning notes, but above all is the importance of disease prevention in children, considering the relevance to implement a strategy directed to immunize pregnant at 3rd trimester and newborn close contacts.
(cocoon strategy) that could reduce disease and mortality in infants <1 year.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0353

CUTANEOUS STIGMAS FACILITATE THE DIAGNOSIS OF ENDOCARDITIS BY KINGELLA KINGAE

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¹Hospital Universitari Doctor Josep Trueta de Girona, Pediatria, Girona, Spain

Title of Case(s)

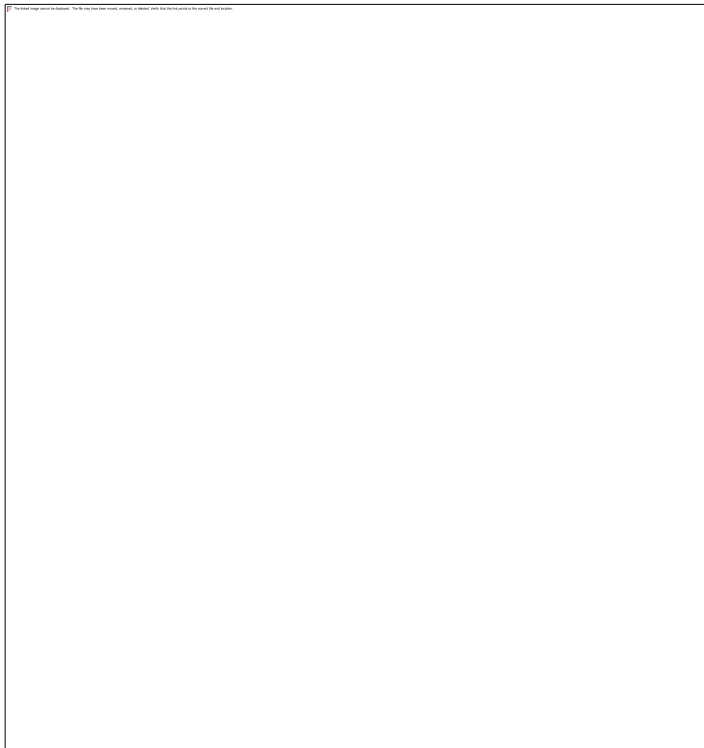
CUTANEOUS STIGMAS FACILITATE THE DIAGNOSIS OF ENDOCARDITIS BY *KINGELLA KINGAE*

Background

Bacterial endocarditis on healthy native valve is a rare disease in pediatrics caused mainly by *S.aureus* and *S.viridans*. Approximately 10% occurs in patients without heart disease. *K.kingae* is a gram-negative bacteria belonging to the HACEK group and generally causes low virulence infections, although it can occasionally cause severe disease as endocarditis or osteoarticular infection.

We present a case of endocarditis by *K.kingae* on native mitral valve, with the singularity that its diagnostic suspicious was established because of a dermal embolic phenomena with vasculitis.

Case Presentation Summary



A 3-year-old girl with no history of interest who consults for high fever of two days and generalized micropetechiae. Blood analysis showed 8,500 leukocytes (70% neutrophils), CRP of 15mg/dL and Procalcitonin of 27ng/mL. We initiated intravenous ceftriaxone.

Painful violaceous nodules were seen in the first toe of both feet (Fig. 1). As a possible thromboembolic phenomena, we did an echocardiography, where it evidenced a big vegetation in the mitral valve with mild valve insufficiency. *K.kingae* was isolated in the blood culture and pharyngeal smear. The patient presented progressive mitral insufficiency requiring cardiac surgery with vegetation excision and valve repair. Subsequently the clinical evolution was favorable, completing 4 weeks of ceftriaxone and remaining asymptomatic.

Learning Points/Discussion

Osler's nodules may go unnoticed many times, but they are pathognomonic of infective endocarditis. These lesions should be differentiated from Janeway's lesions. Osler's nodules are palpable, painful, and erythematous that disappear within a few days; while Janeway's lesions are small, erythematous, painless macules or papules that last for weeks. Distinguishing these two entities is a challenging. It is the first time that Osler's nodules are reported in a pediatric patient with *K.kingae* endocarditis.

06A. EDUCATION: DIAGNOSIS THROUGH HOST RESPONSE

ESP17-0354

C REACTIVE PROTEIN- ROLE AS A SCREENING/ SURROGATE BIOMARKER IN INFECTION REVISITED

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Background

Availability of diagnostic assays for infection vary in India where infectious disease burden is high. The host response to infection produces various mediators which can be potentially used as biomarkers. The cut off levels of different biomarkers including C reactive protein (CRP) for clinical decision making vary between different studies. The objective was to establish and evaluate reference range of CRP for new speciality children's hospital.

Methods

The children aged 2 to 84 months who were evaluated for fever either as in or out patients were included. Complete blood count including absolute neutrophil count (ANC) (automated counter), C Reactive protein (automated analyser), urinalysis and blood culture were done. Children with recent vaccination, immunodeficiency and history of antibiotics started were excluded. The sensitivity, specificity, positive and negative predictive value were determined at 5mg and 10mg/L cut off levels for CRP. The results were correlated with ANC, blood and urine culture reports.

Results

125 children were included. Five children were excluded who showed neutropenia though total count was normal. CRP value ranged from 4 -159 mg/L (mean -23.7mg/L). Elevated ANC was seen in 30 children. Blood and urine culture were positive in 15 and 40 children respectively. The main organisms found in blood culture were *Streptococcus Pneumoniae* and *sangui*, *Klebsiella Pnemoniae*, *Salmonella typhi*, *Acinetobacter* and *Enterobacter*. *E.coli* was predominant organism seen in urine culture. The sensitivity of CRP was high at 77% at 5mg /L while specificity was 87% at 10mg/L.

Conclusions

CRP level is an accessible, faster and cost-effective marker for initial evaluation of infection in the Indian scenario. Serial monitoring which can be helpful is not always possible in OPD patients. Currently reference value used for CRP is <10mg/L in the hospital.

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-0355

ACUTE TBE CASE IN THE ABSENCE OF IGM

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¹*Kazakh National Medical University, Infectious and tropical diseases, Almaty, Kazakhstan*

²*Kazakh National Medical University, Children Infectious diseases, Almaty, Kazakhstan*

³*Kabanbay District Hospital, Infectious Diseases Department, Almaty Region- Kabanbay village, Kazakhstan*

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Title of Case(s)

ACUTE TBE CASE IN THE ABSENCE OF IGM

Background

TBE natural foci are in Almaty region of Kazakhstan (ARK). *Ixodes persulcatus* are the main reservoirs of TBEV in ARK. The distribution of *Ixodes persulcatus* in natural foci in ARK is a mosaic and tied to mountain mixed forests, at the same time, in steppe zones, the incidence of TBE is not marked. Thus, in the TBE Case Definition is included in addition to TBE clinical manifestations, visit or residence in endemic area and the presence of such a risk factor as the tick bite.

Case Presentation Summary

A boy of 15 years was admitted to hospital from an endemic area (Lepsinsk village, Alakol district, Almaty region) 06.06.16 on 3 day of illness. His father had suffered confirmed TBE 3 years ago. Boy became ill with fever, appearance of weakness, severe headache, repeated vomiting. 28 days ago (08.06.16) the boy was bitten by tick. There were hyperemia and a pasty face, injection of sclera, meningeal symptoms (stiff neck, Kernig sign) upon admission to the hospital. Was established TBE probable case, meningeal form. IgG detected in blood on 07.06.16 (4 day of illness) on TBEV in IFA (0,352/0,113) in the absence of IgM. In the second serum taken 14 days later also detected only IgG to tick-borne encephalitis virus (0,834/0,114). The patient was treated with Anti-TBEV immunoglobulin and discharged with recovery without complications.

Learning Points/Discussion

Residents of endemic TBE regions may have antibodies to TBE without the presence of manifested infection in the past. In the case of TBE re-infection IgM does not appear in blood and serological diagnosis must be based on the increase of IgG titres. The initial infection can occur when drinking raw milk

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-0357

TBE IN CHILDREN IN KAZAKHSTAN

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Title of Case(s)

TBE in children in Kazakhstan

Background

Two regions in Kazakhstan are endemic for TBE, *Ixodes persulcatus* are common here. The TBE incidence has tendency to increase from 27 cases in 2013 to 48 cases in 2016, of which only 6-8 cases are children. Also, there is increasing the number of persons bitten by ticks during these years (from 1500 to more than 3000), half of them are children.

Case Presentation Summary

In Almaty Pediatric Infectious Diseases Hospital in 2013-16, were treated 4 children with TBE final diagnosis, 23 with unspecified viral encephalitis and 3 with fever after a tick bite. Officially there were registered only 4 TBE cases in children these years.

4 children, 5-14 years old, had tick bite, admitted to the IDH in May-June, spent in the hospital 7-20 days were under our supervision. Symptoms appeared 4-5 days after tick bite - fever, sore throat, headache. Then condition improved, temperature was dropping, but after 4-14 days after the first wave was developing the second wave - fever, headache, vomiting, meningeal symptoms. Half had meningitis, others meningoencephalitis, complications did not develop. In the CSF early in the disease developed 42-138 cell count (neutrophils 12-70%) in the blood, leukocytosis $10-13 \times 10^9/L$.

Learning Points/Discussion

The impression that not all children TBE cases in Kazakhstan are identified, diagnosed and recorded. TBE in children occurs in the form of two-wave illness. But TBE diagnosis is established very late, never during the first wave, usually on 3-6 days of the second wave. Sick children have not been tested for IgG and in the case of TBE re-infection IgM does not appear in blood.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0358

FALSE-POSITIVE IGRA RESULTS IN A TERTIARY REFERENCE SPANISH HOSPITAL

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Background

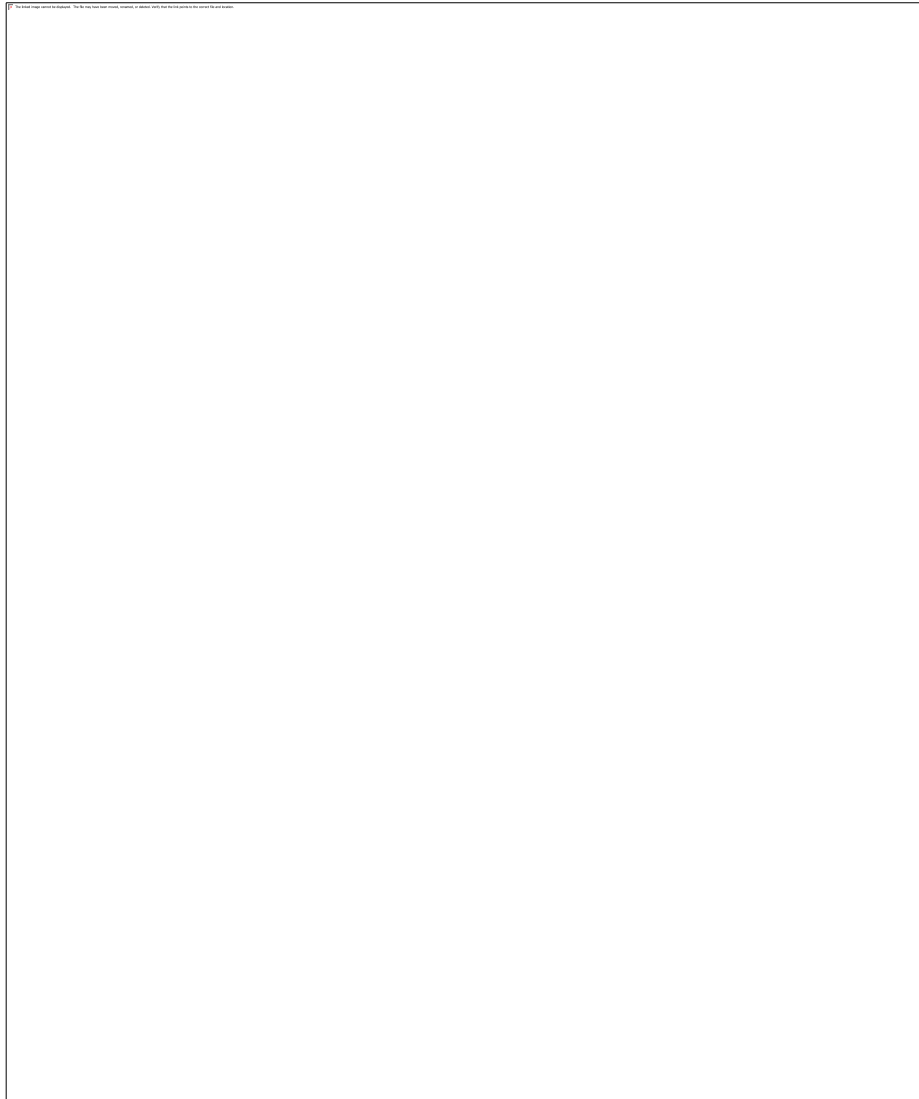
Interferon-gamma release assays (IGRAs) have been introduced for the diagnosis of latent tuberculosis (TB) infection and to support the diagnosis of active TB disease. They have a higher specificity than tuberculin skin test (TST), and false positive results due to intra-assay variability (e. g. improper collection, storage, incubation, and processing of blood tubes, and variation of IFN- γ measurements) or variable immune response (medication, stress, infection) have been only rarely reported in children.

Methods

During 2013 to 2016 period, 602 QuantiFERON-TB Gold In-Tube assay (QFT-GIT) (Cellestis Ltd., Australia) were performed in our children's hospital: 406 were negative, 31 indeterminate and 165 positive. Five of them (3%) were considered false-positive results.

Results

The main characteristics of the 5 patients are summarized in Table 1. All had a first positive QFT-GIT result, with subsequent negative results. Only patient 1 had been in close contact with a confirmed TB case, but his mother had received treatment during pregnancy and was sputum smear negative before delivery. All radiological and microbiological studies were negative for active TB.



Conclusions

Although infrequently, false positive QFT-GIT assays may be found in children. The presence of immunologic disorders, maternal T cell in the newborn or active infections due to nontuberculous micobacteria might explain these results.

Identification of children at risk for false-positive IGRA results is crucial as they can lead to unnecessary exams and treatments.

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-0360

CLINICAL AND EPIDEMIOLOGICAL TBE MANIFESTATIONS IN ALMATY CITY

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Title of Case(s)

Clinical and epidemiological TBE manifestations in Almaty city

Background

Almaty and Eastern Kazakhstan region are TBE endemic zones. There were registered 172 TBE cases during 2011-2015. In Almaty accounts for ¼ of all TBE cases (46 cases - 26,7%). In Almaty annually are registered from 5 to 12 cases TBE. The TBE incidence in Almaty recorded from April to August. The maximum number of cases, are determined in June (42,5%)

Case Presentation Summary

We analysed 40 confirmed (IgM in ELISA) TBE cases. There were 75% (30) men and 25% (10) women. The average age was 30.5 years. Visit to the nature was reported by 37(92,5%) patients, the others (7,5%) have not traveled outside of the city. The tick bite was noted 21 patients (52,5%). 6 patients (28.6%) had received prophylactic immunoglobulin, 3 (10%) had received vaccination against TBE, however two of them received only 1st vaccine dose prior 2 weeks, and the third – 2 vaccination three months prior to the tick bite. The incubation period is averaged 12.4 days, hospital stay - 15.8 days. There were meningeal–13 (32,5%), meningo-encephalitic – 12(30%), poliomyelitic - 1(2,5%), febrile 11(27.5%) and erased -3(7,5%) TBE clinical forms. 2 (5,0%) patients died. Patients were treated by anti TBEV immunoglobulin, and antiviral drugs.

Learning Points/Discussion

Almaty region is endemic TBE area, sick mainly men (75%) in the young age group (21-40 years). The problem in diagnosis is that 7.5% of patients deny visiting to the nature and 47.5% even deny a tick bite. TBE may develop on the background of using anti TBEV immunoglobulin prophylaxis and even unfinished by the time of the disease vaccination.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0362

MOXIFLOXACIN FOR THE TREATMENT OF DISSEMINATED MICOBACTERIUM AVIUM COMPLEX IN A CHILD WITH COMPLETE INTERFERON GAMMA RECEPTOR DEFICIENCY

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Title of Case(s)

MOXIFLOXACIN FOR THE TREATMENT OF DISSEMINATED MICOBACTERIUM AVIUM COMPLEX IN A CHILD WITH COMPLETE INTERFERON GAMMA RECEPTOR DEFICIENCY.

Background

Although concerns about the potential cartilage toxicity in pediatrics, fluoroquinolones (FQs) remain appealing antimicrobials due to their effectiveness against multi-drug resistant organisms.

Moxifloxacin (MXF) is mainly employed as a powerful second line anti-TB drug in adults, but the clinical experience in children is poor and limited to TB.

We report about a off-label MXF treatment in a child with a primary immunodeficiency and disseminated atypical mycobacterial infection.

Case Presentation Summary

A 18-month-old male born to non-consanguineous parents was admitted with persistent fever, hepatosplenomegaly, neutrophilia, anemia, raised C-reactive protein, increased liver enzymes. Bone marrow (BM) aspirate ruled out myeloproliferative disorders, hemophagocytosis. Immunological and neutrophil respiratory burst test were normal. Cultures from liver biopsy grew *Mycobacterium avium* complex (MAC). Functional studies of IFN- γ axis (markedly raised IFN- γ plasma levels, none expression of IFN- γ R1 in monocytes and abolished induction of IL-12) and sequencing of the IFNGR1 gene (new compound heterozygous mutations) confirmed the diagnosis of complete IFN- γ R1 deficiency.

Based on susceptibility test, 4-drug antimycobacterial treatment (clarithromycin, ethambutol, rifabutin and MFX, 10 mg/kg/die) was started and is still ongoing after the HSCT (20 weeks).

None of the adverse effects related to MFX were observed (arthritis, rash, allergic reaction, liver toxicity); QT remained always in the normal range.

Learning Points/Discussion

Depending on the pattern of drug susceptibility on antibiograms, a MFX-containing regimen might be considered for treatment of disseminated MAC infection in children, especially in case of primary or acquired immunodeficiencies, where an aggressive and extensive treatment is needed. Although the occurrence of adverse effects should be strictly monitored, the benefit-risk ratio appears to favor the use of this drug.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0364

CA-MRSA OSTEOMYELITIS WITH TORPID EVOLUTION

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Title of Case(s)

CA-MRSA osteomyelitis with torpid evolution

Background

S. aureus is the most common cause of osteomyelitis in children. Although the prevalence of community-associated methicillin-resistant *S. aureus* (CA-MRSA) varies geographically, it is an important cause of pediatric musculoskeletal infections. CA-MRSA is associated with more severe infection than methicillin-susceptible *S. aureus*.

Case Presentation Summary

9 year-old boy with fever, erythema, pain and increased temperature in left leg after having received a kick one month ago. Arrived from Venezuela, he had been treated there with ampicillin with poor adhesion. He presented in the front area of the tibia painful erythematous and hot plate of 13, 5 x 8 cm. In analytics leukocytosis and neutrophilia with increased inflammatory parameters. He was admitted with parenteral amoxicillin-clavulanic, changed after 4 days for cloxacillin and clindamicin because of the poor evolution. In the culture of the purulent material outputting of the drainage MRSA was isolated (sensitive to linezolid, vancomycin, rifampin, resistant to clindamicin). Treatment was changed to vancomycin and rifampicin. X-ray without bone involvement apparently. Severe pain persisted. Magnetic resonance image (MRI) showed osteomyelitis in the entire tibia and subperiosteum with affectation of soft tissue. Collection was drained with MRSA isolation in culture. He continued 6 weeks of parenteral vancomycin, rifampin, and 15 days of linezolid with good response. One month later symptoms and analytical disorders reappeared. Poor adherence to treatment. MRI with greater affectation, without susceptible findings of surgical intervention. Admission with parenteral vancomycin, continues with the treatment at the present time with severe impair of the tibia bone.

Learning Points/Discussion

Chronic osteomyelitis is severe and treatment retardation condition poor prognosis of the limb. Resistant bacteria such as MRSA are serious and difficult to treat. In these patients surgical approach is essential.

22A. EDUCATION: OTHER

ESP17-0365

PYELONEPHRITIS ACUTA IN A MALE INFANT

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Title of Case(s)

PYELONEPHRITIS ACUTA IN A MALE INFANT- CASE REPORT

Background

Our case is an acute bacteriological pyelonephritis caused by Klebsiella on the left kidney of a male infant. The primary hotspot of the infection was most probably phimosis, which was later removed with circumcision.

Case Presentation Summary

OBJECTIVE OF RESEARCH : To show a case of acute pyelonephritis with male , 11-month-old suckling that was treated at our ward with the diagnosis of Convulsiones febrilis, Pyelonephritis ac. lat. sin. Phymosis.

MATERIAL AND WORK METHODES: Data from the infants medical history were used. It was admitted at our ward with a convulsive status and a temperature of 40° C. After treatment of the seizures with diazepam applied i.v., the infant was hospitalized and more thorough examinations were conducted.

RESULTS: His blood analysis showed : Le-9,7 , CRP-42 mg/l, fibrinogen 5 gr/l, urine- strongly positive albumen and a mass of Le in the sediment. The results of his hepatogram, ionogram, glycemia, urea, creatinine, chest x-ray, ECG and LP were good. The microbiological examinations, that is , the samples taken from his nose and throat and hemokulture were negative, whereas there was a presence of Klebsiella in his urine. The ultrasonography scan of U.T. revealed pyelonephritis on his left kidney. The infant was treated for 10 days with intravenous antibiotic according to the antibiogram. His urine was tested on a daily basis and at the end of the treatment all the laboratory examinations were repeated and were normal. At the Pathophysiology Clinics DMSA 99 mTc was conducted, which indicated that there were no defects on both sides of the renal parenchyma.

Learning Points/Discussion

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04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0366

RESPIRATORY VIRAL INFECTIONS IN PEDIATRIC INTENSIVE CARE UNIT OVER 5 YEARS- EPIDEMIOLOGY AND RISK FACTORS FOR SEVERE OUTCOME

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Background

Respiratory infections are associated with high morbidity and mortality. Risk factors for severe disease are diverse.

Aims: to describe epidemiology of viral respiratory infections among children admitted to PICU and risk factors for complications and severe outcome.

Methods

A retrospective study of patients with documented viral respiratory infections admitted to Ruth Rappaport Children's Hospital's PICU, Haifa, Israel (May 2010-May 2015). Data included: age, gender, ethnicity, underlying conditions, community acquired vs. nosocomial, length of stay, diagnosis on admission, use of antibiotics, antiviral, steroids, use of respiratory support, complications (bacteremia, pneumonia, encephalitis, mortality).

Results

There were 2444 admission to PICU, of them ninety one (3.7%) were with viral respiratory infection (32 transferred from other hospitals) . RSV and adenovirus were most common (51% and 26% of cases respectively). Influenza viruses were detected in 16% of the cases. Eighteen cases were nosocomial (mainly adenovirus-8 cases). Underling condition was seen in 61 patients (66%), most commonly cardiac (33%), respiratory (21%), neurology (14%) immunodeficiency (7%). Seventeen patients (18%) had secondary pneumonia, 15 patients (16%) had bacteremia and 42 (46%) needed invasive ventilation. Ten patients (11%) died in hospital (mean age 3.12), all had underling conditions.

Factors associated with complications were: underling condition (OR 2.9;CI-1.1-7.7), antiviral use (OR 24 CI-3-200), invasive ventilation >12 days (OR 19.5;CI-3.7-100), being >3 years old (OR 5;CI-1.3-19), and length of stay; >14 day stays in the PICU (OR6;CI-1.9-19) compared to 1-6 day stays. However, preterm birth had decreased association with complication (OR 0.17;CI-0.05-0.64).

Conclusions

Viral infections are common in PICU. Complications were common mainly among older children, those with underling disorders and those with prolonged ventilation and hospitalization. Mortality is significant though may be affected by ever underling condition.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0368

IMMUNIZATION COVERAGE FOR OTHER IMMUNOGENS FOLLOWING THE INTRODUCTION OF THE CONJUGATE PNEUMOCOCCAL VACCINE IN THE TACHIRA STATE

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Background

WHO established that vaccination coverage on immunization programs must reach at least 90%. The inclusion of new vaccines to public calendars could reinvigorate the interest of population on them, increasing vaccination coverage. The objective of this study was to correlate potential increase on vaccines coverage given in the SIP (state immunization program) in Táchira State from 2008 to 2014, after the introduction of PCV.

Methods

Study clinical epidemiological, observational, retrospective, correlate; where is get the growth interannual of the coverage of them inmonogenos managed from them 2 months of age and before the year of life by the PAI from the 2007 to the 2014; noting if there were changes in his behavior since introduction of the Pneumococcal conjugate vaccine, obtained from the regional address immunization registry of health of Táchira State.

Results

During the study period, a sustained and uniform increase coverage of vaccines was observed. The vaccine with the highest coverage observed was Oral Polio 75,08% and that of lowest coverage was anti-rotavirus with 62,75%.

A moderate correlation between the administration of the anti neumococcal conjugate vaccine and increase of coverage of others vaccines at SIP was observed. The highest correlation was for pentavalent vaccine, with a Pearson index of 0.58 and the lowest correlation was for MMR, with a Pearson index of 0,105.

Since pneumococcal vaccine introduction on SIP, immunization coverage has increased more than 20 points

Conclusions

The introduction of the Pneumococcal conjugate vaccine may be responsible for 45% vaccine coverage increase, turning it into a sort of aircraft carrier effect that push up the vaccine coverage of all others vaccines.

Clinical Trial Registration (Please input N/A if not registered)

N/A

06B. SCIENCE: DIAGNOSTIC TOOLS

ESP17-0370

BIOMARKERS IN PEDIATRIC SEPSIS: A SYSTEMATIC REVIEW

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Background

Sepsis remains an important challenge in pediatric critical care medicine and biomarkers have a great potential to improve its diagnosis and treatment. The current review intends to systematically evaluate existing evidence of the diagnostic utility of biomarkers for prediction of sepsis in children.

Methods

A systematic review of the literature in English was undertaken with searches in Pubmed database using the key words 'pediatric', 'children', 'sepsis' and 'biomarker'. All clinical studies evaluating biomarkers were included. Lower date limit was set the 1st of January 2011 and the search was continued until November 2016. The review conformed to the PRISMA guidelines.

Results

Of 762 potentially relevant articles, 127 fulfilled the inclusion and exclusion criteria. C-reactive protein (CRP) and procalcitonin (PCT) were the most extensively biomarkers evaluated. Biomarkers related to vascular endothelial damage, vasodilation, oxidative stress, cytokines/chemokines and cell markers have also been studied. Multiple biomarkers based on genome-wide expression as well as metabolic profiling are under investigation and could further personalize treatment more promptly and accurately. In addition, in 41 of 127 selected manuscripts, the biomarkers studied were associated with particular diseases such as meningitis, pneumonia, immunodeficiencies.

Conclusions

Due to the complexity of sepsis pathophysiology, it is unlikely that a single 'gold' biomarker can be solely used in clinical practice. A combination of biomarkers or genomics could establish a personal and dynamic disease profile, but further investigations are needed in the field.

Systematic Review Registration (Please input N/A if not registered)

N/A

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-0371

BARTONELLA HENSELAE ENDOCARDITIS. REPORT OF A CASE.

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Title of Case(s)

Bartonella henselae endocarditis. Report of a case.

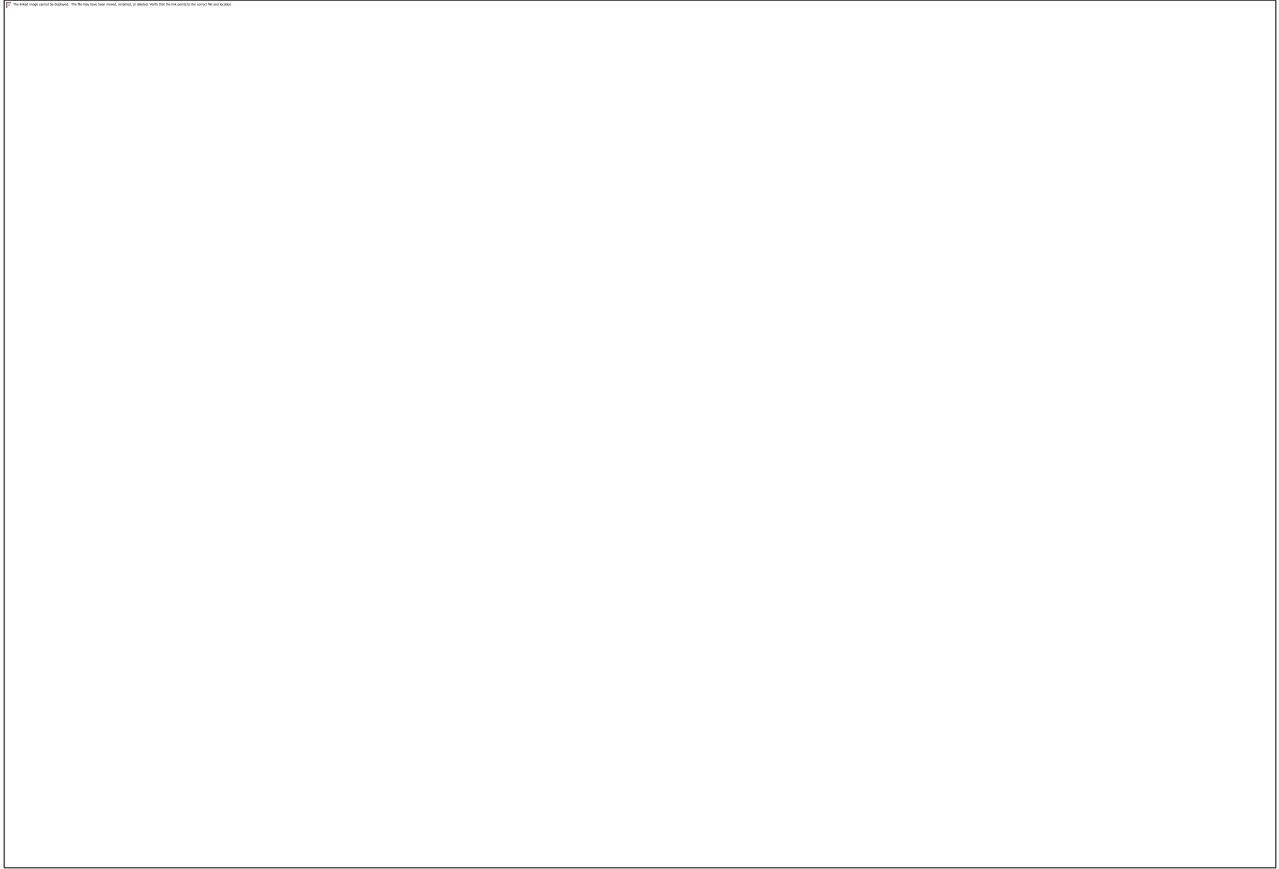
Background

Bartonella henselae, a fastidious pleomorphic gram negative rod commonly associated with localized subacute lymphadenitis, has been reported as a cause of culture negative infectious endocarditis (IE) in children with congenital heart disease.

Case Presentation Summary

We report a case of *Bartonella henselae* IE in a 7 years old female with past medical history of tetralogy of Fallot with pulmonary atresia (Blalock taussig shunt and contegra conduit repair), right ectopic kidney with 26% function, genetic disorder in study and nephrotic syndrome.

She was admitted to the hospital to complete nephrotic syndrome study (Renal biopsy: crescentic *glomerulonephritis* with *immune complex deposits*). A control echocardiogram revealed a 9x4 mm vegetation in left pulmonary artery and contegra conduit calcified with severe stenosis. After this, mother told that she had 1 month of intermittent fever 3 months before admission. She was started on antibiotics (linezolid plus ceftriaxone). Five blood cultures were negative and the vegetation persisted with no changes so caspofungin was added. Because the patient had negative blood cultures, *glomerulonephritis* and contact with cats we solicited *Bartonella henselae* IgG titers positive >1/1024, therefore, ciprofloxacin was added. After 70 days of antibiotics and 50 days of caspofungin the vegetation persisted so she went under surgery to change the contegra conduit. The culture of the conduit was positive for *Staphylococcus pasteuri* and universal PCR for *Bartonella henselae*, she started Rifampin and caspofungin was suspended. She had allergy to linezolid so it was switched to vancomycin. Finally she completed 5 weeks of vancomycin plus rifampin and 6 weeks of ciprofloxacin.



Learning Points/Discussion

Bartonella henselae endocarditis requires a high clinical suspicion in patients with congenital heart diseases with persistent negative blood cultures.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0372

LOCALIZED NEWBORN HERPETIC INFECTION OF PROBABLE MATERNAL-FETAL VIA WITH SUBSEQUENT REACTIVATION

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Title of Case(s)

LOCALIZED NEWBORN HERPETIC INFECTION OF PROBABLE MATERNAL-FETAL VIA WITH SUBSEQUENT REACTIVATION

Background

Management of herpes infection in neonatal period remains a challenge despite diagnostic and therapeutic advances. Disseminated disease has a high mortality presenting risk of future sequelae in childhood. There has been an increase in the incidence because of elevated prevalence of genital herpes in young women.

Case Presentation Summary

7 days-old boy arrived to pediatrics emergency with a clustered papulovesicular plaque in parietooccipital scalp over an erythematous base. Normal pregnancy without fever at delivery, no use of electrodes on scalp. There was no genital lesions during pregnancy. Cesarean because of difficulties for delivery. Mother had evolutive lesions in right ankle in last 3 days previous to delivery. The newborn were admitted at hospital suspecting herpes infection with secondary impetiginization, so intravenous cloxacillin and acyclovir were indicated: PCR of vesicle: VHS2 +. Medular puncture and CNS ultrasound rules out neurological complications. Serological and microbiological study in parallel on the mother was performed obtaining VHS 2+ by PCR in blood, and positive Ig G and Ig M for VHS 2. Unfortunately there was no possibility to capture previous serologies during pregnancy, not distinguishing reinfection or reactivation. 14 days after the patient was discharged starting prophylaxis with acyclovir 300mgr/m² tid for 6 months. 2 weeks after new vesicles in scalp appear coinciding with similar lesions in mother's right ankle. Both of them were treated with other acyclovir schedule curing completely. A new reactivation in the child happened 10 days after finishing the treatment.

Learning Points/Discussion

Localized neonatal herpes (45%) has a good prognosis, but early therapy and follow-up is mandatory. The systemic or neurological progression of the disease must be prevented and ruled out.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0373

TREATMENT OF BRONCHIOLITIS IN RELATION TO TIME AND PLACE

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Background

Treatment of infant bronchiolitis has varied in relation to time. We evaluated treatment of bronchiolitis, separately for those treated at the ward and in the pediatric intensive care unit (PICU) in 2000-2016.

Methods

This one-center study is based on retrospective chart review for years 2000-2015. Together, 104 infants <12-months-of-age were treated for bronchiolitis in the PICU, and for these episodes, we selected 186 control patients admitted close to cases and treated at the ward (34 were transferred to the PICU). We divided the data for the years 2000-2005 and 2007-2015 to identify the treatment strategies separately at the ward and in the PICU before and after the AAP 2006 bronchiolitis guideline.

Results

Statistically significant changes was seen in five treatment modalities in the PICU and at the ward between the two time periods. The use of beta-agonist inhalations (PICU 68% vs. 41%, $p=0.007$; ward 76% vs. 29%, $p<0.001$) and systemic corticosteroids (28% vs. 10%, $p=0.016$; 20% vs. 6%, $p=0.005$) decreased. The use of some inhalations, such as racemic adrenalin (59% vs. 82%, $p=0.008$; 37% vs. 56%, $p=0.013$) and 3% NaCl (0% vs. 35%, $p<0.001$; 0% vs. 56%, $p<0.001$) increased. The high flow nasal cannula (HFNC) treatment was introduced in 2011.

Conclusions

Unnecessary treatments such as beta-agonist inhalations and systemic corticosteroids were used less after than before the AAP 2006 guideline, but the use of hypertonic saline and racemic adrenalin inhalations increased.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0374

CHRONIC LYMPHADENITIS AS A MAJOR MANIFESTATION OF MYCOBACTERIUM MARINUM INFECTION

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Title of Case(s)

Chronic Lymphadenitis as a Major Manifestation of *Mycobacterium Marinum* Infection

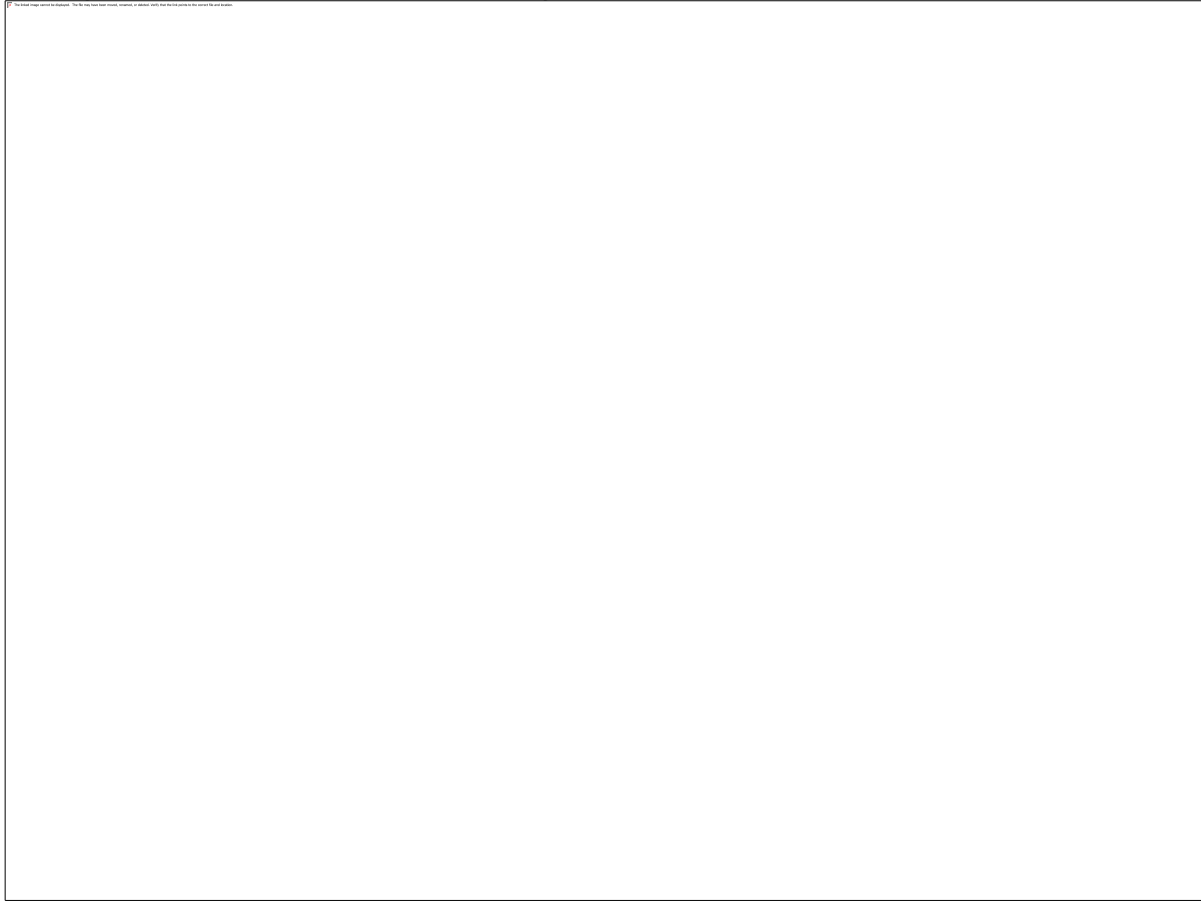
Background

Chronic lymphadenitis is the most common manifestation of nontuberculous mycobacterium (NTM) infection in children. *M. marinum* infection generally affects the skin and soft tissues following cutaneous injury in non-chlorinated swimming pools, aquariums or natural bodies of water. It is infrequently noted in children and rarely associated with lymphadenitis. We investigated the prevalence of *M. marinum* infection at a pediatric tertiary medical center and present the clinical characteristics of 4 patients in whom lymphadenitis was the major manifestation of the disease.

Case Presentation Summary

A total of 180 NTM isolates from 180 patients with NTM infections were identified from 1996 to 2016. These included 8 *M. marinum* isolates, 3 obtained from lymph nodes (preauricular, submandibular and inguinal) and 5 from skin lesions. One of the skin-site lesions drained into an enlarged inguinal lymph node. Lymphadenitis was the major manifestation in 4 of the 8 children with *M. marinum* infection, for a prevalence of 0.02% for *M. marinum* lymphadenitis. The demographic and clinical features of the 4 patients are shown in Table 1. All were referred for evaluation of chronic enlarged lymph nodes. Detailed history at presentation in one patient and a retrospective anamnesis after isolation of *M. marinum* in 2 others revealed that that they had visited the same natural spring. No structures other than skin and lymph nodes were involved in the infection. Direct microscopy

was negative in all cases. All *M. marinum* isolates grew at 30°C.



Learning Points/Discussion

Pediatricians should be aware of *M. marinum* as a cause of chronic lymphadenitis. Meticulous search for aquatic exposure during anamnesis may change the management and spare patients unnecessary surgery.

03A. EDUCATION: GROUP A STREPTOCOCCUS

ESP17-0375

GROUP A STREPTOCOCCUS AND STAPHYLOCOCCUS AUREUS COMMUNITY-ACQUIRED BACTERAEMIA IN CHILDREN: A 15-YEAR RETROSPECTIVE AND COMPARATIVE STUDY IN A FRENCH TERTIARY CARE HOSPITAL

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Background

Streptococcus pyogenes (Group A *Streptococcus*, GAS) and *Staphylococcus aureus* (SA) are increasingly implicated in community-acquired bacteraemia (CA-B) in children. An early recognition of GAS or SA CA-B could assist their management and optimize patient outcome.

Methods

We retrospectively included all GAS and SA CA-B in patients aged < 18 years between January 2001 and December 2015 in a French pediatric tertiary-care hospital and compared their clinical and biological features and their management.

Results

A total of 179 cases of CA-B were included: 50 with GAS and 129 with SA. The main site of infection was osteo-articular for SA and skin or soft tissue for GAS. A history of varicella was associated with GAS CA-B ($p=0.02$). Compared to SA, patients with GAS CA-B were younger ($p=0.03$), developed more toxic signs as well as more toxic shock syndroms (TSS) ($p=0.02$). They also tended to be admitted more frequently in intensive care units ($p=0.08$) and required more mechanical ventilation ($p=0.001$).

Conclusions

The initial presentation including toxic clinical signs and/or risk factors as varicella could orientate rapidly to GAS-B and should prompt the initiation of an antibiotherapy including an antitoxic treatment.

22A. EDUCATION: OTHER

ESP17-0376

CLINICAL CHARACTERISTICS OF KAWASAKI DISEASE IN OLDER CHILDREN

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Title of Case(s)

CLINICAL CHARACTERISTICS OF KAWASAKI DISEASE IN OLDER CHILDREN

Background

Kawasaki disease usually affects children under 5 years old. Above this age differential diagnosis with other entities is complex. Our objective is to describe the Kawasaki disease's (KD) characteristics in children older than 5 years.

Case Presentation Summary

Descriptive, retrospective study of all children aged ≥ 5 years with clinical suspicion of KD admitted at a tertiary care hospital between 2002 and 2015.

Out of 196 suspected cases of KD between 2002 and 2015, 25 (12%) occurred in patients aged ≥ 5 years, 17 were males and 8 females. Median age was 72.7 months [IQR 62.3-162.2].

Before starting treatment, 14 patients (56%) met criteria for complete KD, 5 (20%) for incomplete KD. 6 (24%) did not meet the criteria, but clinical suspicion was significant enough to indicate treatment with gamma globulin. After the acute phase, 20 patients (85%) met full criteria and 2 (8%) had incomplete KD. 3 (12%) did not meet criteria at any time.

Differential diagnosis was proposed in 14 of 25 patients (56%): hemophagocytic syndrome (2/25, 8%), rheumatic diseases (3/25, 12%), toxic shock syndrome (4/25, 16%) and other bacterial infections (11/25; 44%).

92% of the patients (23/25) received treatment with gamma globulin. 3/23 (13%) were considered refractory cases and received a second dose. One patient was refractory to both doses and received infliximab. 6/25 (24%) received corticosteroids.

17% of the treated patients (4/23) had coronary injuries: 3 (13%) transient ectasia, and 1 (4%) an aneurysm and permanent ectasia. None of the untreated patients developed coronary disease. **Learning Points/Discussion**

In children older than 5 years with suspected Kawasaki disease, other clinical entities are frequently considered. In our study, a significant percentage of patients had coronary abnormalities despite treatment with gamma globulin.

12B. EDUCATION: INVASIVE FUNGAL INFECTIONS

ESP17-0378

EPIDEMIOLOGY AND CLINICAL COURSE OF INVASIVE CANDIDIASIS IN A HIGH COMPLEXITY NEONATAL ICU IN CALI/COLOMBIA

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Background

EPIDEMIOLOGY AND CLINICAL COURSE OF INVASIVE CANDIDIASIS IN A HIGH COMPLEXITY NEONATAL ICU IN CALI/COLOMBIA

Candidemia is a growing problem worldwide in newborn patients in the ICU and, despite the high standards of quality care of these newborns, it has fatal outcomes. Multiple risk factors associated with candidemia have been reported; its epidemiology is, however, variable at each institution. The objective of this study was to describe the epidemiology and factors associated with candidemia, and also the complications and severity of this disease in neonates hospitalized in the ICU.

Methods

The methodology utilised was a descriptive and observational study of a cohort of neonates institutionalized in a high-complexity ICU in Cali, Colombia. The study was carried out between 01 January 2008 and 31 December 2015, 51 infants were diagnosed with candidemia, with a prevalence of 7% of the total infections of the ICU in 2015.

Results

52% were male and the average age at the time of infection was 20 days (12-27), with a birth weight of 805 grams (1200–2020g). 37% had a prior history of bacteremia, mainly due to *S. epidermidis*. All patients received some antibiotic management during their hospitalization and 72% received more than 2 cycles. Ampicillin, amikacin and vancomycin were the most frequently used. The species of *Candida* most frequently isolated was *C. parapsilosis*. 45% of patients underwent some type of surgery; 23% were abdominal surgeries. At least 50% of newborns received 20 or more days of parenteral nutrition. Nine patients (17%) died during hospitalization.

Conclusions

Candidemia is a common infection in neonates hospitalized in the ICU and the epidemiology, risk factors, and mortality rate found in our study are similar to those reported in the literature.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0379

ACUTE RENAL FAILURE ASSOCIATED WITH IMMUNE RESTORATION INFLAMMATORY SYNDROME (IRIS) IN AN HIV-POSITIVE PATIENT WITH RENAL TUBERCULOSIS

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Title of Case(s)

Acute renal failure associated with immune restoration inflammatory syndrome (IRIS) in an HIV-Positive patient with Renal Tuberculosis

Background

Acute renal failure (ARF) is frequently encountered in patients with HIV infection. In paediatrics there are only a few case reports of renal immune reconstitution inflammatory syndrome (IRIS). We describe a patient infected with HIV with urinary shedding of *Mycobacterium tuberculosis* who developed ARF 4 weeks after change of her highly active anti-retroviral therapy (HAART) regimen. The diagnostic work-up and further course of disease implicated IRIS as the cause of ARF.

Case Presentation Summary

A 13 year old male patient, diagnosed with HIV infection since the age of 11 was admitted to our hospital because of dehydration associated with diarrhoea and vomiting. One month prior to hospitalisation, he was noted to have a HIV viral load of 8643 copies/mL and CD4+ T-lymphocyte count of 4 cells/ μ L and his HAART regimen was changed to abacavir, lamivudine and lopinavir/ritonavir (ABC/3TC/LPVr). Xpert MTB/RIF test performed in a sputum sample was negative. Three days after admission he developed anuria and generalised oedema. Urine analysis showed pyuria, proteinuria and microscopic haematuria. Serum creatinine raised to 7.3 mg/dL. Mild hyponatraemia of 131 mEq/L was noted. Abdominal ultrasound revealed a large and oedematous right kidney consistent with medical renal disease. Patient treated with Ceftriaxone and Metronidazole. He developed severe respiratory distress and died 12 days after admission. Xpert MTB/RIF test performed in a urine sample came back positive two days after the patient died.

Learning Points/Discussion

This case report indicates that IRIS should be considered as a cause of ARF after initiation or change of HAART in patients who have AIDS and renally disseminated antigens, as documented here for tuberculosis.

02B. EDUCATION: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-0382

PREDICTING THE EFFECTIVENESS OF ANTIBIOTIC THERAPY IN CHILDREN

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Background

The long turn around times contribute to the spread of infectious disease, negative klids patient outcomes and the misuse of antibiotics that can contribute to antibiotic resistance. Higher pediatrics mortality when the initial therapy turns out to be inappropriate.

Methods

Selection of the right antibiotic treatment still requires time-consuming antibiotic susceptibility testing. Specific therapy focuses on early identification of the illness, source control, and administration on antimicrobial agents including drugs capable of suppressing toxin production .

Results

Results in modern clinical laboratories still requires more than ten hours following bacterial isolation. The most fulminant expression of a spectrum of diseases caused by toxin-producing strains of *Staphylococcus aureus* and *Streptococcus pyogenes*. No significant trend in the errors was observed for any organism or antibiotic agent tested chi-square test.

Conclusions

Validation studies are now under way to expand the strategy of rapid identification and antibiotic susceptibility testing. Appropriate antibiotic treatment facilitated by new technologies may therefore be an effective means for combating microbial antibiotic resistance. Decreasing the time to identify the causative organism and determine its antibiotic susceptibility can significantly improve outcomes in children patients with bacteremia or bacterial infection.

16A. SCIENCE: PUBLIC HEALTH: MOLECULAR EPIDEMIOLOGY AND OTHER ASPECTS

ESP17-0383

PHYLOGENETIC ANALYSIS OF THE VP7 GENE OF GROUP A HUMAN ROTAVIRUS G1P[8] AND G2P[4] STRAINS CIRCULATING IN SAPPORO, JAPAN FROM 1991 – 2011

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Background

Group A rotaviruses (RVAs) are the leading cause of severe diarrheal disease of infants and young children worldwide including Japan. A lot of studies have indicated that G1P[8] genotype RVAs are the most prevalent strains worldwide. Recently some studies have shown the re-emergence of G2P[4] genotype.

Methods

To investigate and characterize the genetic variability in G1P[8] and G2P[4] field strains isolated from Japanese children during 1991-2011, that is no vaccine era.

Phylogenetic analysis for the VP7 gene of G1P[8] and G2P[4] strains from 1987 to 2011 in Sapporo, Japan was performed. Amino acid substitutions were also mapped and rates of evolution were estimated. **Results**

A total of 226 strains with G1P[8] genotype were obtained. Phylogenetic analysis of VP7 gene classified 226 strains into 3 lineages. The mean estimated substitution rate was 6.74×10^{-4} nucleotide substitutions per site per year. One particular lineage was distributed in Sapporo.

A total of 23 strains with G2P[4] were obtained. Phylogenetic analysis of G2P[4] VP7 gene classified all 23 strains into one lineage. The mean estimated substitution rate was one tenth slower than G1P[4] VP7 gene.

Conclusions

The VP7 gene of G1P[8] and G2P[4] genotype RVAs obtained in Sapporo were analyzed longitudinally. It was suggested that the most prevalent G1P[8] lineage strains in Sapporo have some survival advantages.

Sequence analysis of the VP7 gene in 23 group A human rotavirus G2P[4] strains showed considerable genetic diversity mainly in variable regions. This study also showed a big difference in the rates of evolution between G1P[8] and G2P[4] in the VP7 gene.

Clinical Trial Registration (Please input N/A if not registered)

N/A

22A. EDUCATION: OTHER

ESP17-0384

EVALUATION AND MANAGEMENT OF MENINGITIS IN INFANTS UNDER 6 MONTHS PRESENTING WITH NON-SPECIFIC COMPLAINTS

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Background

Young infants under 6 months are brought to emergency department (ED) for evaluation of a variety of complaints, often non-specific, and present as a diagnostic dilemma. This study aimed to examine how these infants were evaluated for the presence of serious infections such as meningitis in a tertiary ED.

Methods

This retrospective observational study examined the medical records of infants under 6 months presenting to a mixed urban ED with undifferentiated complaints between January 2013 and December 2014. Multivariable regression model was adopted for risk prediction.

Results

Fever alone (OR 8.50), Standard Paediatric Observation Chart sepsis alert criteria (OR 6.88) and inflammatory markers were useful to predict serious infection in these infants. Meningitis was the second commonest serious infection (3.83%, 95% CI: 2.64 – 5.37%) after UTI in these young infants.

Fever was the biggest risk factor amongst all clinical signs (OR 26.79, 95% CI: 9.24 – 77.66%). Some clinical signs of meningism were difficult to evaluate in this age group, and thus documented infrequently, such as photophobia (32/835) (3.83%, 95% CI: 2.64 – 5.37%) and neck stiffness (6.59%, 95% CI: 5 – 8.49%).

Many young infants underwent lumbar puncture (LP) (114/835) (13.65%, 95% CI: 11.40 – 16.17%). The failure rate of LP was not insignificant (16/114) (14.04%, 95%CI: 8.24 – 21.79%). Administration of antibiotics in ED was delayed due to performing LP (median 4.88 hours with no LP, versus, 3.24 hours with LP done, $p = 0.016$).

Conclusions

Young infants presenting with non-specific complaints are at risk of serious infections including meningitis. Diagnostic evaluation of these conditions can be challenging. Common clinical signs and inflammatory markers are useful, higher risks infants required collection of cerebrospinal fluid to confirm the diagnosis before receiving antibiotics treatment.

04A. EDUCATION: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-0385

PERTUSSIS IN BRAZIL – ANALYSIS BETWEEN 2010 TO 2016

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Background

Pertussis continues causing significant morbidity and mortality worldwide. This review summarizes recent data concerning pertussis in a country of South America, Brazil in the period from 2010 to 2016

Methods

Brazilian Health definition was used for pertussis diagnosis. Proportion of pertussis cases by age, was evaluated at the Brazilian National Pertussis Reference Centers in the period of 2010 to 2016

Results

There were a total of 26.375 pertussis confirmed cases from 2010 to 2016 with 788 fatal cases (3, 4%). Most of the confirmed cases and all the fatal cases correspond to patients younger than six months . From the year of 2010, a steady increase of pertussis cases was observed. In 2010 the incidence was 0.3 /100,000 and reached 4.2/100.000 in 2014. In end of 2014 acellular pertussis vaccine in pregnancy was included in the Brazilian National schedule. In the subsequent years the incidence rate decreased to 1.5/100.000 in 2015 and 1.49/100,000 in 2016. Number total of deaths was highest in 2013 an 2014 with 109 and 110 fatalities. In 2015 and 2016 the numbers decreased to 33 and 7 respectively.

Conclusions

Pertussis is an important problem for public health in Brazil and is associated with high fatality rate in infants. The number of cases decreased in the last two years after inclusion of maternal acellular pertussis vaccine. However, the number of confirmed pertussis cases decreased in all ages evaluated so the explanation can be also exhaustion of susceptibles.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0386

MALARIA IN VENEZUELA: REEMERGING DISEASE, ITS IMPACT ON CHILDHOOD

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Background

Malaria is endemic around the world, estimated annually 212 million cases and 429.000 deaths.

The incidence in the affected countries varies widely; in the Americas has had a major rebound, reason why is considered as a public health problem.

Venezuela was a model of malaria control, being a pioneer in reaching the goals established by international organizations.

Transmission remained stable for 45 years. Most cases in Bolívar, Amazonas, Delta Amacuro and Sucre states .

Methods

In the last decades, there have been changes in the epidemiological pattern with a sustained increase in interannual cases, that's the reason for this epidemiological, chronological, retrospective study of official nation's data published by Ministry of Health, obtained from various instruments: Bulletins, Yearbooks of Morbidity and Mortality from years 2000-2013.

Results

Morbidity shows a sustained increase in cases in all age groups, with total of 350.890 cases for 2000-2009. For 2010-2015 cases reaches 446.896, an increase of (37%). Total number of cases for 2000-2015: 797.786, 50.000 cases/year.

Mortality rate for 2000-2013 (297 deaths), by age groups (<1 year, 1 to 4, and 5 to 14 years old), (78 deaths) 26.26%. It's important to highlight years (2001/2002/2003/2004 and 2008), exceeds 30%.

Lethality is very low, but in the pediatric population, average: (2,3), in 2004 (2,13) higher and 2011, and 2013 (1,73) higher.

Conclusions

These findings could be explained by failures in the national anti-malaria program, indiscriminate illegal mining, climatic changes that modify the vector pattern, and socioeconomic issues, with the direct consequence of increase on the disease, with notorious impact in the infantile population. It's mandatory to rebuild a national plan for malaria control, epidemiological surveillance and transmission control should be activated and strengthened, provided with sufficient funding.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0388

CONTACT ATTEMPTS AND LOSS TO FOLLOW-UP IN A COHORT STUDY OF ACUTE RESPIRATORY ILLNESS OUTCOMES IN A LOW-SOCIOECONOMIC COMMUNITY

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Background

There is increasing attention on the outcomes of acute respiratory illness (ARI) in children, particularly the development of chronic cough. In cohort studies of ARI, retention of study participants is crucial for completeness of data and the ability to properly assess outcomes. We describe the rate of loss to follow-up (LTFU) over an 8-week period in a study of paediatric ARI in a low-socioeconomic community and the contact attempts required to retain study children.

Methods

A prospective cohort study of children aged <15 years presenting to 3 primary care centres in low-socioeconomic communities with ARI with cough as a symptom. Children were followed weekly for 8-weeks. Follow-ups were conducted either over the phone or in person with 3 attempts/week required.

Results

137 children were included in this analysis; 55% were male, 93% were Indigenous and mean age was 4.7 years. By day 56, 31% had been lost to follow up and there was no difference in LTFU by cough status at that timepoint. The highest proportion of LTFU (43%) occurred within the first week. Overall 66% of follow-up contacts were successful; on average 61% of participants required more than 1 contact with 10% requiring three. Despite 3 attempts, on average 34% of weekly follow-ups were unsuccessful.

Conclusions

In these communities, a third of children enrolled in cohort studies of ARI will be LTFU within 8 weeks and contact will be unsuccessful on a given week for a similar proportion. Future studies in similar communities will need to account for these losses in study design and sample size calculations and risk of bias and consider increasing the number of weekly contacts and/or the method in which those contacts are performed.

11A. EDUCATION: INFECTIONS IN THE ONCOLOGY PATIENT

ESP17-0392

CHRYSEOBACTERIUM INDOLOGENES INDWELLING CATHETER-RELATED BACTEREMIA IN A PEDIATRIC PATIENT WITH ACUTE LYMPHOBLASTIC LEUKEMIA

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Title of Case(s)

CHRYSEOBACTERIUM INDOLOGENES INDWELLING CATHETER-RELATED BACTEREMIA IN A PEDIATRIC PATIENT WITH ACUTE LYMPHOBLASTIC LEUKEMIA (ALL)

Background

Chryseobacterium indologenes is an opportunistic gram-negative bacilli responsible for bloodstream infections in immunocompromised patients and in those with indwelling intravascular devices. Recently, its incidence has increased due to a rise in the use of broad-spectrum antibiotics. We report the first case in Mexico of *C. indologenes* catheter-related bacteremia in a pediatric patient with ALL.

Case Presentation Summary

A 3-year-old male patient with ALL underwent Port-a-Cath placement 3 months after initial diagnosis. He was admitted four months later for scheduled chemotherapy administration, presenting with no prior symptomatology and a normal CBC. The patient developed fever, chills, headache and abdominal pain 7 hours after the indwelling catheter was accessed, he remained hemodynamically stable. A catheter-related bacteremia was suspected, central and peripheral blood cultures were obtained, the patient was immediately started on meropenem (40mg/kg) and vancomycin (10mg/kg), and his catheter was removed.

Blood cultures grew *Chryseobacterium indologenes* from both central and peripheral specimens, sensitive to ciprofloxacin, gentamicin, levofloxacin, meropenem, and piperacillin/tazobactam; and resistant to aztreonam, ceftazidime, ceftriaxone, trimethoprim/sulfamethoxazole. IV antibiotics were continued for 12 days, after which, he completed 7 days of levofloxacin (10mg/kg).

He markedly improved within 48 hours of starting antibiotics and developed no further complications. Surveillance blood cultures were negative. He was able to complete his chemotherapy regimen. **Learning Points/Discussion**

C. indologenes is an emergent healthcare problem due to its frequent resistance to antibiotics routinely used for the empiric treatment of gram-negative bacteremia; owing to its ability to produce broad-spectrum B-lactamases and metal B-lactamases. *C. indologenes* bacteremia should prompt the removal of indwelling catheters, and antimicrobial therapy should be carefully tailored to susceptibility testing.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0395

CLINICAL EPIDEMIOLOGY OF THE HUMAN RHINOVIRUS IN AFRICAN AND SOUTHEAST ASIAN CHILDREN: A CASE-CONTROL ANALYSIS IN THE PNEUMONIA ETIOLOGY FOR CHILD HEALTH (PERCH) STUDY

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Background

The role of Human Rhinovirus (HRV) in severe respiratory infection in children has yet to be fully elucidated, since HRV identification is ubiquitous in both diseased and asymptomatic children. We aimed to describe the clinical epidemiology of HRV infections in HIV-uninfected children hospitalized with WHO-defined severe or very severe pneumonia.

Methods

The Pneumonia Etiology for Child Health (PERCH) study is a 7-country case-control study of HIV-uninfected children (1-59 months) hospitalized with pneumonia and age-frequency matched community controls. Nasopharyngeal/oropharyngeal swabs were collected for all participants and tested for the presence of HRV as well as 18 other respiratory viruses. The clinical epidemiology of HRV detection was calculated using multivariate regression analysis expressed as adjusted Odds Ratio (aOR).

Results

HRV detection was 1.45-fold (aOR 95% CI: 1.29-1.62) higher among cases (24%) compared to controls (21%, $P < 0.005$); this association was even stronger among children aged 12-59 months (28% vs 18%, aOR 95% CI: 1.75-2.47). The HRV-associated cases were more likely to be malnourished (30% vs. 12%, $P < 0.001$), HIV-1 exposed (10% vs. 8%, $P = 0.046$) and have higher HRV nasopharyngeal viral load (3.7 vs. 3.5 \log_{10} copies/mL, $P < 0.001$) than HRV-associated controls.

Among the pneumonia cases, HRV was 1.73-fold (aOR 95% CI: 1.43-2.0) more prevalent among cases presenting with wheeze compared to cases without wheeze (32% vs. 19%; $P < 0.001$) and 53% of the HRV-associated cases were mono-infections with very little evidence of bacterial co-infections; however, among the cases that died the prevalence of bacterial co-infection were significantly higher than cases that survived.

Conclusions

HRV detection, especially among children 1-5 years of age, was associated with severe lower respiratory infection; however, HRV detection was ubiquitous among both cases and controls.

Clinical Trial Registration (Please input N/A if not registered)

N/A

22A. EDUCATION: OTHER

ESP17-0397

ACUTE GASTROINTESTINAL INFECTIONS IN DRACEVO MUNICIPALITY

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Background

Acute gastrointestinal infections are serious problem among children aged 0-5 years. Main causes are viral infections (rota and adeno virus). Bacterial infections are rare, (salmonella and shigella species) and among rarest are infections with parasites. The aim of this study is to evaluate the need for hospitalization due to dehydration in children with gastrointestinal infection. The main reason for that is inadequate oral rehydration.

Methods

The study included 998 children followed from January 2011 to December 2016. The Investigations included acid-base status, blood count, glycaemia, proteinogram, serum iron, creatinine, AST, ALT, lipid status, urine analysis and stool sample examination.

Results

28% (279) of the children, rota virus infection was found in the stool sample, 9% (90) had adeno virus and other causes were found in 63% (undetected virus with sterile stool or bacterial infection in 7-8 cases). 25% of the children need hospitalization due to severe dehydration, mostly among those with rota virus. Acid-base imbalance was dominant in hospitalized patients and requires urgent compensation. Urine analysis shows positive ketones and stool is either sterile or rota virus is isolated and rare adeno-virus.

Conclusions

Rota-virus vaccine is not on the regular vaccination schedule in Macedonia. There is a need to evaluate necessity of this vaccine to avoid frequent hospitalizations in children with acute gastrointestinal infections and consequently to cut the costs for the country budget.

03A. EDUCATION: GROUP A STREPTOCOCCUS

ESP17-0399

INVASIVE GROUP A STREPTOCOCCAL INFECTION IN A CHILDREN'S HOSPITAL (2011-2016)

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Title of Case(s)

Invasive Group A Streptococcal Infections

Background

Group A streptococcus(GAS) causes mild to severe infections in children. A rising incidence of invasive GAS(IGAS) infections has been noted in the last decade causing significant morbidity. IGAS infection is defined as the isolation of *S.pyogenes* from sterile sites.

We present epidemiological characteristics, clinical presentations and outcomes of hospitalized children ≤ 11 years with IGAS infection in our hospital, some of them with unusual clinical presentations and serious complications. We calculated the incidence rate (IR) as the number of cases/100.000 children aged <11 years.

Case Presentation Summary

29 cases were detected. IR in the study period was 2.55 (annual IR:1.7-3.6). IRs by age groups were 7.6 for children <36 months, 1.3 for those 36-59 months and 0.47 for children >59 months. Average age:31 months (from 1-106 months). 62% were males. Most cases presented in winter and early spring. Varicella preceded IGAS infection in 21%. Clinical presentations were: empyema (11patients), severe skin and soft-tissue infections (6), osteoarticular infections (5; 1 secondary to Lemierre's syndrome), primary bacteremia (3), complicated ENT infections (2), meningitis with subdural empyema (1) and prosthetic valve endocarditis (1). 4 patients (14%) presented streptococcal toxic shock syndrome. *S.pyogenes* was isolated in blood cultures in 55%. No isolates were resistant to clindamycin. 55% of the patients required admission in the Pediatric Intensive Care Unit (average stay:7.75days) and 17% surgical treatment. All patients had a full recovery.

Learning Points/Discussion

- IGAS disease affected predominantly healthy children younger than 36 months without predisposing conditions.
- Empyemas and soft-tissue infections were the most common clinical presentations.
- IGAS disease in children may present as a severe infection, though with an early and appropriate treatment patients survive with favorable outcome.

18B. EDUCATION: UPDATE ON TYPHOID

ESP17-0401

TYPHOID FEVER IN YOUNG CHILDREN OF THE NORTH INDIAN PROVINCE OF PUNJAB

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Background

Typhoid fever continues to be one of the the major infectious diseases in the developing countries. A large proportion of young children particularly those below 2 years age remained unprotected because no vaccine was available for them earlier. So this study looked at the clinical profile of this group of children.

Methods

This prospective study was conducted at Dayanand Medical College and Hospital, a private tertiary care hospital in Ludhiana, Punjab, India over a 3 year period from May 2013 to May 2016. The study was approved by the institutional review board. Cases were diagnosed as typhoid fever if presented with fever (temperature >38C) for at least 3 days and their blood culture yielded *S. typhi* or paratyphi. Case records were analyzed for clinical data, laboratory parameters, treatment and outcome.

Results

During the study period 211 cases were blood culture positive. Out of these 211 cases, 35 (16.6%) were in children less than 2 years. All the patients (100%) had fever at presentation, followed by diarrhea (48.5%), vomiting (31.4%). On laboratory investigations ALT was raised in 30 (85.7%) cases, LDH (31.4%). Serology i.e. widal test (TO titres more than 160) was reactive in only 6 (17.1%) cases. Out of total 35 cases salmonella typhi was seen in 31 (88.5%) and paratyphi in 4 (11.5%) cases. Out of total 35 salmonella isolates all (100%) were resistant to nalidixic acid, 10 (28.5%) were resistant to aminoglycosides, 2 (5.7%) to fluoroquinolones and 9 (25.7%) to both. All patients were unimmunized against typhoid vaccine.

Conclusions

In children less than 2 years age, one of the significant risk factors associated with typhoid fever was compromised hygiene and bottle feeding was a big contributing factor. Now that conjugate typhoid vaccine is available, the inclusion of this vaccine in the national immunization schedule will go a long way in decreasing disease burden in this age group.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0402

INFLUENZA IN CHILDREN – CLINICAL FORMS IN 2015 – 2016 SEASON

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Background

Seasonal flu epidemics remain a serious health issue in children. In Romania, we registered numerous cases of influenza with polymorphic symptoms, in the context of low vaccination.

Methods

We conducted a retrospective study on cases of influenza in children who were hospitalized in the Pediatric Departments of the National Institute of Infectious Diseases "Prof. Dr. Matei Bals" during 2015 - 2016. The clinical and demographic patient features followed were: age, sex, home environment, severity of the disease and the complications. Positive diagnosis was established on clinical, epidemiological and laboratory data.

Results

During the studied period we have registered 305 cases of influenza in children who were hospitalized in our Pediatric Clinic. Etiologically the majority of cases were determined by the AH3N2 influenza, and most of them were mild to moderate forms of disease. We registered three cases of influenza A in children who died, one of them complicated with sepsis and the other two with encephalitis. The most affected age group was the 4-7 years, with a male predominance and with higher prevalence in the urban environment. The classic influenza virus infection symptoms characterized the majority of cases but we had cases with polymorph manifestations which included rash, myalgias, severe respiratory complications, cardiac, hematological, neurological and digestive manifestations, some resolving with permanent damage.

Conclusions

The infection with influenza viruses assumed new clinical forms of the disease, sometimes evolution is unfavorable, with complications and sequelae irreversible and dead patient. That is why we stress the importance of preventive measures nonspecific but especially specific and the establishment of early and accurate diagnosis of influenza in children.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0404

BACTERIAL ETIOLOGY OF MIDDLE EAR FLUID IN INDIAN CHILDREN WITH RECURRENT OTITIS MEDIA INFECTION

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Background

Recurrent Otitis Media is one of the common infections of childhood. The causative bacterial pathogen is one of the major risk factor of recurrent infection. With limited availability of Indian data, we performed this study to identify the bacterial pathogens

Methods

Otitis media cases were diagnosed based on clinical criteria. 36 Middle ear fluid (MEF) samples were collected by Tympanocentesis and cultured for pathogens. 78% of the cases had 3 previous episodes of otitis media in the past 6 months whereas the rest 22% of the cases had 4 episodes in the last 6 months. All the patients were on antibiotic coverage at the time of sample collection.

Genomic DNA was extracted from MEF samples using Qiagen DNA mini Kit. 16s rDNA PCR and qmPCR was performed on these samples. qmPCR positive samples for *S. pneumoniae* were serotyped with PCRSeqTyping

Results

None of the 36 samples showed growth by conventional culture. 16s rDNA PCR could identify bacterial pathogens in 33 samples. The organisms were *Neisseria sp* (11), *Neisseria meningitidis* (8), *Lactococcus sp* (5), *S. pneumoniae* (2), *Pseudomonas aeruginosa* (2), *Haemophilus influenza* (1), *Streptococcus infantis* (1), *Staphylococcus epidermidis* (1), *Staphylococcus auricularis* (1) and *Streptococcus sp* (1).

qmPCR for *S. pneumoniae* was positive in 2 samples. PCRSeqTyping identified Serotype 19A in both the samples

Conclusions
The study demonstrates the usefulness of 16s rDNA PCR protocol to identify the bacterial pathogens in MEF by culture-independent method. *Neisseria sp.* was the predominant pathogen identified followed by *Lactococcus sp* and *S. pneumoniae*. The study provides insight to the etiology of bacterial pathogens in recurrent otitis media among Indian children for first time

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0405

CHARACTERISTICS OF PEDIATRIC COMPLICATED PLEURAL EFFUSION IN OUR COMMUNITY (1997-2015)

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Background

An increase in complicated pleural effusion (CPE) in children has been observed in the last decades mainly caused by *Streptococcus pneumoniae*. Different factors have been proposed to explain this fact.

Our aim was to evaluate the characteristics of CPE in children in our hospital.

Methods

We analyzed CPE in hospitalized children aged <11 years from 1997 to 2015 (1997-2006: retrospective study; 2007-2015: prospective study). We defined 4 periods according to pneumococcal conjugated vaccine (PVC): 1°1997-2001: Pre-vaccination; 2°2002-2005: PCV7 with low immunization coverage (30%); 3°2006-2009: PCV7 with a coverage of 60% and 4°2010-2015: PCV13 with a coverage of 65%. We evaluated incidence rates (IRs), epidemiological characteristics, etiology and outcomes. Incidence rates (IRs) were calculated as cases/100,000 children.

Results

172 cases were identified. IRs by periods: 1°Pre-vaccination: **0.95**; 2°PCV7 low coverage: **6.3**, 3°PCV7: **7.5** (annual IR: 5.7-11.9) and 4°PCV13: **6.6** (4.25-11). Average age: 3 years; 88% aged <5 years and 65% aged 2-5 years. Microorganisms isolated in 59% (n=101): *Streptococcus pneumoniae* (78), *Streptococcus pyogenes* (15; 53% diagnosed the last 5 years) and *Staphylococcus aureus* (4). Pneumococcal serotypes (n=18): 19A(7), 3(4), 1(3), others n=1 (14,22F,76,9). Positive pleural fluid (PF) culture in 53%. Bacterial antigen detection (BAD) in PF was positive in 33% of negative PF cultures. Blood culture was the only positive test in 11%. The most frequent complication was the bronchopleural fistula(20) and one patient died.



Conclusions

- We have observed an increase in the incidence of complicated CPE during the study period which persists despite immunization coverage of 60-70%.
- CPE mainly affected children aged 2-5 years and *S. pneumoniae* was the major pathogen associated.
- *Streptococcus pyogenes* seems to increase in the last years.
- Bacterial antigen detection in PF has increased etiological identification.

04A. EDUCATION: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-0406

CLINICAL PICTURE OF PRETERM AND TERM INFANTS HOSPITALIZED FOR PERTUSSIS IN THE NETHERLANDS

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Background

Because of the re-emergence of pertussis, not yet (fully) vaccinated infants are unprotected by current immunization programs. Maternal vaccination in the third trimester of pregnancy offers protection for infants within the first months of life. Preterms (<37w gestational age; GA) might profit less from this intervention. We aimed to assess potential differences in clinical presentation of term and preterm infants, who were hospitalized for pertussis.

Methods

For 0-2-year-olds, hospitalized for pertussis in 2005-2015, data were retrieved from medical records through hospital discharge registry. Characteristics between term and preterm infants were compared.

Results

Fifty (57%) of the 87 hospitals participated. Data from 676 (57%) of 1187 medical records were extracted. 49.8% concerned boys, at least 11.9% was born preterm (median GA 35w, range 26-36w). Preterms were hospitalized at older age than terms (median 3.0m vs 2.0m; $p=0.02$) and stayed longer (median 6d vs 5d; $p=0.2$). We found no differences in symptoms at admission, except that preterms less often had cyanosis than terms (31% vs 44%; $p=0.03$). Complications (e.g. pneumonia, weight loss, desaturation) were reported in 11% of preterms and 7% of terms ($p=0.07$). Preterms stayed longer at the ICU than terms (median 15d vs 9d; $p=0.004$), probably due to need for active respiration (15% vs 7%; $p=0.01$) or oxygen (38% vs 35%; $p=0.6$).

Conclusions

In the Netherlands, approximately 7.5% of infants are born prematurely, so 11.9% suggests a higher risk for pertussis hospitalization in preterms. In view of the longer hospital admission with complications and ICU, maternal vaccination is best given before 30w GA to let preterms benefit from protection by maternal antibodies. In the evaluation of vaccination programs, monitoring of preterms separately is needed to evaluate if terms and preterms benefit equally.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0413

INFLUENZA AND OTHER RESPIRATORY VIRUS INFECTIONS AMONG OUTPATIENT CHILDREN WITH INFLUENZA-LIKE ILLNESS IN SHANGHAI, CHINA

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Background

We carried out a prospective surveillance of influenza among outpatient children visiting hospital for influenza-like illness (ILI) between January 2015 and May 2016.

Methods

Nasal/throat swabs were collected from 788 children with ILI at a largest tertiary teaching children hospital in Shanghai from January 2015 and May 2016. Influenza viruses, including A/H1N1-pdm09, A/H3N2, B/Yamagata and B/Victoria were tested by real-time PCR. The other six respiratory viruses including respiratory syncytial virus (RSV), parainfluenza virus (PIV1-3), enterovirus (EV) and adenovirus (ADV) were also detected by multiplex real-time PCR.

Results

Among 788 enrolled cases aged 1 month-14 years (80.7% <5 years), influenza A and B viruses were detected in 122 (16.7%) and 100 (12.3%) of ILI patients, respectively. A/H3N2 viruses in January-October 2015 with a small outbreak occurring in July-August and A/H1N1-pdm09 replaced A/H3N2 since November 2015 and were detected with a large outbreak occurring in January 2016. Influenza B was prevalent year-round and peaked from January to May each year with the detection rates of 21.8%–29.2%. All of the influenza B viruses belonged to the B/Yamagata lineage in 2015 and changed to B/Victoria lineage in 2016. Besides Influenza, EV, RSV, PIV-3, ADV, PIV-1 and PIV-2, were detected in 10.8%, 8.2%, 7.2%, 3.5%, 2.1% and 0.2% of children, respectively.

Conclusions

Influenza virus remained the most common pathogen causing ILI in outpatient children in Shanghai. A/H1N1-pdm09 re-emerged and caused outbreak in Shanghai in 2015-2016 season. Influenza vaccination should be strengthened in children in Shanghai to reduce the burden of ILI.

22A. SCIENCE: OTHER

ESP17-0414

ANALYSIS OF THE IMMUNIZATION AGAINST MENINGOCOCCAL B DISEASE IN CHILDREN AGED ≤14 YEARS. VALENCIA REGION (SPAIN). YEARS 2015-2016

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Background

The vaccination against meningococcal B disease is recommended and financed in Spain by the health authorities for risk groups. The vaccine is generally recommended by the scientific society of pediatrics and parents can acquire it in chemists since October 2015 without public financing.

The aim of the study is to analyze the evolution of the number of meningococcal B vaccines administered in Valencia region (Comunitat Valenciana) during the years 2015-2016.

Methods

Descriptive analysis of vaccination against meningococcus B reported in the Vaccine Information System (SIV) by sex, age and risk group and dose in children ≤14 years of age in 2015 and 2016.

Results

1,434 doses were reported in 2015 and 112,195 in 2016, 50.9% in men in 2015 and 51.2% in 2016. By risk groups, the 82.64% of the doses were in non-risk children in 2015, 6.9% in case contacts, 6.3% in children with asplenia or splenic dysfunction. The 99.35% (111,471) of the doses were administered in children without risk factors in 2016, 0.25% in case contacts.

By age group, the 30.1% were administered in children aged 0-11 months in 2015 (15.45% in 2016), the 41.9% in the group of 1-4 years (45.2% in 2016).

The 86% of the doses were first doses in 2015 (58.8% in 2016). The coverage of 1st doses was 0.9% in children under 1 year in 2015 (24.1% in 2016) and 0.2% in the group of 1 to 4 years 16.1% (in 2016).

Conclusions

The availability of the vaccine in chemists has exponentially increased the use of the vaccine in 2016 year. Estimated vaccination coverage for 1st dose decreases with age. Most vaccinated children are not at risk.

Clinical Trial Registration (Please input N/A if not registered)

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0415

ASSOCIATION OF SCABIES AND PSYCHIATRIC DISORDERS IN CHILDHOOD: A NATIONWIDE POPULATION-BASED STUDY

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Background

Scabies is a common and distressing disease caused by the mite *Sarcoptes scabiei*. Psychiatric disorder in childhood (PDC) is an important disease and easily neglected. There are several similarities in scabies and psychiatric disorders in childhood. An association between scabies and psychiatric disorders may exist.

Methods

This nationwide population-based cohort study utilized data from the National Health Insurance Research Database, Taiwan, to investigate the relationship between scabies and psychiatric disorders in childhood.

Results

A total of 2,137 children with scabies were identified as the study group and 8,548 age- and sex-matched children were selected as the control group. 607 (5.68%) children developed PDC during the seven-year follow-up period. The overall incidences of PDC are similar (scabies group vs. control group: 5.7% vs. 5.7%, crude hazard ratio: 1 and 95% confidence interval: 0.82 to 1.22). However, patients with scabies had a higher risk of developing

intellectual disability (scabies group vs. control group: 1.3% vs. 0.6%, adjusted hazard ratio:

2.04).

Conclusions

There was no obvious risk of subsequent PDC in patients with scabies in our study. PDC may be underdiagnosed and further studies were warranted to elucidate the relationship between scabies and PDC. We suggest a more comprehensive management in treating patients with scabies. Early and comprehensive treatment of scabies and other risk factors may decrease the risk of subsequent intellectual disability.

22A. SCIENCE: OTHER

ESP17-0417

VACCINATION IN PRIVATE CENTERS TO IMPROVE IMMUNIZATION COVERAGES IN THE VALENCIA REGION (SPAIN). YEAR 2016

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Background

In the Valencia region (Comunitat valenciana-CV) there is a collaboration agreement between the Health Authority and private centers in order to improve immunization coverage. So the access to vaccination programs in both children and adults that are vaccinated according to official programs is facilitated. This vaccination has not cost for the individual.

The aim of the study is to evaluate the impact of the vaccination in private centers in the improvement of the immunization coverage in CV for different vaccines of the immunization schedule during the year 2016.

Methods

A cross-sectional descriptive has been done. Data were obtained from the SIV to analyze the number of vaccinations and patients vaccinated in 2016 in private centers by age group and sex for different vaccines (hexavalent, measles-mumps-rubella (MMR), pneumococcal conjugate 13-valent (PCV13), influenza, papillomavirus(HPV) and rotavirus.

Results

In 2016, 1,963,408 vaccinations (1,173,090 vaccinated people) were registered in SIV. 140,758 corresponded to 490 private centers (7.17%)(69,024 vaccinated people, 5.88%). By sex, there were no differences between vaccinated in private and public centers.

By age group, 8.09% were vaccinated people in private centers aged between 15 and 64 years and 7.33% under 15 years.

6.14% of the people were vaccinated with hexavalent vaccine in private centers, 5.75% PNC13V, 5.86% MMR and 4.16% HPV. For the rotavirus vaccine (not included in the funded immunization schedule), 8.70% were vaccinated in private centers.

Vaccinated people against influenza in private centers represented the 4.56% of the total (462 vaccination private centers, 32.33%).

Conclusions

The contribution to the improvement of vaccination coverage of private centers is important in vaccines included in the children and adult immunization schedules for all age and sex groups.

Clinical Trial Registration (Please input N/A if not registered)

22A. EDUCATION: OTHER

ESP17-0418

ANAKINRA IMMUNOMODULATOR AND HEPATOTOXICITY

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Title of Case(s)

MODERATE-SEVERE HEPATOTOXICITY DUE TO IMMUNOMODULATOR ANAKINRA

Background

Anakinra is a recombinant competitively antagonist of IL-1 receptor. It has been approved for treating Systemic Rheumatoid Arthritis (RA) and other autoinflammatory disorders or Cryopyrin-Associated Periodic Syndromes (CAPS). It is not exempt from side effects such as injection site reaction, worsening of rheumatoid arthritis, upper respiratory tract infection, headache, diarrhea, sinusitis, and abdominal pain. We report an hepatotoxicity pediatric case during treatment with Anakinra.

Case Presentation Summary

A 15-month-old girl was admitted to Hospital after 6 days of fever and analytic alterations suggesting sepsis, initially treated with cefotaxime. Since she continued with fever, and a disseminated exanthem appeared with mucose-affectation and a coronary alteration was observed, Kawasaki Disease was suspected. So, immunoglobulin and acetylsalicylic acid was started with no improvement. A second immunoglobuline dose and loading corticosteroid dose were indicated and presumption diagnosis was RA. Bone marrow study showed an inflammatory pattern.

With high-dose corticosteroid, fever disappeared, analytic alterations improved partially. By descending corticosteroids, hiperpirexy reappeared, so treatment with anakinra was started. 24 hours later, clinical and analytic alterations improved being discharged. After 20 days transaminases (AST/ALT) increased to 1000 UI/ml join to elevation of inflammation parameters requiring to replace anakinra by tocilizumab, AST/ALT reached 3000 UI/ml in the next week.

An hepatic biopsy made 18 days later coinciding with a dramatic decrease of liver enzymes confirmed this thinking (mild portal and lobular hepatitis. Focal bile duct injury consistent with hepatotoxicity, despite nonspecific findings).

Learning Points/Discussion

1/ If liver's function deteriorates in a child receiving Anakinra, and transaminases figures drops slowly after interruption, first suspicion will be the progression of autoimmune disease.

2/ Pharmacological toxicity should ruled out too.

3/ Persistence of elevated transaminases can oblige to perform a liver biopsy

22A. EDUCATION: OTHER

ESP17-0419

THE DIRECT COST OF HEALTH INSURANCE COMPANIES FOR THE TREATMENT OF MEASLES IN SLOVAKIA – MODEL

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Background

In Slovakia measles has been eliminated since 1999 thanks to the consistently high vaccination coverage in paediatric and adolescent population. Therefore, if we want to know the cost of treatment for potential emergence of measles currently, we need to use the model. The objective of our work was to model the direct cost for the treatment of measles and its complications.

Methods

The model consists of the direct costs for diagnostic and therapeutic procedures during home treatment and hospitalization for measles. The economic evaluation was based on the data of financing health care through the General health insurance company in Slovakia in the 2014. The direct costs include capitation payment, CRP tests (for differential diagnosis), drugs, hospitalization costs at the department of infectology, diagnostic procedures; after hospitalization – check examination of antibody levels and drugs.

Results

The direct costs for an uncomplicated and less severe course of measles (otitis, diarrhea) range from EUR 948.54 (15-18 years old) to EUR 951.56 (0 year old) per one case. In severe measles complications (pneumonia and encephalitis/meningoencephalitis) the direct among cost 15-18 years old vary from EUR 1,091.78 to EUR 1,369.19, respectively. In 0 year old children the direct costs for pneumonia and encephalitis/meningoencephalitis range from EUR 1,094.80 to EUR 1,372.21, respectively.

Conclusions

Measles represent an economic burden for the health insurance system. Possible decrease in measles vaccination coverage below 95% would lead to new measles outbreaks in Slovakia. Furthermore, the current demographic changes (migration, imported measles) represent a new threat for spreading of the disease among unvaccinated population. Health care system needs to prepare sources to take an immediate action in possible emergency situation.

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22A. SCIENCE: OTHER

ESP17-0420

VACCINATION WITH PNEUMOCOCCAL CONJUGATE 13-VALENT VACCINE IN CHILDREN YOUNGER THAN 15 YEARS. VALENCIA REGION (SPAIN). YEAR 2016

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Background

The pneumococcal conjugate 13-valent (PCV13) vaccine was included in the children immunization schedule in April 2015 for all children born after 2015 in the Valencia region. Previously, it was funded by the Health Authority only for risk groups but it could be recommended by pediatrics and acquired by parents without public funding.

The aim of this study is to analyze the vaccination of PCV13 in children under 15 years of age in Valencia region in 2016.

Methods

A descriptive analysis of PCV13 vaccination registered in the Vaccine Information System (SIV) by dose, sex, age and risk group in children under 15 years of age in Valencia region in 2016 was carried out.

Results

135,225 doses were reported, 51.5% in men. By risk group, 97.48% of the doses were in non-risk children, 2.18% in the chronic cardiorespiratory disease group, 0.26% in children with asplenia or splenic dysfunction, 0.06% in children with cochlear implants or indication.

The group of children with chronic cardiorespiratory disease represents the 3.45% of vaccinated children aged 1-4 years.

The immunization coverage of second dose in children aged less than one year (born in 2016) was 97.67% while the third dose in the cohort born in 2015 was 90.52%.

By age group, 66.76% of the doses were administered in children less than 1 year, 32.3% in the group 1-4 years.

Conclusions

Vaccination coverage against pneumococcus in children under one year in the cohort born in 2016 is very high, decreasing in the second dose of those born in 2015. There are no significant differences between men and women. Most of the vaccinated at risk have a cardiorespiratory pathology and are aged from 1 to 4 years.

Clinical Trial Registration (Please input N/A if not registered)

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0421

NEONATAL LISTERIOSIS IN CYPRUS

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Title of Case(s)

NEONATAL LISTERIOSIS IN CYPRUS

Background

Listeria monocytogenes is a foodborne pathogen which can cause significant disease in high risk groups such as immunocompromised individuals, pregnant women and newborns who acquire the disease through the placenta. Despite congenital listeriosis is a rare disease, it carries significant mortality and severe sequelae to a substantial percentage of the surviving neonates. We describe the clinical features and outcomes of pregnancy related listeriosis in Cyprus.

Case Presentation Summary

Cases admitted between January 2006 and December 2016 to Archbishop Makarios Hospital, Nicosia, which is the referral hospital in Cyprus, were studied retrospectively. 3 blood culture positive cases of early onset neonatal listeriosis were detected during this time. In all 3 cases babies were preterm (mean duration of pregnancy 31.7mo) with mean birthweight 2.0 kg. They had onset of symptoms within the first few hours of life and were admitted to the NICU the same day. All neonates had respiratory distress on admission, 2 of them had a rash and one of them was febrile (39.9°C). The empiric treatment administered always included penicillin, which later switched to ampicillin, and gentamycin. All 3 neonates survived the disease, however, the most preterm later manifested delay of speech and cognitive functions and behavioural disorders.

Learning Points/Discussion

The annual incidence of pregnancy related listeriosis in Cyprus is estimated to be 3.2/100,000 live births, which is compatible with some other countries such as the UK and France and lower than in the US and Israel. Despite being a rare infection, it can prove to be a serious illness with significant sequelae in surviving neonates. The prevention of this disease by targeting the dietary habits of pregnant women will decrease the incidence in the sensitive population of neonates

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0422

AGE RELATED CLINICAL AND HEMATOLOGIC FEATURES IN ARGENTINIAN CHILDREN WITH DENGUE INFECTION. COHORT STUDY

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Background

Diagnosis of dengue (DEN) in children can be a challenge. Clinical features resemble other febrile illness.

Methods

Retrospective cohort study was performed to identify age related clinical and hematological differences in DEN presentation.

We included all patients younger than 18 years with at least 2 of: headache, retro-orbital pain, myalgia, arthralgia, rash, abdominal pain, nausea, vomiting, and diarrhea, evaluated at "Hospital de Pediatría Garrahan" (Buenos Aires, Argentina) from December 2015 to April 2016 with definitive laboratory diagnosis of DEN infection. DEN positive was defined: PCR DEN positive, NS1 positive or IgM positive with fourfold increased in IgG titer. We compare clinical and hematological characteristics between of DEN positive and negative in patients younger or older than 10 years. Stata 10 was used.

Results

Patient included: 196. Younger than 10 years: 116 p, older 80 p. DEN positive: 84(43%). In multivariate analysis, headache (OR 3.2 vs 0.67, $p < 0.01$) and leukopenia $< 4000/\text{mm}^3$ (OR 16 vs 6.8, $p < 0.01$) were more associated with DEN positive in children younger than 10 years, and rash (OR 2.7 vs 6.7, $p < 0.01$) and thrombocytopenia $< 150000/\text{mm}^3$ (OR 5 vs 19, $p < 0.01$) in older. There were no statistically significant difference between age groups in sex, co-morbidity or and days of fever, retro-orbital pain, nausea/vomiting, myalgia, arthralgia and length of fever. None of them developed severe dengue.

Conclusions

Headache and leukopenia were statistically associated with dengue infection in children younger than 10 years. Children older than 10 years were significantly more likely to present with rash and thrombocytopenia.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0423

COST ANALYSIS OF HEALTHCARE FOR NON-HOSPITALIZED CHILDREN WITH COMMUNITY-ACQUIRED PNEUMONIA IN THE CITY OF SALVADOR, BRAZIL

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Background

To estimate the direct and indirect costs of healthcare for non-hospitalized children with community-acquired pneumonia (CAP) aged <5 years.

Methods

This observational, prospective study included children aged 2-59 months with CAP, seen in an Emergency Room, in Salvador, Brazil. Caregivers were interviewed and data were registered in a standardized questionnaire on costs, then entered and analysed in the software SPSS. Written informed consent was obtained before recruitment and the study was approved by the Ethics Committee of the Federal University of Bahia.

Results

We recruited 203 patients between June 2010 and May 2011. 50.2% were male and 49.8% female; the mean age was 27±15 months (minimum 3.7 months, maximum 3.2 years), and 20% were younger than 1 year. The cost of outpatient care (consultation to the Brazilian Public Healthcare System (SUS) of these patients is the sum of US\$ 2,951.62. Everyone had a chest x-ray (anteroposterior and lateral), totalling US\$ 1,185.52. All patients were treated with amoxicillin and the total cost of treatment was US\$ 211.92. The total transport expenses to patients' guardians to attend appointments was US\$ 508.56. The total loss of income caused by absence from work by patients' guardians or family members to their employers was US\$ 1,145.73, for the 43 patients who reported it. Overall, 70 caregivers reported their number of days absent, out of which 45 (64.3%) were for 1 day, equivalent to US\$ 363.60.

Conclusions

The direct costs of CAP are of significant magnitude to the SUS and the indirect costs are even higher.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0424

THE INITIAL SITE OF VESICULAR RASH IS ASSOCIATED WITH COMPLICATIONS OF HERPES ZOSTER IN IMMUNOCOMPETENT CHILDREN

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Background

Information regarding complications of herpes zoster (HZ) in immunocompetent children is relatively sparse. The aim of our study is to investigate the risk factors regarding development of HZ complications in immunocompetent children and describe the clinical characteristics of the cases.

Methods

We conducted a retrospective case control study at a tertiary children's hospital in Japan. Children who were diagnosed with HZ between January 2010 and October 2016 were included. The information regarding the site of the rash, immune states, VZV vaccination history, and complications (post herpetic neuralgia, bacterial skin infection, keratitis or uveitis and meningitis) were extracted from the medical records. Immunocompetent children with HZ were divided into two groups: with or without complications. Univariate analysis, followed by multivariate analysis was performed to identify the risk factors for developing complications.

Results

One hundred thirty eight cases of HZ were identified during the study period. Among these, 58 (42%) cases were immunocompetent children with a median age of 9 years. The most common site of the rash was the trunk (n=38, 79%), followed by the extremity (n=10, 21%) and head and neck (n=8, 17%). Complications were observed in 18 cases (13%). Univariate analysis showed that development of the rash on head or neck and unimmunized VZV vaccine were more common in patients with complications (43% vs 7%, p=0.004, 50% vs 9%, p=0.019, respectively). Multivariate analysis showed that the development of the rash on head or neck was the only independent risk factor for developing complications (p=0.015). The details of patients with HZ complications is described in table 1.

Conclusions

The existence of vesicular rash on the head or neck was associated with complications of HZ in immunocompetent children.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0425

EARLY-ONSET SEPSIS: TRENDS IN INCIDENCE AND ANTIMICROBIAL RESISTANCE OVER A 10-YEAR PERIOD

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Background

Early-onset sepsis (EOS) remains an important cause of morbidity and mortality amongst newborns, with group B *Streptococcus* (GBS) being the most frequent isolated pathogen.

Aim: to evaluate clinical data of newborns with EOS and trends in causative microorganisms and their antimicrobial susceptibility. **Methods**

Retrospective analysis of medical records and microbiological data of all newborns with EOS, defined by clinical sepsis if signs/symptoms compatible with positive blood culture or with laboratory studies suggestive of infection (WBC>30.000/ μ L or <5.000/ μ L, platelet count <100.000/ μ L, CRP>2mg/dL), until 72hours of life. Study period: January 07 – December 16.

Results

Among a total of 28075 live births (LBs), 104 newborns developed EOS (3,7 per 1000LBs). Twenty-five cases had positive blood cultures (0,89 per 1000 LBs). The median birth weight was 2.975kg and 35% were preterm newborns. Hypotonia and grunting were the most frequent signs; CRP was >2mg/dL in 85%.

The most frequently isolated bacteria were GBS (14; 0.5 per 1000LBs) and *E. coli* (4; 0.1 per 1000LBs). Most newborns with GBS were term (79%); 75% with *E. coli* were preterm (median 31weeks).

Ampicillin and gentamicin were the main antibiotics used. GBS showed no resistance to penicillin as well as *E. coli* to gentamicin. MRSA was isolated in 1 case.

Lethality occurred in 3 newborns with positive blood cultures. **Conclusions**

In agreement with literature, GBS was the most frequent pathogen in term newborns and *E. coli* in preterm, with low levels of resistance to commonly used antibiotics. Continuous surveillance of antibiotic susceptibility is essential to rationalize antibiotic prescribing.

20A. EDUCATION: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0427

HUMAN PAPILLOMAVIRUS VACCINATION COVERAGE IN LUXEMBOURG.

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Background

A national HPV vaccination program was introduced in Luxembourg in 2008 whereby bivalent or quadrivalent vaccine is fully reimbursed for girls aged 12-17 years. In 2015, vaccination policy was changed limiting reimbursement to girls aged 11-13 years with two doses of bivalent vaccine.

Methods

Anonymous records consisting of individual vaccine doses purchased in pharmacies between 2008-2015 and qualifying for the reimbursement were extracted from the Luxembourgish Social Security database. Variables included: age at first vaccine dose purchase, duration in days between first, second and third vaccine dose purchase, year of birth, year of the first, second and third vaccine dose purchase, vaccine type (bi- or quadrivalent), medical speciality of the prescribing physician and total number of doses reimbursed.

Results

Of 43,112 girls aged 12-25 years in 2015, 58.1% girls purchased at least one dose of HPV vaccine, 52.0% purchased at least two doses, and 41.1 % purchased three doses. 53% of the women purchased quadrivalent and 47% purchased bivalent vaccine. Vaccination coverage (VC) with at least one purchased dose was highest in cohorts born between 1994 and 1999, consistently exceeding 70%. VC was found to be significantly associated with nationality ($p < 0.0001$): highest in young women of Portuguese (80%), intermediate in Luxembourgish women (54%) and lowest in young women of French (39%) nationality. VC varied geographically ranging from 39% to 79%.

Conclusions

HPV vaccination coverage with at least one dose appears to be higher in Luxembourg than in other countries not offering vaccines in schools. HPV vaccination was associated with nationality and regional factors, which deserves further investigation. It will be important to monitor the effects of the change of the age limit for reimbursement on HPV vaccination coverage.

22A. EDUCATION: OTHER

ESP17-0428

IS IT CHICKENPOX OR IS IT SHINGLES? – AN (AKWARD) CASE REPORT

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Title of Case(s)

IS IT CHICKENPOX OR IS IT SHINGLES? – AN (AKWARD) CASE REPORT

Background

Varicella-zoster virus (VZV) infection is very common, and causes two clinically distinct forms of disease: varicella (chickenpox) and herpes zoster (shingles). Primary VZV infection usually results in the diffuse vesicular rash of varicella. The establishment of latent infection within the sensory dorsal root ganglia follows clinical resolution. Endogenous reactivation of this virus leads to herpes zoster - a painful, unilateral vesicular eruption in a restricted dermatomal distribution. Typically, the rash starts as erythematous papules, which quickly evolve. In immunocompetent hosts, the lesions crust by seven to ten days and are no longer infectious.

Case Presentation Summary

A four-year-old boy, previously healthy with a HIV positive father, was admitted in the Emergency Room (ER) with vesicular lesions in his right upper limb. These skin lesions were distributed through a dermatome and had inflammatory signs (picture 1). The child had local pain, which began earlier than the lesions. There were no other skin lesions in his body. The diagnosis' hypothesis was a herpes infection superinfected, and he was admitted in the Pediatrics' ward for intravenous antibiotics. The immunoglobulin analysis was negative, including the varicella IgG. However, the microbiology from the exudate collected from the vesicles identified varicella zoster DNA. An immunologic study was then performed, which was normal. He responded well to antibiotics, with progressive diminishing of the local inflammatory signs. He was discharged from the hospital after 7 days, clinically improved.

Learning Points/Discussion

Primary VZV infection as a painful, unilateral vesicular eruption in a restricted dermatomal distribution has rarely been described in the literature. By analyzing this case, we believe that the primary infection was presented as a herpes zoster infection or shingles.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0429

ETIOLOGY OF PNEUMONIA IN PATIENTS ADMITTED IN THE CHILDREN'S HOSPITAL "DR. MARIO ORTIZ SUAREZ "AND CLINIC" ANGEL FOIANINI "- SANTA CRUZ-BOLIVIA.

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Background

Pneumonia is the leading cause of childhood death in the developing world. Higher-quality etiological data are required to reduce this mortality burden. We conducted a study of methods to determine the etiology among infants and children with severe pneumonia admitted in a hospital in a developing country in South America

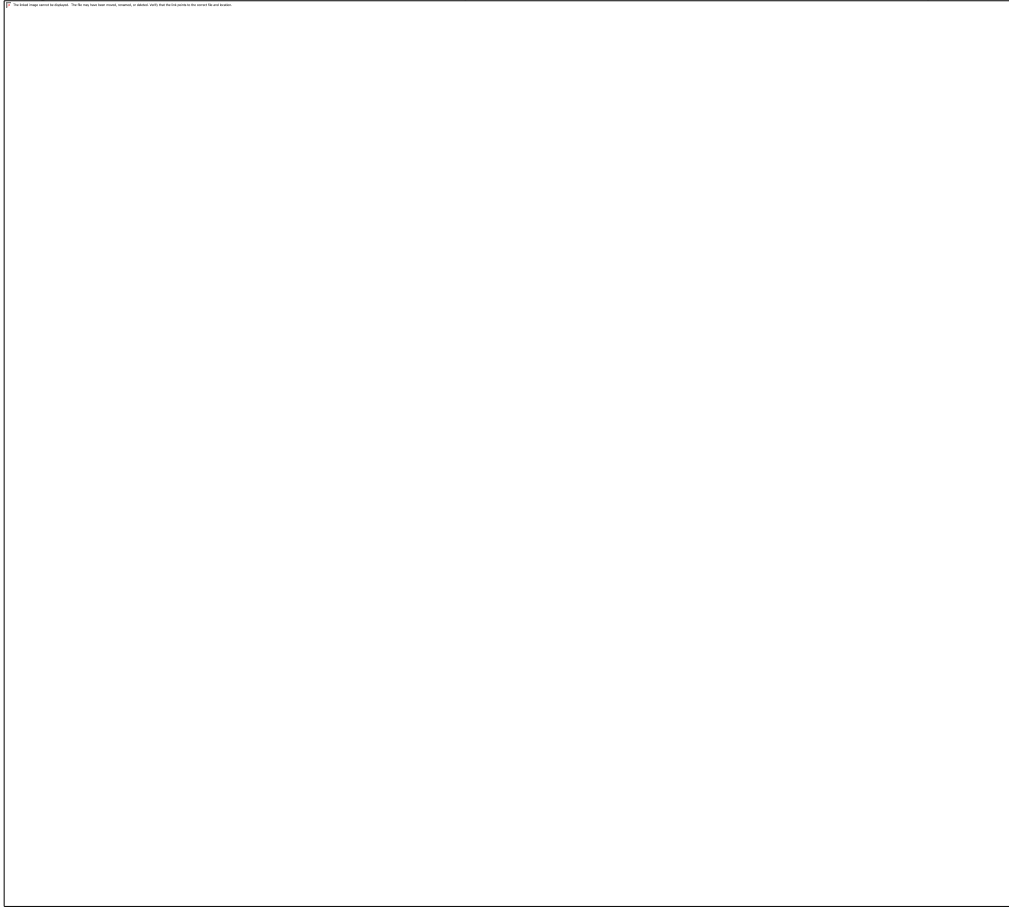
Methods

We have included patients hospitalized for community acquired pneumonia (NAC) in the period of March, 2016-December, 2016. At the time of admission, chest X-rays; Basic laboratory tests: blood count; Quantitative C-reactive protein were performed. For etiologic diagnosis we collected blood for culture, and multiplex polymerase chain reaction (PCR), and obtained nasopharyngeal swab specimens for multiplex PCR for multiplex PCR. In patients with pleural effusion culture of pleural fluid (LP) was also collected. Multiplex PCR (Fast-track Diagnostics (FTD), Luxembourg) to detect genetic material from 33 respiratory pathogens was used to evaluate the pneumonia etiologies.

Results

We have included **201 patients** with age between 1 month and 11 years old. 59.7% were age between 1 and 12 months. Most of the children were younger than 2 years old (**155/201**). We found an etiologic agent bacterial or virus in **124 of 201 patients**. Table 1 indicate the etiologic findings Respiratory syncytial virus (RSV) was the most frequent etiologic agent. From the bacterial infections *S. pneumoniae* was the most frequent (table 1). The

diagnosis of *S. pneumoniae* was frequently associated with pneumonia complicated by pleural effusion.



Conclusions

Diagnostic evaluation in community pneumonia is important to be done for better prevention approach

07B. SCIENCE: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0431

HEALTHCARE WORKER PERCEPTIONS OF THE BARRIERS TO PREVENTING HOSPITAL-ACQUIRED INFECTIONS IN GREEK NEONATAL INTENSIVE CARE UNITS

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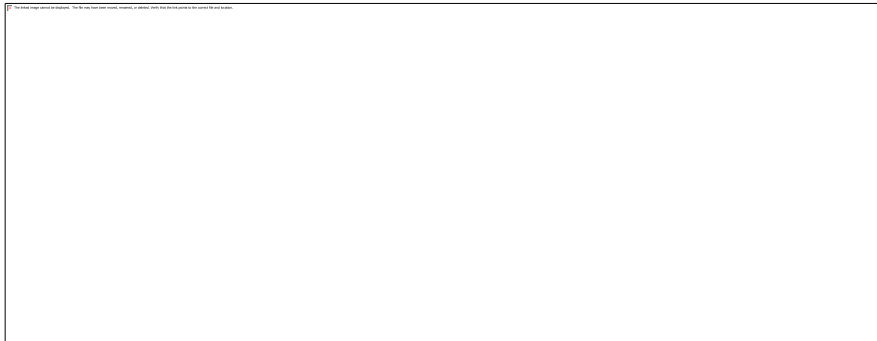
Background

Healthcare-associated infections (HAIs) in the neonatal intensive care unit (NICU) result in increased morbidity and mortality, prolonged lengths of stay and increased medical costs. Rates of HAIs in Greek NICUs are among the highest in Europe. An understanding of healthcare worker (HCW) attitudes and cultural perspectives around the barriers to preventing HAI is an important precursor to the development and implementation of preventative strategies.

Methods

We conducted qualitative interviews with 20 physicians and 17 nurses working in the NICUs of three pediatric hospitals in Athens with high rates of HAI for a total of 37 respondents. Interviews were transcribed and systematically analyzed using a modified grounded theory approach.

Results



Respondents in our sample identified numerous barriers to the prevention of HAIs (Table I). While the majority of barriers to infection prevention were either caused or exacerbated by the economic crisis, in combination they further contributed to HAIs by impacting the ability of HCWs to properly perform hand hygiene. Respondents also identified cultural barriers including entrenched beliefs that limit the ability to change routine and the role of hierarchy. While many respondents perceived HAIs as an “inevitable evil” in the NICU, they located responsibility for transmission within themselves.

Conclusions

HCWs in Greek NICUs identify numerous barriers to the prevention of HAI. These barriers are largely caused and exacerbated by the country's economic troubles and a lack of organization in existing stewardship and educational programs. Despite being frustrated with these barriers, HCWs in our sample expressed interest in and optimism about changing practices to prevent HAI, suggesting the opportunity to engage with HCWs in designing infection prevention interventions.

Clinical Trial Registration (Please input N/A if not registered)

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0432

CONGENITAL CMV INFECTION IN THE PREMATURE INFANT

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Title of Case(s)

Congenital CMV in the Premature Infant

Background

Congenital Cytomegalovirus (CMV) is the most common congenital infection in the world with substantial mortality and severe neurological sequelae. Early diagnosis and treatment with ganciclovir improves outcomes in term infants. We report a preterm neonate with multisystem involvement of congenital CMV to share our experience and treatment challenges.

Case Presentation Summary

28+6 week infant male was born to a CMV seropositive mother. He developed multi-organ affects of CMV, complicating the common course of prematurity.

From day 8 he was CMV urine positive. CMV PCR was serially monitored, showing multiplying copies despite treatment with ganciclovir. He went on to develop pneumonitis, hepatitis, bone marrow suppression with both hepatomegaly and splenomegaly. On echo he had cardiomyopathy with biventricular and septal hypertrophy. Persistent pancytopenia and coagulopathy from birth required multiple transfusions with poor increments and contributed to a cerebellar haemorrhage.

Episodes of neutropenic sepsis further complicated his condition. This was secondary bone marrow suppression from both the CMV and use of ganciclovir (a known complication). G-CSF was used as an interim treatment to boost white cell production, in the hope to limit episodes of septicaemia and expedite recommencing ganciclovir. Predicting the effect and prognosis for this case was challenging, especially when communicating this to his family. Long discussions on the benefits of ongoing treatment were had as an MDT.

When the progression of viral pneumonitis caused significant discomfort and worsening respiratory distress, the decision to palliate was made. On Day 62 of life he died peacefully surrounded by family.

Learning Points/Discussion

Congenital CMV can have significant and devastating consequences. The use of ganciclovir in premature infants should be more widely documented. Our experience with its use has shaped our practice as a unit.

20B. SCIENCE: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-0433

IMMUNITY AGAINST DIPHTHERIA: RESULTS OF A BELGIAN SEROPREVALENCE STUDY 2013-2015

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Background

Since the generalisation of vaccination in 1959, diphtheria has dramatically decreased in Belgium. Vaccination coverage (3rd dose) was estimated 98.8% in 2015. However, immunity against diphtheria is known to naturally wane over time, older adults may not have received vaccination and circulation of *Corynebacteria* still occurs. This can cause diphtheria cases, as illustrated by a fatal case in Belgium in 2016. This study evaluates the immunity of the Belgian population against diphtheria.

Methods

Residual sera were collected from 27 volunteering laboratories, members of the Belgian sentinel laboratory network. Exclusion criteria avoided overrepresentation of immunosuppressed persons. Antibodies against diphtheria toxoid (anti-DT IgG) were quantified using an in-house multiplex bead-based immunoassay. Seropositivity was defined as anti-DT IgG ≥ 0.1 IU/ml. Weighted proportions were calculated accounting for clustered sampling and standardizing for age, sex, and population per province.

Results

In total 3254 specimens were tested, sampled between July 2013 and January 2015. Age ranged from 0 to 91 years (median: 18) and 50.1% of specimens were collected among women. Weighted seropositivity was 54.9% (CI95%: 52.1%-57.8%). Statistically significant variations of seropositivity were observed according to age ($p < 0.001$). Seropositivity was highest in 1 year old children [95.0% (CI95%: 87.5–98.1)] and gradually decreased from the age of 15 years [81.3 % (CI 95%: 76.6–84.9)] onwards. Seropositivity reached its lowest level among 55-64 year olds [19.1% (CI95%: 13.0–27.3%)] and then re-increased reaching 46.9% (CI95%: 32.9–61.5) among persons ≥ 85 years.

Conclusions

Overall, half of the Belgian population is protected against diphtheria. Seropositivity varies greatly with age and is high in infants but low in some age groups, particularly 55-64 years-olds. This study helps identifying specific age-groups which should be targeted by immunization booster programs.

Clinical Trial Registration (Please input N/A if not registered)

N/A

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0434

ARE HIGH OXYGENATION LEVELS REALLY THE CAUSE RETINOPATHY OF PREMATUREITY?

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Background

50,000 children blind worldwide from retinopathy of prematurity (ROP). It is well documented that hyperoxygenation and postnatal growth are two of several risk factors that promote the development of ROP. The UK's screening program positively impacting the number of infants affected, but are we practicing methods to limit its development?

Methods

A retrospective case review of four preterm infants who developed ROP within our unit, against one case matched control that did not develop ROP.

All oxygen saturations (SpO₂) were against oxygen delivery (Fio₂) whilst on mechanical and noninvasive ventilation was plotted. Observations were taken from nursing charts.

The number of ventilated hours was calculated. The mean saturation and Fio₂ in each infant was determined. Badger records were used to plot postnatal growth in all five babies.

Results

Of all five babies reviewed, all had similar clinical paths of prematurity. Over 3500 hours of observations were analysed. All four affected babies had mean SpO₂ above recommended range 91-94%. All four affected babies had poor postnatal growth. Of the unaffected infant, there was also a raised average SpO₂ and poor postnatal growth.

Conclusions

Retinopathy of premature is a complex condition with multifactorial risk factors. It is still our role as clinicians to limit these risk factors and to reduce over oxygenating preterm infants and optimising postnatal growth.

20A. EDUCATION: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0435

PUBLIC HEALTH BENEFIT OF PEDIATRIC PNEUMOCOCCAL CONJUGATE VACCINE (PCV) IMMUNIZATION PROGRAMS IN CHILDREN

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Background and Objective

Post-marketing experience with PCVs has provided substantial evidence to support public health policies. However, the considerable variability in epidemiological/PCV immunization programs features between countries suggests that findings from individual countries cannot be directly compared. Therefore, to better characterize PCVs impact in children, we assessed changes that occurred in PCV era in the incidence of invasive pneumococcal disease (IPD) in <5-year-olds, across a range of different countries.

Methods

IPD data sets were identified by literature search/from publicly available surveillance reports until December 2016. Those fulfilling the following criteria were selected for analysis: robust well-described surveillance; incidence and/or case counts available (or possible to derive from available data) for <5-year-olds for overall IPD, PCV-preventable IPD (VT-IPD) and non-PCV-preventable IPD (NVT-IPD). Changes in incidence were assessed across pre-PCV, PCV7 and higher-valent PCVs (HV-PCV: PHiD-CV, PCV13) eras.

Learning Points Discussion

Data sets from 10 high-income countries met the selection criteria, and suggest that:

- in eligible countries, pre-PCV overall IPD incidence was variable, ranging from 17.1-94.7 cases/100,000 child-years; the incidence range was narrower in PCV7 and HV-PCV eras (9.6-33.0 and 6.5-18.8 cases/100,000 child-years, respectively) (table);
- the major absolute rate reduction in overall IPD incidence appears to be due to PCV7 serotypes, with additional reductions due to HV-PCV serotypes being smaller;

- in analyzed countries, VT-IPD has now been almost eliminated while NVT-IPD has increased.



In HV-PCV era, the overall IPD incidence in <5-year-olds was low and similar across countries included in this analysis, regardless of programmatic (e.g. PCV choice/schedule) and epidemiological (e.g. initial IPD incidence/serotype distribution/surveillance system) differences. Further decreases in the total burden of IPD are unlikely to occur as VT-IPD is largely eliminated and residual disease is mainly due to NVTs.

Funding: GlaxoSmithKline Biologicals SA

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0437

COMMUNITY-ACQUIRED METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS: BURDEN OF DISEASE AND RISK OF LETHALITY IN PATIENTS HOSPITALIZED IN 10 PEDIATRIC CENTERS OF ARGENTINA

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Background

Community-acquired methicillin-resistant *Staphylococcus aureus* (CA-MRSA) infections are prevalent in Argentina and in several countries of the world; they may have a serious evolution. Objectives: To estimate the burden of CA-MRSA disease using a hospital based study, and to describe lethality risk factors associated with this infection.

Methods

Prospective and multicentric study of all patients ≤ 15 years old admitted for Community-Acquired *Staphylococcus aureus* (CA-SA) infection, hospitalized in 10 pediatric centers, between January-2012 and December-2014.

Results

From a total of 1141 patients with CA-SA infection, 904 (79.2%) were CA-MRSA. The incidence of CA-MRSA cases (per 10,000 discharges) in < 5 years was 27.6 in 2012, and 39.0 in 2013-2014 period (increase of 29.0% CI95%11.9-42.7). The age group most affected was 2-4 years with 32.2 and 51.9 respectively. Incidence of 5-15 years were: 27.5 and 42.7 respectively (increase of 35.29% CI95%16.3-50.0). Median of age of CA-MRSA cases was 44.0 months (0-189); 61.5% males. Clinical presentations: skin/soft tissue infection 66.2%, pneumonia 11.5%, sepsis 8.1%, osteomyelitis 5.5%, arthritis 5.2%, pericarditis/endocarditis 0.8%, meningitis 0.6%, bacteremia 0.4%, others 0.7%. 1003 samples were obtained: skin/soft tissue 67.4%, blood 16.8%, pleural fluid 8.0%, joint fluid 4.3%, bone 2.4%, CSF 0.6%, other 0.5%. These isolates showed resistance to erythromycin 11.1%, clindamycin 11.0%, gentamicin 8.4%, trimethoprim-sulfamethoxazole 0.6%. All strains were susceptible to vancomycin. Lethality was 2.2% (20/904). Risk factors associated with lethality were: age ≥ 8 years OR 2.78 (1.05-7.37), pneumonia OR 6.37 (2.37-17.09), meningitis OR 19.53 (2.40-127.87) and sepsis OR 42.53 (12.78-156.36)).

Conclusions

CA-MRSA incidence was high, mainly in children 2-4 years of age; the most frequent clinical presentation was skin/soft tissue infection. However, age ≥ 8 years and clinical presentations of pneumonia, meningitis and sepsis were associated with a higher lethality.

22A. EDUCATION: OTHER

ESP17-0438

PERIPHERAL FACIAL PALSY: A RARE COMPLICATION OF INFECTIOUS MONONUCLEOSIS

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Title of Case(s)

Peripheral Facial Palsy: A Rare Complication of Infectious Mononucleosis

Background

Epstein-Barr virus (EBV), a Herpesvirus, is one of the most frequent infections in the world, estimated to affect approximately 90% of the US population, mainly during late childhood or adolescence. It causes infectious mononucleosis (IM), commonly characterized by malaise, mild fever, sore throat, cervical lymphadenopathy, hepatosplenomegaly. Less frequently, it can also present with neurological manifestations, such as mono or polyneuropathy. There are a few cases described of Peripheral Facial Palsy (PFP) associated with IM, although this complication is reported in 0,9%.

Case Presentation Summary

A previously healthy 14-year old girl was admitted in the Emergency Department presenting with facial asymmetry since that morning, not being able to completely close her left eye. Both lower and upper portions of the face were affected and her left corner of the mouth dropped. It was admitted left PFP, medicated with acyclovir, prednisolone and symptomatic control. Two weeks previously, she had fever, sore throat and tonsillitis. She didn't have lymph-organomegaly at the physical examination. The analytic evaluation showed a positive monostest (heterophile antibodies), leukocytosis (14000/uL), sixty-two percent of lymphocytes (8820/uL), and serologies confirming an acute EBV infection (positive VCA IgM, IgG and EA antibodies and negative EBNA antibody) and excluding other infections (Cytomegalovirus, *Borrelia burgdorferi* and *Mycoplasma pneumoniae*). She began physical physiotherapy and it was fully recovered six weeks later.

Learning Points/Discussion

This case reports a rare neurologic complication of IM. The mechanism by which IM causes PFP is not completely understood. PFP usually develops two weeks after a systemic viral infection, like in our patient. It enforces the benefit of excluding EBV infection in the management of a patient with PFP, particularly with a previous tonsillitis.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0439

PNEUMOCOCCAL OSTEO-ARTICULAR INFECTIONS IN CHILDREN: EPIDEMIOLOGY, SEQUELAE AND VACCINATION IMPACT. RETROSPECTIVE STUDY IN MONTPELLIER BETWEEN 2002 AND 2016

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Background

The principal agents of osteo-articular infections (OAI) are staphylococcus aureus and Kingella kingae. The pneumococcus in a non exceptional manner is also a cause in these infections. We have evaluated the implication of pneumococcus in OAI to study its epidemiology, the clinical profile of children and the rate of sequelae.

Methods

We did a retrospective study between 2002 and 2016 in Montpellier Teaching Hospital which is the only regional center for treating bone infections. We selected the cases from the register of bacteriology laboratory. The inclusion criteria were : age < 16 years, positive deep culture samples and diagnosis of OAI based on clinical signs, inflammatory syndrome and radiological abnormalities.

Results

Thirteen patients were included, 7 septic arthritis and 6 osteoarthritis. There was no isolated osteomyelitis. The sex ratio was 7 boys for 6 girls. The mean age was 21 months. The lower limb was affected in ¾ of cases and ¼ of cases the upper limb. No patient was presenting a background favoring pneumococcal infections. There were 4 cases of repeated surgical interventions. The mean follow up was 48.8 months. 4/9 of infants presented morphological and radiological sequelae. The number of cases was to 1,75/year before the generalisation of anti pneumococcal vaccination and 0,6/ year since the generalisation of vaccination to 13 valency.

Conclusions

The pneumococcus is a responsible agent of OAI in infants. In our serie, there was always a joint involvement. The number of repeated surgical interventions and the rate of sequelae of 1/3 is superior to what is found in the literature and compared to the others agents. However, the incidence seems lower since the generalisation of vaccination.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-0446

IMPACT OF ANTIMICROBIAL STEWARDSHIP PROGRAMS: ANTIBIOTIC CONSUMPTION DURING A 9-YEAR PERIOD IN A TERTIARY CARE CHILDREN'S HOSPITAL IN ITALY

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Background

Antimicrobial stewardship programs (ASPs) included comprehensive quality improvement activities aimed at optimizing antimicrobial prescribing and minimizing resistance; ASPs have been widely adopted in adult care but still remain limited in children's hospitals. Since 2009, Bambino Gesù Children's Hospital (OPBG) implemented ASPs and carried out annual prevalence surveys to monitor antibiotic consumption. This study aimed to estimate the trend in prevalence of antibiotic use in children between 2008-2016 and to describe changing in antibiotic prescription habits over time.

Methods

Annual prevalence surveys were conducted in OPBG, Italy, from 2008 to 2016. Detailed antibiotic (ATC: J01) prescribing data were collected by reviewing medical charts of all patients (0–18 years old) hospitalized for ≥ 48 hours. Prevalence was estimated by active substance, therapeutic indications and ward type. Trends in prevalence were analyzed using the Cochrane-Armitage chi-squared test.

Results

Among 3,234 surveyed children, 1,541 (47.6%) received one or more antibiotics. Prevalence of antibiotic use increased from 40.6% in 2008 to 52.8% in 2016 ($p=0.004$). Third-generation cephalosporins used in surgical prophylaxis decreased over time ($p<0.001$) whereas a concomitant increase in the administration of first (from 5.7% in 2008 to 46.2% in 2016) and second generation cephalosporins (from 1.9% in 2008 to 20.5% in 2016) occurred. Use of penicillins plus β -lactams increased in medical prophylaxis (from 13.0% in 2008 to 42.7% in 2016). Carbapenems were mainly used in hospital acquired infections and no increasing trend was observed in this subgroup of patients. Prevalence of fluoroquinolones was low (4.6%) and no increasing trend was estimated.

Conclusions

Antimicrobial stewardship programs improve the appropriateness of antibiotic prescriptions, especially in surgical prophylaxis. Monitoring prevalence of antibiotic use allows benchmarking and provides data for planning further interventions and assessing effectiveness.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0447

THE BEHAVIOR OF SEPSIS, MENINGITIS, AND PNEUMONIA IN CHILDREN UNDER 5, IN TWO NEIGHBORING STATES, ACCORDING TO APPLICATION OF ROUTINE PNEUMOCOCCAL VACCINATION PROGRAMS. VENEZUELA 2008-2014

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Background

Universal immunization with pneumococcal conjugate vaccine have demonstrated consistently decrease in morbidity and mortality of invasive Pneumococcal disease (IPD), where the programs were applied. The objective of this study is to know the impact of vaccine intervention on hospitalizations and mortality rates by NID when compare Táchira state Vs., Trujillo, one has implemented universal vaccination program and the other has not.

Methods

This is a Retrospective chronological epidemiological study that measures the impact of vaccine intervention. Hospitalization and mortality rates were compared by mortality standardized ratio (MSR) confidence interval of 95%. (Poisson). Impact was measured by hospitalization rates and deaths from those diseases.

Results

IPD hospitalization and mortality rate has decreased during the observation period in Táchira state, the entity where the universal vaccination was implemented; these changes were observed since first year of intervention. We found high rates of 80/105 hospitalizations for pneumonia, among the states, higher in Trujillo state, and with MSR for hospitalizations by IPD 38% (IC95% 27-50), differences while it decreased to 74% (IC95% 17-197) mortality rates statistically non-significant.

Conclusions

The introduction of pneumococcal conjugate vaccine on the immunization program was successful, reducing the rates of hospitalization and mortality by NID. We need to improve the vaccine coverage among children to achieve better results. Results suggest that rates of sepsis, pneumonia and meningitis in children under five, may represent a reliable surrogate marker of IPD and accurately reflect the impact of the vaccine in a population.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0448

EPSTEIN-BARR VIRUS - A RARE CAUSE OF ACUTE DISSEMINATED ENCEPHALOMYELITIS

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Title of Case(s)

EPSTEIN-BARR VIRUS - A RARE CAUSE OF ACUTE DISSEMINATED ENCEPHALOMYELITIS

Background

Epstein-Barr virus (EBV) is a lymphotropic virus best known for causing infectious mononucleosis, however, a myriad of neurologic complications have been described.

Case Presentation Summary

We describe the case of a fifteen-year-old girl admitted to the pediatric unit with acute onset weakness, drowsiness and letargia, preceded one week by a streptococcal negative tonsillitis treated with amoxicillin. Physical examination revealed flaccid paresis, generalized arreflexia with flexor plantar responses and urinary retention, without sensory level or neck stiffness. Cerebrospinal fluid analysis showed mild pleocytosis with lymphocytic predominance. Clinical findings were consistent with encephalomyelitis and prompt empirical treatment with intravenous human immunoglobulin, acyclovir, ceftriaxone and ciprofloxacin was initiated until etiologic confirmation. On the third day of hospitalization she developed a generalized maculopapular rash that resolved within four days. Brain and spine magnetic resonance imaging (MRI) showed multiple lesions suggestive of demyelination, mainly with grey matter involvement. Serologic testing was positive for Herpes simplex virus, *Borrelia burgdorferii* and EBV-VCA IgM/IgG. Subsequent MRI showed lesion improvement and further investigation revealed negative *Borrelia burgdorferii* immunoblot, lower EBV-VCA IgM and positive EBV-EBNA IgG. On outpatient follow-up she fully recovered in four weeks, without any residual neurologic complications.

Learning Points/Discussion

Acute flaccid paralysis is a clinical syndrome with a broad array of etiologies with different implications on therapy and prognosis. EBV is a rare cause in immunocompetent patients and as a neurotropic virus it must always be considered in the differential.

There is no standard therapy for acute disseminated encephalomyelitis and common treatment approach includes steroids, immunoglobulin or plasmapheresis. In this case, clinical and imaging improvement suggested a good prognosis and led us to avoid steroids, however, close neurological follow-up must be warranted.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0449

ATYPICAL PRESENTATION OF TUBERCULOMA OF BRAIN IN A 9 YEARS CHILD

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Title of Case(s)

Atypical Presentation of Tuberculoma of Brain in a 9 years child

Background

Tuberculosis an infectious disease which is highly prevalent in developing countries. 5-10% cases involve central nervous system due to haematogenous spread. Tuberculoma is one of the manifestations of Central Nervous System. Tuberculomas often present with focal neurological deficit without evidence of systemic disease.

Case Presentation Summary

A 9 years boy presented with occasional headache for 12 months with 3 episodes of transient unconsciousness lasted for 1 to 2 minutes. All routine investigations were done, CBC showed increased polymorph. MT was positive with in durations of 25mm at 72 hours with blister formation. Chest X ray was normal.

CT scan brain shows multiple ring like lesions with rim enhancement, and peri-lesional hypodense areas noted in left frontal, both parieto-occipital region of the brain with evidence of midline shifting. Report was suggestive of tuberculoma of brain with oedema.

After getting the investigation reports anti-tubercular drugs were started with 3 FDC, streptomycin and prednisolone for 2 months. After 2 month advised to continue Rifampicin and Isoniazide. During follow up at 9 months of his treatment CT scan showed a few number of ring like lesions with rim enhancement, and peri-lesional hypodense area. Follow up at 18 months of his treatment CT scan shows only area of calcification with perilesional oedema. Treatment continuation upto 24 months.

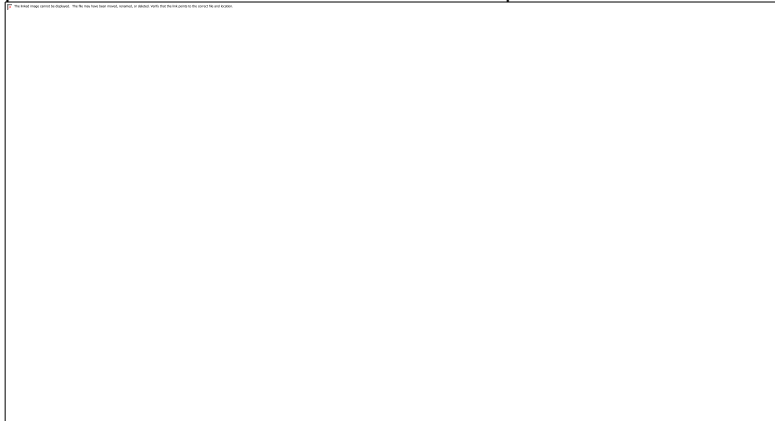


Figure: Sequential CT and MRI at the time of diagnosis and at 18 months

Learning Points/Discussion

Recurrent headache of any intensity should not be ignored

Prompt diagnosis and early initiation of treatment is very vital. Anti-TB drugs with prednisolone are essential for the successful treatment of cerebral tuberculomas. Duration of therapy depends on the clinical and radiological response of individual patient.

08C. EDUCATION: HIV/AIDS

ESP17-0450

SOCIAL SERVICES REFERRAL PRACTICE GUIDELINES FOR CHILDREN WITH HIV

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Title of Case(s)

HIV-positive patients referred to Social Services

Background

Manchester has one of the largest paediatric HIV cohorts outside London, with about 60 HIV-positive under 18 year-olds. In practice we regularly observe difficulties ensuring best management, for instance due to non-attendance (DNA) at clinic appointments and non-adherence to anti-retroviral therapy. Children have a right to health, and obstructing access to medical care is considered neglect. The Children's HIV Association guidelines therefore advocate escalation to social services, but there is no national/local policy to aid this process. We reviewed our cohort to create practice guidelines.

Case Presentation Summary

12 year-old girl, already known to social services, who regularly refused her medication. Peak viral load 715 pre-treatment. Following child protection plan implementation, viral load fell to <40. This case supports social services referral if 3+ episodes of non-adherence.

17 year-old girl, diagnosed on entry to the UK. Non-attendance at clinics from the outset. A turbulent family environment, with CD4 nadir 310 at the time of her father's death. She was fostered but absconded from services. Through inter-hospital communication she was followed up in another city. This case supports a national approach.

15 year-old boy, diagnosed with PCP and viral load >1 million. Significant religious and language barriers. By 4 years old on 7th medication course, and had developmental delay. Following Emergency Treatment Order application, agreement reached for directly observed treatment. This case supports early social services involvement to prevent adverse clinical outcomes.

Learning Points/Discussion

The case narratives demonstrated how difficult it is to create objective guidelines, but that social services input can alter outcomes. We recommend a treatment agreement with parents, and an objective protocol with specific triggers to follow if this is breached (e.g. 3+ DNA's trigger multi-disciplinary discussion).

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0451

SYSTEMIC EPSTEIN BARR VIRUS POSITIVE T CELL LYMPHOPROLIFERATIVE DISEASE OF CHILDHOOD: A RARE DISORDER

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Title of Case(s)

Systemic EBV positive T cell lymphoproliferative disease of childhood : A rare disorder

Background

Background

Epstein - Barr virus (EBV) is one of the common infections encountered in pediatric population. It commonly manifest as Infectious mononucleosis during adolescence but its association with childhood lymphoproliferative disorder is a major concern. EBV associated lymphoproliferative disorder (LPD) is commonly derived from B cells however, Systemic EBV positive T cell LPD should be considered in an extremely aggressive course.

Case Presentation Summary

A- 5 year old immunocompetent female patient of Asian (Middle East) origin presented with 3 months history of persistent fever, hepatosplenomegaly and mucosal bleed. Imaging studies in addition, showed mediastinal and intra-abdominal lymph nodes and nodular densities in both lungs. Laboratory examination revealed pancytopenia, abnormal liver function test, hyperferritinemia, hypertriglyceridemia and hypofibrinogenemia. Peripheral blood smear and bone marrow investigations did not show any morphologic evidence of Leukemia/ Lymphoma. No definite hemophagocyte seen. Lymph node biopsy showed effacement of architecture by small lymphocytic cells which were immunopositive for CD2, CD3, CD5 and CD8 and were negative for CD20, CD10, CD15, CD56 and CD34 with proliferative index of about 50%. This case was diagnosed as Hemophagocytic lymphohistiocytosis (HLH) and was further investigated to know the etiology. The atypical lymphoid cells were positive for EBER in situ hybridization. Patient was finally diagnosed as case of Systemic EBV positive T cell LPD of childhood. Patient subsequently succumbed due to sepsis.

Learning Points/Discussion

Systemic EBV positive T cell LPD of childhood is rarely encountered in clinical practice. EBV screening should be done in all cases of T cell LPD when they are presenting as HLH with a rapid downhill course.

22A. EDUCATION: OTHER

ESP17-0453

HAEMOLYTIC UREMIC SYNDROME IN CHILDREN IN CRETE

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Background

Haemolytic uremic syndrome (HUS) is a thrombotic microangiopathy consisted of progressive renal failure, non-immune haemolytic anaemia and thrombocytopenia. HUS is classified into STEC-HUS, mediated by Shiga toxin-producing *Escherichia coli*, atypical (aHUS), mediated by hereditary complement abnormalities and *S. pneumoniae*-associated. HUS is more common in children younger than 5 years old. Herein we describe the incidence, types and characteristics of HUS in children over a 15-year period in Crete.

Methods

We retrospectively reviewed the records of all children under 15 years with HUS hospitalised from 2002-2016. Stool and blood cultures and laboratory investigation important for the identification of the cause of the condition were recorded.

Results

We identified 7 children (5 girls, 2 boys) with HUS, aged 0.17-4.7 (median 1.68) years. In 4 children HUS was infection-induced, (1 *E coli* O45 STEC, 2 gastroenteritis of unidentified cause, 1 *S. pneumoniae*-induced) and in 3 it was atypical, associated with hereditary complement abnormalities. The annual incidence of the condition in our area was 0.31/100 children at risk/year (0.17 for boys and 0.45 for girls) and the cumulative incidence 0.02%. Interestingly, the first presentation of all 3 atypical cases was infection-induced (1 *E. coli* O45:H2). 6/7 children were treated with fresh frozen plasma and 1 child required no treatment. One child required dialysis and is the only one with impaired renal function during a long-term follow-up period of the 7 children (2.5 to 11, median, 4.2 years).

Conclusions

HUS is unusual in children of our area of practice and can be infection-induced even in atypical cases. Long-term prognosis was in general favourable.

17A. EDUCATION: REFUGEE CHILDREN

ESP17-0455

TUBERCULOSIS AND IMMIGRANTS: A 6-YEAR STUDY IN THE DISTRICT OF RAGUSA

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Background

TB is a major problem in vulnerable populations, such as immune compromised subjects or those who live in environment below the current hygienic standard. This situation unfortunately afflicts the lives of many immigrants and refugees, including children. The Ragusa district, the extreme lower limb of Sicily and Europe, has been during the last five years, a major target for refugees, who account for 8% of total population. This raised concerns of possible infectious hazard for the autochthonous population

Methods

Study population: demographic data were obtained from the national website (www.demo.istat.it) and cases from the national health authority website for infectious disease notification (www.SIMIWEB.it). All TB cases notified between 2010-2015 in the Ragusa district were included.

Results

With 111 cases reported, frequency was 5.87 cases/100000 overall, with 64.7/100000 in immigrants versus 1.6/100000 in Italians. This trend was consistent over the study interval; 39.6% of cases occurred in Rumanian citizens; of 13 cases occurred at age <19 years, 5 were Italian.

Conclusions

the incidence of TB in Ragusa is comparable with that reported in others areas, in Italy and others European countries. It characteristically affects immigrants, with a trend to increase especially in young Afros. No harm for the local population, including children.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0458

RETROSPECTIVE ANALYSIS OF ENTEROVIRUS INFECTIONS IN BADAJOZ: CLINICAL MANIFESTATIONS

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Background

Enterovirus infections are common among children. Enteroviruses usually cause mild infections but in recent years several countries have reported outbreaks associated with severe manifestations. Objective: to describe clinical manifestations and complications of enterovirus infections in Badajoz Children's Hospital.

Methods

Cases of children under fourteen years old with positive enterovirus detection in respiratory samples over a ten-month-period (November 2015 – August 2016) were analysed retrospectively. Epidemiological, clinical manifestations and treatment data were collected.

Results

Enteroviruses were isolated in respiratory samples of thirty-one patients. The age range was 0'1 to 6'8 years and median age was 1'6 years (61'1% under 2 years and 25'8% between 2 and 4 years). 54'8% of the cases were male and 45'2 were female. The incidence of the infection was higher from March to July (64'5% of the cases in those 5 months). The most common clinical manifestations were fever 71%, bronchial hyperactivity 35'4% and vomiting 32'2%.

Neurological manifestations were developed in seven patients (22'6%); all these cases were diagnosed between June-August. Four cases were diagnosed of encephalitis, one of meningitis and one of acute disseminated encephalomyelitis and one of cranial nerve palsy. The most common manifestations among patients with neurological outcomes were movement disorders (6/7), vomiting (6/7), fever (5/7), ataxia (3/7) and cranial nerve palsy (2/7). Three of these required admission to an intensive care unit.

Conclusions

Incidence of enterovirus infections is higher between children under two years. These infections are more frequent in spring and summer.

In our hospital there has been seven cases diagnosed from June to August that developed neurological outcomes, this coincides with other neurological outbreaks reported in the literature.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-0459

POINT PREVALENCE SURVEY OF ANTIBIOTIC USE IN A TERTIARY-CARE TEACHING HOSPITAL, MEDELLIN, COLOMBIA

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Background

Inappropriate antibiotic use is related to bacterial resistance, higher health-care costs and adverse effects. In pediatrics, antibiotics are the most frequently prescribed drugs and can be used inadequately in up to 50% of the time. Our aim was determine the point prevalence of antibiotic use in hospitalized children in a tertiary-care teaching hospital, in order to design effective antibiotic stewardship strategies.

Methods

Hospital Pablo Tobón Uribe is a tertiary-care institution, at Medellín, Colombia. It has 490 beds, of which 142 are pediatric. Data collection was performed on September 23, 2015 at 8:00 am, all patients in pediatric wards receiving antibiotics, antifungals or antivirals were included. Patients receiving anti-TB and antiretrovirals were excluded. Antimicrobial prescriptions and their characteristics were evaluated by reviewing medical electronic records and using a written survey. Reviewers were ID specialists or fellows.

Results

The point prevalence of antibiotic use in children was 45% (48 of 84 hospitalized patients were receiving antibiotics). 78 prescriptions were evaluated, 70% were indicated as treatment. Antibiotics were being used in 77% of the cases, antifungals in 12% and antivirals in 11%. The most prescribed antibiotics were cefepime, vancomycin and carbapenems. The most frequent diagnosis were pneumonia, febril neutropenia and UTI. Fifteen prescriptions (19%) were considered inadequate, 6 were profilaxis and 9 were treatments.

Conclusions

The prevalence of antibiotic use in our hospital is similar to that reported worldwide, however we found that the use of vancomycin and carbapenems is high. Implementation of an antibiotic control program is recommended.

After this study we implemented a strategy of antibiotic control in the intensive care units to monitor all antibiotic prescriptions in order to improve indication, dosing, descalation and duration of treatments.

22A. EDUCATION: OTHER

ESP17-0460

BLOOD COMPONENT THERAPY IN SPECIALITY PAEDIATRIC HOSPITAL- AN APPRAISAL

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Background

In paediatric transfusions, it is important to strike a balance between optimum utilization of valuable resource and the need to transfuse. Though indications and complications may be similar to adults, higher metabolic rate and oxygen consumption and increased rate of cardiac output to circulating volume have to be borne in mind. The objective was to evaluate transfusion practices at speciality children hospital with a blood storage centre and to analyse challenges faced during transfusions.

Methods

The retrospective study covered one year from time of starting of blood storage centre (BSC) and included all children who received blood component therapy. For each child, demographic data, diagnosis, details of blood component therapy and reasons for transfusion were collected. As BSC, Packed red blood cells (PRBC), Random donor platelets (RDP) and fresh frozen plasma (FFP) only were considered. Among 193 transfusions given, 45 were for neonates and rest were for paediatrics age group (2 months to 10 years).

Results

Transfusion of PRBCs was the maximum (101) followed by FFP (39). The indications for transfusion in pediatrics included renal diseases, oncology, surgery (pre operative or post operative status), thalassemia and trauma. In neonates, the common indication was anemia. 13 children diagnosed with infections required PRBC transfusions. Two of them had blood grouping discrepancies-one, case of pyogenic meningitis who later developed encephalopathy and other pneumococcal pneumonia. The children diagnosed with dengue were conservatively managed without transfusions.

Conclusions

Packed red blood cells are the most frequently used blood component for transfusion. Blood grouping discrepancies can occur in severe infections due to nonspecific stimulation of cold agglutinin activity or cross reactive epitopes on bacterial lipopolysaccharide. They need to be resolved using appropriate techniques, as these children may require multiple transfusions.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0461

CSF INFECTION DUE TO STREPTOCOCCUS VIRIDANS - MORE THAN JUST A CONTAMINATION!

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Background

Isolation of *Streptococcus viridans* (SV) in the CNS is uncommon, often believed to be a contamination and related to infections of the oral cavity and/or recent neurosurgical procedures. Data regarding SV CNS infections are scarce and management guidelines are lacking. We describe epidemiological data and clinical features of patients with SV isolation in CSF.

Methods

Retrospective analysis of microbiological records and clinical charts of children (<14 years) with SV isolation in CSF (01/2007-12/2016).

Results

Median age 2 years (IQR 4–48 months). All patients presented with fever whereas other clinical manifestations were highly variable. Out of 3546 CSF cultures 456 (12.8%) were informed positive. Pathogens belonging to the SV group were isolated from 26 patients in 27/456 cultures (5.9%). *S.mitis* was most frequently identified (n=14,52%) followed by *S.oralis* (n=7,26%). 11 (44.7%) cultures were considered infections and 16 (59.3%) contamination. 13 patients (48%) had a history of a recent (<21days) neurosurgical procedure; 10 of those (77%) were classified as infection. Only one patient (17%) without surgery history was considered infection. Systemic (WBC, C-reactive-protein) and local (CSF) inflammatory markers were not different when comparing infection and contamination group. All patients in the infection group received antimicrobial therapy (4-21days, mean 10) and 5/11 required neurosurgical intervention (shunt externalization (n=3), removal (n=2)). No deaths were reported. All isolates were sensitive to vancomycin and 56% to penicillin. Alarmingly, during the last 4 years, *S.mitis* resistance to cefotaxime increased from 0% to 60% (p=0.01).

Conclusions

SV isolation in the CSF of patients with a recent neurosurgical procedure should be considered infection and early antimicrobial therapy is recommended. Exclusive antibiotic therapy appears appropriate in selected cases. Increasing cefotaxime resistance of *S.mitis* warrants epidemiological surveillance and adjustment of the empiric antibiotic protocols.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0462

A CASE OF INFANTILE BRAIN ABSCESSSES CAUSED BY PEPTONIPHILUS HAREI AND ATOPOBIUM VAGINAE

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Title of Case(s)

A CASE OF INFANTILE BRAIN ABSCESSSES

Background

In term neonates brain abscesses are rare and mostly caused by anaerobic and microaerophilic cocci and anaerobic bacilli and are predominantly the result of an adjacent infection, haematogenous dissemination or traumatic head injury. The causative pathogens are related to the underlying condition and in most cases a single pathogen is isolated, however in up to 30% of cases the cultures are sterile.

Case Presentation Summary

A 4-month-old girl, with history of loss of head control and rapid head growth (10 cm since birth), was admitted with irritability, fever, opisthotonus, bulging fontanelles and open sagittal suture. She had slightly elevated CRP (43 mg/l), thrombocytosis ($1133 \times 10^9/L$) and normal WBC. Ventriculitis and multiple abscesses mostly in the left cerebral hemisphere were revealed on CT (figure). The abscesses were drained and from the greenish pus *Peptoniphilus harei* and *Atopobium vaginae* were identified by MALDI-TOF and confirmed by 16S-sequencing. Both organisms were susceptible to penicillins, cephalosporins and clindamycin. Treatment was initiated with meropenem and vancomycin (16 days) and continued with co-amoxiclav (39 days). The cultures were repeatedly positive until the 11th day of treatment. In time the abscesses decreased in size, whereas the patient developed seizures and resorptive hydrocephaly which required ventriculoperitoneal shunting. At the age of 7 months she is on antiepileptic treatment and has serious developmental delay.

Learning Points/Discussion

Rapid head growth and regressing motor skills may be signs of brain abscesses in infants.

Peptoniphilus harei and *Atopobium vaginae*, thus far known as colonisers of the gastrointestinal and vaginal tract and rare causes of brain abscesses in elderly, may cause brain abscesses in an otherwise healthy neonate.

In case of an invasive bacterial infection there may be no significant elevation of inflammatory markers.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0463

VARICELLA HOSPITALIZATIONS IN A TERTIARY PEDIATRIC CARE CENTER.

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Background

Varicella virus infection is common in childhood and generally has benign course, some complications may require hospitalization and rarely causes death.

Methods

Retrospective study in an Argentinian tertiary care pediatric center. Clinical and laboratory results were abstracted from medical charts during 2015 and analyzed with Epi info 3.5.4.

Complicated chickenpox was defined those with bacterial infection, neurological involvement, or autoimmune manifestations.

Neonates and patients with varicella hospitalized for other reasons were excluded.

Results

1129 patients visited emergency department (ED). Mean age 52 months. 114 were hospitalized (10%). Hospitalization rate: 125 / 10,000 discharges in 2015. Inpatients median age: 33.3 months. Most frequent cause of hospitalization was skin and soft tissue infection (SSTI) in 69% (n=78): (impetigo, cellulitis, fasciitis). 19 patients were hospitalized for increased risk of disseminated infection, 7 had zoster, 4 social reason, 4 respiratory complications and 2 neurologic involvement.

Mean days of hospitalization: 6 (1-19).

71% were healthy and 29% had comorbid conditions. 17.8% patients with STTI had bacteremia: methicillin sensitive *Staphylococcus aureus* (MSSA) in 6 patients (46%), *Streptococcus pyogenes* in 5 (38%), resistant methicillin *Staphylococcus aureus* in 2 (26%).

High white blood cell and neutrophils counts were associated with major risk of bacteremia: 18,467 vs. 9,916/mm³ and 12,482 vs. 4,761/mm³, respectively (p<0.05). Ten patients had abnormal liver function and one developed liver failure.

98% recovered without sequelae.

Two patients died: one septic shock and other with liver failure.

None hospitalized patient was immunized against chickenpox.

Conclusions

Bacterial superinfection was the most common complication. 14 cases of bacteremia were in healthy children, two patients died.

Elevated counts of total white cells and neutrophils was associated with increased risk of bacteremia. Although the vaccine is available in the national calendar since June 2015, there was not uniform vaccination coverage.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0465

FREQUENCY OF RESPIRATORY TRACT INFECTIONS AND USE OF ANTIBIOTICS IN THEIR TREATMENT IN PRIVATE PEDIATRIC PRACTICE "PEDIJATRIKA-BAMBI" STRUMICA, MAKEDONIJA

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Background

Respiratory diseases are the most frequent reason for children visit to pediatrician. Prescription of antibiotics in acute respiratory infections is not without effect but irrational prescription also leads to development of bacterial resistance to antibiotics, which is ongoing problem worldwide.

Methods

Retrospective review of the data from daily records in pediatric practice in 2014.

Results

In the reviewed period a total of 1272 children were examined. There were 642 first examination (50.4%), 335 control examinations (26.3%), 98 short visits (7.7%) while there were 190 preventive examinations (14.9%). Out of the total number of examined children, there were 535 (42.05%) children with respiratory disease. Out of total number of the first examination, 339(63.3%) children had respiratory disease and out of a total number of control examinations, there were 196 (36.6%) children with respiratory disease. Distribution of the respiratory diseases according to the diagnoses is as follows: J00 -102(19,0%); J01-1(0,18%); J02-80(14,9%);J03-105(19,5%); J04-59(11,0%); J20-125(23,3%); J18-10(1,8%); J21- 12(2,24); J45-5(0,9%);J44.8 -22(4,1%); J30.4-14(2,61%). According to the age, the majority of children were 0-3 years of age-242(45,2%), followed by 4-7 years of age 198 (37,0%); 8-11 years of age 60 (11,2%); 12-15 years ,23(4,2%) and 16-19 years,12 (2,24%). Out of the total number, antibiotics were prescribed to 160 (29,9%) children. Distribution according to the age of children who were prescribed antibiotics was: 0-3,60 children (37,5%); age 4-7,53 children (33,1%); age 8-11, 17 children(10,6%); age 12-15,19 children(11,8%); age 16-19, 4 children(2,5%).

Conclusions

63.3 % of the children in the first examination had acute respiratory infection and more than half of them in control examinations. Antibiotics were prescribed to 29,9% of children, equally at age 0-3 and 4-7. Antibiotics were mainly prescribed for acute tonsillitis and the most frequently prescribed was amoxicillin.

01A. EDUCATION: ANTIMICROBIAL STEWARDSHIP

ESP17-0471

ANTIMICROBIAL STEWARDSHIP IN PEDIATRICS: EVALUATION OF ANTIBIOTIC USE IN INPATIENT PEDIATRIC PATIENT GROUPS

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Background

Antibiotic resistance is rising and poses a serious public health threat. Evaluation of antimicrobial stewardship programs is limited for paediatrics. We analysed antimicrobial prescriptions from 2008 and 2015 for four paediatric infectious conditions in a secondary care setting to determine whether antibiotic use has been restricted.

Methods

In this retrospective analysis patients aged between 0 and 18 years old were included if they were admitted in 2008 or 2015 and received antibiotics for one of the following diagnoses: urinary tract infection (UTI), lower respiratory tract infection (LRTI), skeletal infection, and meningitis. Variables measured were duration of intravenous and oral antibiotics, type and dose of antibiotic.

Results

For UTI the median duration of intravenous therapy significantly decreased from 3 days in 2008 to 2 days in 2015 ($p=0.023$). The use of cephalosporin antibiotics in this group reduced from 93% to 45% ($p = 0.002$). For LRTI the total duration of antibiotic therapy significantly decreased ($p<0.001$) from 9.2 days in 2008 to 6.6 days in 2015. A significant decrease was also noticed in duration of intravenous treatment ($p< 0.001$). Penicillin prescriptions for LRTI were more often narrow in spectrum ($p=0.0158$). No significant differences in antibiotic use between 2008 and 2015 for skeletal infection and meningitis were found.

Conclusions

A significant decrease in total duration of antibiotic treatment was found for LRTI. Intravenous antibiotic treatment was shortened in time in the LRTI group and in the UTI group. The use of cephalosporin decreased in the UTI group. Penicillin prescriptions for LRTI were more often narrow in spectrum. These outcomes could be explained by increased awareness and a selection of interventions in the context of antimicrobial stewardship.

22A. SCIENCE: OTHER

ESP17-0472

ONLINE CHAT SERVICE HELP PARENTS ON QUESTIONS RELATED TO PAEDIATRIC INFECTIONS

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Background

Novel channels of communication between parents and physicians result in low threshold consultations on paediatric problems. We evaluated parental consultations in a chat-based communication service. We hypothesized that most questions would be infection-focused, and parental satisfaction to be inversely associated with the need for further medical contact.

Methods

The chat service was initiated by a private healthcare clinic in the greater Helsinki area in September 2015. Between October 2015 and March 2016 346 consecutive consultations were immediately evaluated by a physician for main cause for consultation, and need for further physical medical contact. Parental assessment was inquired by email after the consultation. The email included a link to an internet-based questionnaire. 102 parents answered the questionnaire 13 (mean; range 1-38) days after consultation. Parents were asked about further medical visits, and satisfaction (6-point scale). The evaluations of both physicians and parents could be linked in 86 (84%) cases.

Results

The largest age group of the children consulted on was <1 year (28 %). The most common main causes for consultation were infections (190/346), skin symptoms (36/346) and stomach problems (30/346). Need for further physical medical visit on the same day was recommended in 48/346 and in case the situation worsens or symptoms change in 212/346 visits. Parental satisfaction was not statistically associated with the need for further physical medical visit.

Conclusions

Online parental consultations focus on infection-related issues. However, parental satisfaction was not associated with the requirement of a further physical medical contact. Therefore, these services may be best suited for situations when a parent is evaluating whether paediatric infections requires a medical visit.

Clinical Trial Registration (Please input N/A if not registered)

N/A

02B. EDUCATION: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-0473

EXTENDED SPECTRUM BETA-LACTAMASES PROFILE OF PEDIATRIC URINARY TRACT INFECTION - A STUDY FROM A TERTIARY CARE HOSPITAL IN SOUTH INDIA

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Background

Extended spectrum beta-lactamases (ESBL) expressing gram negative bacilli are now commonly causing community acquired infections including UTI and represent a challenge for practitioners in choosing empirical antibiotics to prevent renal scarring.

Hence a retrospective descriptive survey was done

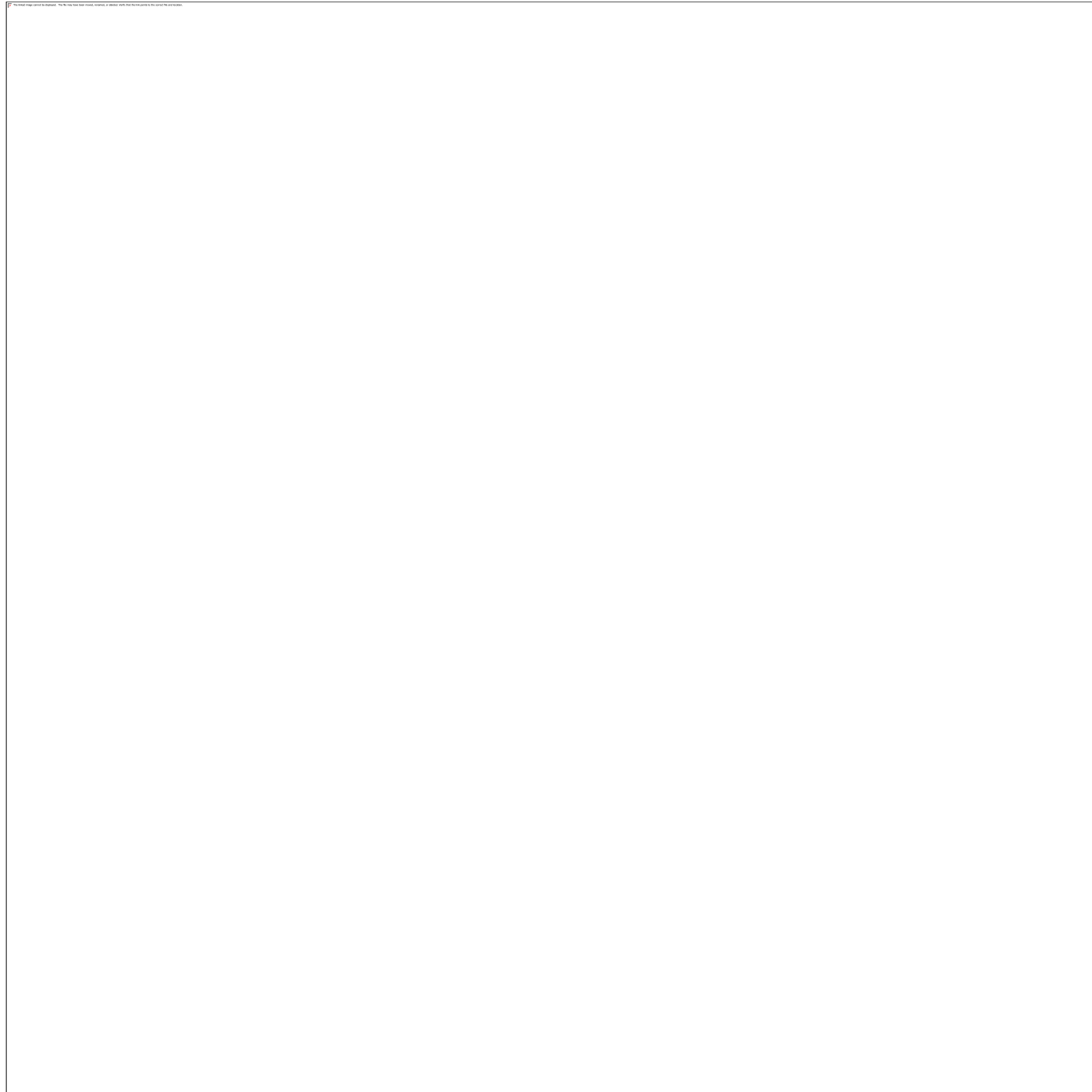
- To study the prevalence of ESBLs causing UTI in community settings, their epidemiology and antibiotic susceptibility pattern.

Methods

We analysed retrospectively results of significant urine cultures of 939 children ≤ 18 years of age with community acquired UTI during 2014- 2016 at Manipal hospital, Bangalore, India. Children with asymptomatic bacteriuria and recent history of admissions or antibiotic exposure were excluded from the study. ESBLs were identified by double disc method and antibiotic susceptibility was tested using CLSI guidelines.

Results

A total of 16 different isolates were obtained from 939 culture positive UTI. Most commonly isolated organism was *E. coli* (69.9%). *K. pneumoniae* (9.6%) and *P. mirabilis* (3.2%) were reported as next common organisms. ESBLs were produced by the same organisms, thus responsible for 40.6% of UTI. 53.5% of *E. coli*, 31.8% of *K. pneumoniae* and 6.4% of *P. mirabilis* were ESBL producers. Most effective antibiotics against ESBLs were Imipenem and Meropenem (93-100% sensitivity). Other antibiotics with better sensitivity were Amikacin and Netilmicin, Cefoperazone-sulbactam and Piperacillin-tazobactam (80-100%). 98-100% resistance was noted for cephalosporins, Aztreonam. A high resistance rate was seen for fluoroquinolones, cotrimoxazole and Amoxicillin-clavulanic acid



Conclusions

A high rate of community acquired ESBLs and their resistance to commonly used antibiotics brings a concern for future options in treating these conditions. The empirical treatment options of using cephalosporins as the first line antibiotic in community acquired UTI should be reviewed. As there is high resistance to oral antibiotics ie amoxicillin-clavulanic acid, fluoroquinolones and cotrimoxazole, alternative drugs like Amikacin, Netilmicin can be considered as first line drugs for empirical therapy. Judicious use of antibiotics and regular review of local antibiograms is warranted for fighting against increasing antibiotic resistance.

04E. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0474

PASSIVE SMOKING AND AIRWAYS MUCOSAL MICROBIOME IN CHILDREN WITH ADENOID HYPERTROPHY

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Background

Exposure to environmental tobacco smoke (ETS) is associated with a variety of health effects, e.g. respiratory illnesses. It can contribute to the development of chronic inflammation, deterioration of immune function and defence mechanisms and changes in mucosal microbiome of the airways. The aim of this study was to determine the influence of passive smoking on selected characteristic of children with adenoid hypertrophy.

Methods

Sixty-one children with adenoid hypertrophy were enrolled in the prospective study. Differences in bacterial colonization of middle nasal meatus and nasopharynx and changes in selected laboratory immune and inflammatory markers according to the tobacco smoke exposure were analysed.

Results

Exposure to tobacco smoke was associated with significantly higher colonization of pathogenic bacteria and polymicrobial growth of pathogenic bacteria (≥ 2 bacteria) in middle nasal meatus compared to non-exposed children ($P=0.045$, $P=0.032$, respectively). Parameters of humoral immunity in serum – IgA and IgG, were detected in higher concentrations in children exposed to tobacco smoke ($P=0.047$, $P=0.031$, respectively). Differences in selected parameters of cellular immunity in peripheral blood according to passive smoking were not observed.

Conclusions

Tobacco smoke exposure is related to increased colonization by pathogenic bacteria in middle nasal meatus and elevation of IgA and IgG in peripheral blood, but does not seem to influence markers of cellular immunity parameters in children with adenoid hypertrophy. Avoidance of passive smoking could be recommended as universal preventive strategy against microbial colonisation of the upper airways and development of various inflammatory diseases in children, e.g. adenoid hypertrophy.

Clinical Trial Registration (Please input N/A if not registered)

N/A

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0475

ASSESSMENT OF THE IMPACT OF NATIONAL GUIDELINES ON THERAPEUTIC APPROACH OF BONE AND JOINT INFECTIONS IN CHILDREN: THE SPANISH PEDIATRIC OSTEOARTICULAR INFECTIONS NETWORK (RIOPED).

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Background

Recent Spanish Guidelines for the management of acute osteoarticular infections (OAI) in children recommend initial intravenous antibiotics and quick switch to oral treatment if the outcome is favorable. Conservative management with arthrocentesis has been recommended in uncomplicated septic arthritis(SA) as well. Aim: Assess the rate of compliance with the 2014 Spanish Guidelines

Methods

Prospective study (September/2015-September/2016) in 37 hospitals from the Spanish Network of OAI (RIOPED) evaluating management of OAI in children was compared with a previously published retrospective, multicenter study with OAI performed between 2008-2012. Confirmed osteomyelitis(OM), osteoarthritis(OA), spondylodiscitis(SD) and SA required a positive isolate; otherwise, they were considered probable. Probable SA with <40,000 cells/mm³ in joint fluid were not included.

Results

Two hundred and fifty-five children with OAI were included: 131 OM (50 confirmed), 79 SA (45 confirmed), 30 OA (19 confirmed) and 15 SD. The rate of empiric intravenous antibiotics in accordance with the guidelines was

65.1% (SA 72.9%, OM 57.3%; $p=0.03$), and 62.3% in the case of oral treatment (AS 60.8%, OM 64.3%). The rate of accordance was similar for empirical and adjusted therapy. Surgery was only performed in 36.8% of SA (85.7% arthrotomy), with a significant decrease compared to the retrospective study ($p=0.014$). Although only 58.5% of cases were compliant with the guidelines in terms of duration of therapy (SA 58.3%, OM 60.4%, $p=0.73$), considering standard 2-3 weeks for SA and 3-4 weeks for OM, overall, there was a shorter duration of therapy in the prospective study (see table).

Conclusions

In this study there was an acceptable adherence of treatment of OAI to the recently published Spanish guidelines. Furthermore, there has been a decreased rate of surgery and, shorter hospital stay of uncomplicated cases.

12B. EDUCATION: INVASIVE FUNGAL INFECTIONS

ESP17-0476

TINEA CAPITIS WITH HIGHLY INFLAMMATORY REACTION

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Title of Case(s)

TINEA CAPITIS WITH HIGHLY INFLAMMATORY REACTION

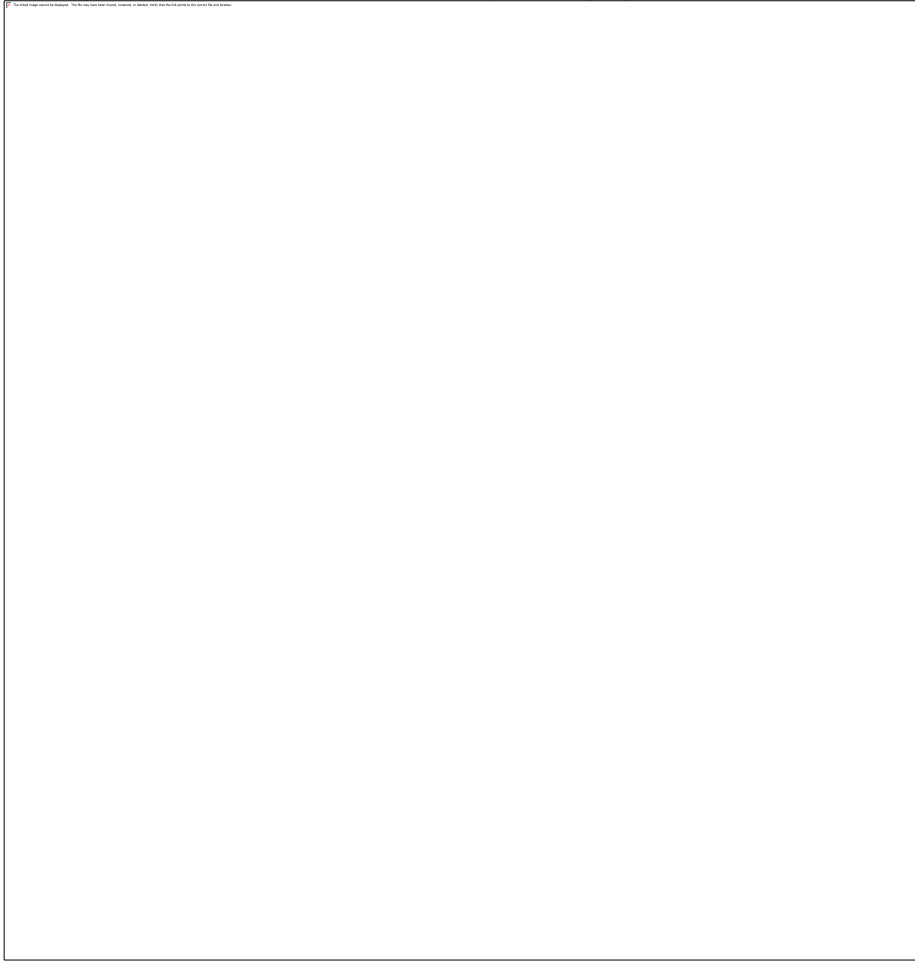
Background

Tinea capitis, an infection of the scalp by dermatophytes, represents the most common fungal infection in pediatric age. The clinical presentation varies from non-inflammatory desquamative dermatosis to the evolution of *Kerion celsi* type lesions that may look like bacterial abscesses.

Case Presentation Summary

We report a case of a 22-month-old boy admitted to the Emergency Department with erythematous-desquamative and purulent lesion of the scalp and forehead, with fluctuation and spontaneous drainage, with 2 weeks of evolution, worsening after application of topical corticosteroids, and onset of fever 3 days before admission. Laboratory studies revealed leukocytosis, elevated CRP and negative blood culture. He was hospitalized with intravenous Flucloxacillin and underwent incisional drainage. On Dermatology observation, the diagnosis of *Kerion celsi* was made, and started treatment with oral Itraconazole, topical corticosteroid and antifungal. Microbiological examination of the exudate was negative. Direct microscopy of the lesion's scraping revealed the presence of hyphae, *Trichophyton mentagrophytes* was isolated in mycological culture. Due to intense inflammatory skin reaction, in addition to multiple scattered erythematous papules of the face, he began oral corticosteroid on the 4th day of hospitalization. He presented clinical improvement, with total resolution of the abscess, completing 15 days of antibiotic therapy. He was discharged with Itraconazole and oral corticosteroid

weaning scheme, with follow-up on ambulatory showing significant improvement.



Learning Points/Discussion

The prognosis of *tinea capitis* is positive, with total resolution of infection in most cases. In cases of *Kerion celsi*, oral corticoid conjugated therapy is necessary to reduce inflammation, scarring and alopecia. Early recognition of this condition is highly important, and abscess-like lesions of the scalp should be carefully investigated so that antifungal therapy is initiated and unnecessary surgical interventions are avoided.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-0480

VARIABILITY IN INPATIENT PAEDIATRIC ANTIBIOTIC USE BETWEEN 2 DUTCH LARGE URBAN TEACHING HOSPITALS IN THE PERIOD 2010 TILL 2015

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Background

At children's wards, approximately a third of all neonates and a half of all children receive antibiotics. Misuse or overuse of antibiotics can have a negative impact. Antimicrobial stewardship programs are implemented to accomplish rational prescribing of antibiotics, but patterns of prescriptions still vary from hospital to hospital. Comparisons between hospitals could help identify areas of inappropriate antibiotic prescribing.

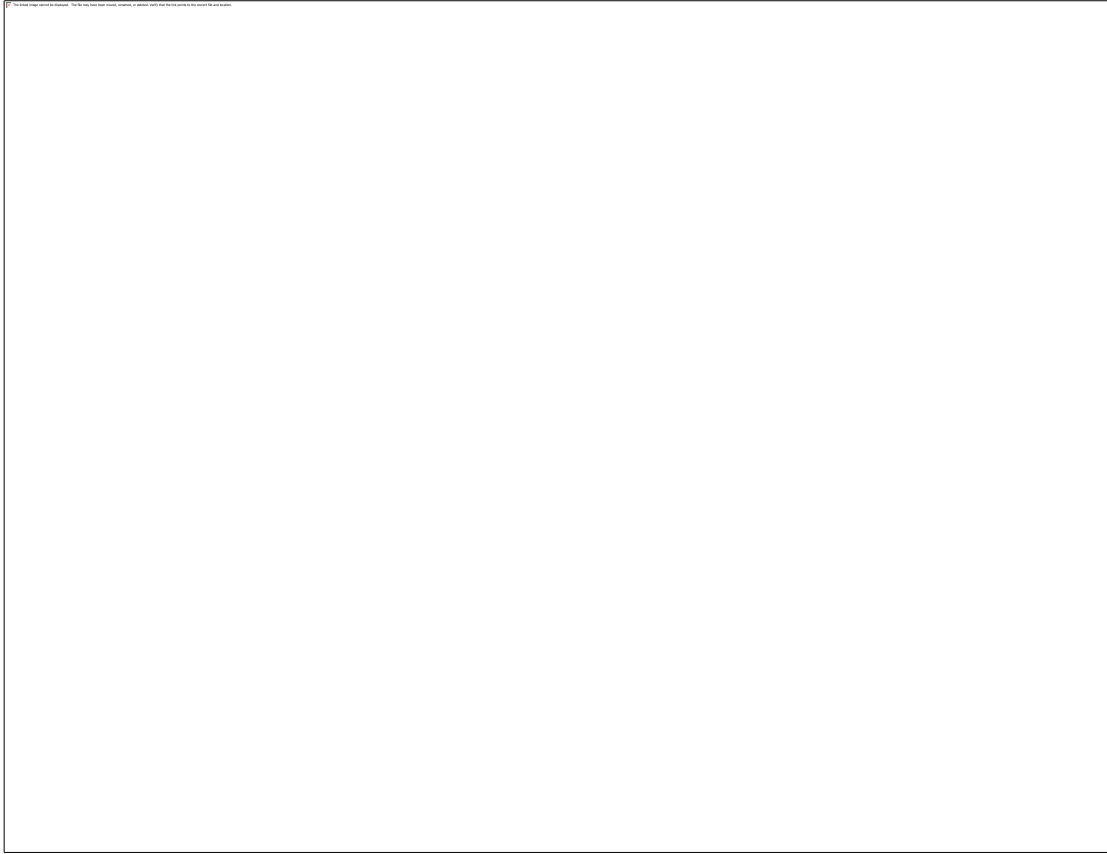
Methods

A retrospective study was conducted of paediatric admissions in 2 Dutch teaching hospitals between 2010 and 2015. The patient information and pharmacy computer system were used to obtain clinical and pharmacological data. Differences in prescribing antibiotics were compared by calculating days on therapy per 100 patient days (DOT).

Results

The neonatology ward DOT varied over the years from 22,91 – 34,39 in hospital 1 and 6,14 – 17,48 in hospital 2. The average DOT was lower in hospital 2 ($p=0.00$). Till 7.53% of the observed post-delivery newborns were prescribed antibiotics in hospital 1 compared to maximal 4.87% in hospital 2. The children's ward DOT varied over the years from 28,62–44,94 in hospital 1 and 44,36–49,55 in hospital 2. The average DOT was lower in hospital 1 ($p=0.01$). Most common prescribed antibiotics were beta-lactam antibiotics (69-84% of all prescribed antibiotics). No significant trends in time were seen except for a decline in ceftriaxone use ($p=0.00$) at the

children's ward in hospital 1.



Conclusions

In general, the total yearly DOT did not decrease significantly within the time period except for ceftriaxone in hospital 1. At the neonatal ward, the DOT was significantly higher in hospital 1, but the children's ward DOT was significantly higher in hospital 2, also when corrected for oncology patients. The origins of these differences should be further elucidated.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-0482

ESTIMATING CLINICAL AND ECONOMIC IMPACT OF SWITCHING FROM THE 13-VALENT (PCV13) TO THE 10-VALENT (PCV10) PNEUMOCOCCAL CONJUGATE VACCINE IN SPAIN

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Background and Objective

PCV13 is used in routine infant immunization across all regions of Spain. PCV13 has reduced incidence of invasive pneumococcal disease (IPD) caused by important serotypes, such as 19A, which caused over 20% of invasive disease in children 0-4 years of age in Spain and rapidly emerged during PCV7 use. Our objective is to evaluate health and economic implications of potential disease emergence of non-vaccine types (NVT) following a switch to a lower-valent vaccine (PCV10) in Spain.

Methods

A decision-analytic model was developed to estimate public health and economic impact of switching infant vaccination from PCV13 to PCV10 across Spain. Historical pneumococcal disease surveillance data were used to estimate disease trends by serotype and to forecast disease emergence and/or reduction for infants (direct effects) and older age groups (indirect effects). For each vaccination program, health outcomes (cases of IPD, pneumonia, and acute otitis media) and costs were estimated. Epidemiologic and cost data were derived from the MBDS and eOblikue databases, respectively, and serotype surveillance was generalized to all of Spain from Instituto de Salud Carlos III.

Learning Points Discussion

In the base case analysis, assuming a 2-year lag before disease re-emergence of serotypes not covered by PCV10 ; continued use of PCV13 prevented 170,000 more cases of pneumococcal disease and 1,800 more deaths than if Spain switched to PCV10 over a 10-year period. Despite a higher vaccine cost, PCV13 remains cost-effective compared to PCV10 across several scenarios.

Due to factors such as increases in NVT, continued use of PCV13 in Spain would provide a greater public health benefit compared to PCV10. It is important for policy makers to consider disease emergence when considering modifications to vaccination strategies.

22A. EDUCATION: OTHER

ESP17-0483

WHAT INFORMATION ABOUT THE PARASITIC DISEASES PARENTS CAN FIND ON THE INTERNET.

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Background

Despite the high standards of hygiene and sanitary norms in Poland, the parasitic diseases remain a concerning medical issue for parents. They often blame parasites for unspecific symptoms and seek for the unproven methods of diagnosis and self-treatment. This need generated a private business - laboratories 'specialized in parasites' and natural medications to treat them. One of the most important sources of knowledge for non-specialists is the Internet. Our aim was to check what information about the parasitic diseases is available reading the first page documents found on Google Search.

Methods

In May-June 2016 we used Google Search with terms: 'parasites children', 'helminthiasis children', 'parenting parasites', 'ascaris children', 'deworming children' and 'parasites treatment.' 39 top websites were reviewed. Their authors were non-specialists (parenting portals writers, bloggers). Information was qualified as correct or incorrect in a context of a disease- or a parasite-naming, the disease symptoms, complications, source/routes of the infection, the diagnostic and therapeutic methods, and the prevention, including a dietary recommendations.

Results

We found misinformation about symptoms in 64,3%, about complications in 58.3% and diagnostic methods in 61.1% of all the information provided in the posts. 26.6% of posts advised unconventional medicine methods of treatment. The therapeutic methods compatible with actual recommendations were included only in 36,6% of the analyzed documents. 43,3% of the posts advised the unnecessary 'antiparasitic' diet. Only 53.3% of the articles indicated correct methods of prevention.

Conclusions

Most information on the parasitic diseases available for the Polish parents is full of bias. That is probably one of the most important reasons for misconception and exaggerating the parasitic diseases burden by non-specialists. Sharing actual, correct information on the parasitic disease is needed to avoid the unnecessary interventions in children.

22A. SCIENCE: OTHER

ESP17-0486

BACTERIOPHAGE THERAPY IN PEDIATRICS

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Background

100 years ago d'Herrele published the first paper on the bacteriophage therapy of dysentery. Discovery and implementation of antibiotics caused rejection of bacteriophage therapy almost in all countries. As a result physicians do not know them sufficiently. Increasing of bacterial resistance reinforced the interest in bacteriophage therapy. Unfortunately only a few clinical trials were done according to modern requirements. Our aim was to analyze the literature regarding possible application of bacteriophages in pediatrics and to perform a clinical trial on bacteriophage effectiveness in diarrheas in children.

Methods

The publications of last 20 years available through Medline were surveyed. A double-blind randomized placebo-controlled clinical trial was performed in 40 hospitalized children (aged from 6 months to six years) with severe diarrhea (diagnosed according to National guidelines based on clinical data and blood and stool tests), 20 of them received treatment according to guidelines plus placebo, 20 instead of placebo received polyvalent bacteriophage septaphage (manufactured by JSC BIOCHIMPARM). Duration of stay in the hospital and improvement of the integrative index of severity in 48 hours after the beginning of bacteriophage/placebo treatment were compared.

Results

It was shown that bacteriophages are safe, lack toxic, allergic effects, do not cause disbiosis. Bacteriophage therapy significantly shortened duration of stay in the hospital (on average for 2.2 ± 0.5 days), contributed to earlier switch from parenteral antibiotics to PO ones, the integrative index of severity improved by 40.2 ± 5.7 degree.

Conclusions

Contraindications for bacteriophage therapy in pediatric population were not revealed. Bacteriophages used together with antibiotics essentially improved clinical course of severe diarrheas in hospitalized children aged from 6 months to 6 years in comparison with similar patients treated with antibiotics and placebo.

Clinical Trial Registration (Please input N/A if not registered)

N/A

12B. EDUCATION: INVASIVE FUNGAL INFECTIONS

ESP17-0487

DISSEMINATED INFECTION BY *PAECILOMYCES VARIOTTI* IN ONCOLOGICAL PATIENT

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Title of Case(s)

DISSEMINATED INFECTION BY *PAECILOMYCES VARIOTTI* IN ONCOLOGICAL PATIENT

Background

Infectious complications have become important causes of morbidity and mortality in patients with cancer. *Candida* and *Aspergillus* are common agents of Invasive Fungal Diseases (IFD), but more species of pathogenic fungi are described. The aim of this work is to report a case of a pediatric oncologic patient who presented an IFD by *Paecilomyces variotti*, which are considered emerging pathogens.

Case Presentation Summary

A 3 years old patient diagnosed with extraocular retinoblastoma evolved with febrile neutropenia after chemotherapy. Due to the persistence of fever despite antibiotic therapy, an investigation of IFD revealed Chest CT with ground-glass opacity, air crescent sign and areas of necrosis in the right lung. Liposomal amphotericin B was initiated, with improvement. He underwent a new episode of febrile neutropenia after chemotherapy. Chest CT evidenced multiple bilateral pulmonary nodules with ground-glass opacity. Patient presented serum and bronchoalveolar lavage (BAL) galactomannan positive. It was diagnosed probable invasive pulmonary aspergillosis and voriconazole was associated. Eucleated eye, with intraocular lens, showed fungal filaments in the culture. After 80 days of amphotericin B and 46 of voriconazole, *Paecilomyces variotti* was identified in the BAL with resistance to voriconazole and sensitivity to amphotericin B. Only liposomal amphotericin B was maintained for more 28 days. Patient has been out of cancer treatment with no new signs of infection.

Learning Points/Discussion

This case report describes disseminated, pulmonary and ocular, IFD by *Paecilomyces variotti*, capable of colonizing ocular lenses, probably the gateway to the infection. It is noteworthy that positive serum galactomannan has been described in IFD by this fungus. *Paecilomyces variotti* is generally resistant to voriconazole and this case reinforces the need for diagnostic confirmation for early institution of correct therapy.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0488

ANALYSIS OF BLOODSTREAM INFECTIONS (BSI) CAUSED BY CANDIDA TROPICALIS AT A CENTER OF REFERENCE IN PEDIATRIC ONCOLOGY, BRAZIL

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Background

Invasive Fungal Disease is an important cause of morbidity and mortality in immunosuppressed patients. *C. albicans* remains the most common infectious agent, however, it has seen an increasing number of infections caused by non-*albicans* species such as *C. tropicalis*. The virulence of non-*albicans* species appears to be greater, in particular *C. tropicalis* in patients with leukemia and neutropenia. Therefore, this study aimed to characterize the BSI by *Candida tropicalis* in children with cancer.

Methods

A retrospective cohort study was conducted with evaluation of data records of pediatric patients (0-18 years) with cancer admitted in Instituto de Oncologia Pediátrica, Brazil, between January 2005 and December 2016. We analyzed two groups of patients: BSI caused by *C. tropicalis* and other by *C. albicans*. A comparative analysis between these two groups, assessing demographic and clinical laboratory characteristics and clinical outcome, was made.

Results

34 patients were obtained, 23 *C. albicans* and 11 *C. tropicalis*. In the *C. albicans* group, regarding the risk factors, the presence of CVC (95.6%), antibiotic use (91.3%) and chemotherapy (69.7%) stood out. As clinical picture, 8.7% presented disseminated lesions. In the *C. tropicalis* group, the same 3 risk factors were highlighted (81.8%, all) and 36.4% of patients presented disseminated lesions. A possible tendency of *C. tropicalis* to cause more damage to organs was observed ($p = 0.070$). Therapeutic success was observed in almost half patients, both groups.

Conclusions

Candida tropicalis showed a tendency to cause more disseminated infection, however, no difference was observed regarding therapeutic response and risk factors. The presence of CVC, antibiotic use and chemotherapy appeared as the most important factors in both groups. These results are important since there are few articles about *C. tropicalis* in pediatric population.

01A. SCIENCE: ANTIMICROBIAL STEWARDSHIP

ESP17-0489

GLOBAL-PPS OF ANTIMICROBIAL CONSUMPTION AND RESISTANCE IN THE COUNTRY OF GEORGIA: EVALUATION OF ANTIBIOTIC PRESCRIPTIONS IN HOSPITALIZED CHILDREN

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Background

Antibiotics are commonly prescribed in Georgia, especially in pediatric patients. Aim of our survey is to describe general trend of prescribing antibiotics in pediatric wards in hospitals and to evaluate changes in dynamics.

Methods

An Antibiotic Resistance and Prescribing in European Children Point-Prevalence-Survey (ARPEC-PPS) and a Global-PPS on antimicrobial Consumption and Resistance (www.global-PPS.com) was performed in 10 hospitals in 2012 and 3 hospitals in 2015 respectively. All patients <18 years, present in the ward at 8:00 AM on the day of the survey, and who had at least one on-going antibiotic prescription, were studied. Collected information included age, gender, weight, antimicrobial agent, information about quality indicators (compliance with antibiotic guidelines and microbiology data).

Results

Overall antibiotic prevalence rate in 2012 (n=140 patients) and 2015 (n= 178 patients) was 53.2% and 69.1% respectively. The top two antibiotics in 2012 and 2015 were ceftriaxone and ampicillin/sulbactam. In 2015, use of ceftriaxone decreased from 52% to 27%; aminoglycosides from 12% to 2%. Ampicillin/sulbactam use increased from 16% to 32%; carbapenems from 2% to 11% and azithromycin from 4% to 8%. Most antibiotics were prescribed to treat lower respiratory tract infections (51% in 2015 and 36% in 2012). In neonates, vancomycin prescriptions increased from 3% to 33% in 2015. Compliance with antibiotic guidelines improved from 65% to 88%.

Conclusions

The Global-PPS provided quantifiable outcome measures to assess quantity and quality of antimicrobial prescribing in hospitalized children. The high use of vancomycin and carbapenems was the most worrisome finding. Further investigation is needed to understand why striking changes in prescribing patterns occurred. These data served to identify targets for quality improvement of antimicrobial prescribing, development of local guidelines, education and practice changes.

Clinical Trial Registration (Please input N/A if not registered)

N/A

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0490

NEONATAL KAWASAKI DISEASE, REPORT OF A CASE.

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Title of Case(s)

Neonatal Kawasaki Disease, report of a case.

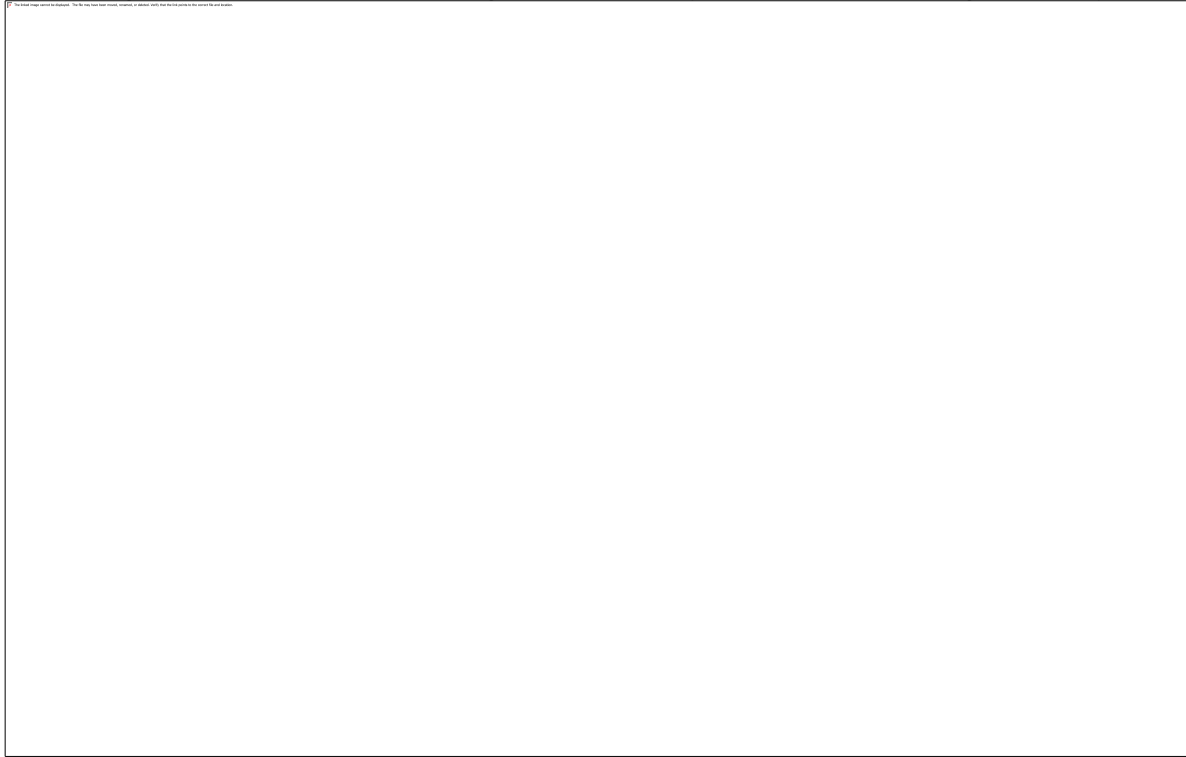
Background

KD is a systemic vasculitis that develops during childhood. It typically affects infants and toddlers from 6 months to 2 years of age. Neonatal KD is extremely rare, and only a few cases are reported in the literature.

Case Presentation Summary

We report a case of a male neonate born at 38 weeks of gestation, delivered by emergency cesarean section because of fetal bradycardia. APGAR score 2-8. Umbilical cord gas pH:7.06 and BD-11. He required positive pressure ventilation, he responded rapidly so he was trasladed with his mother. At 20 hours old, he started respiratory distress and he was trasladed to NICU. He evolved hemodynamically unstable and his ecochardiogram showed decrease of the left ventricle shortening fraction (23-25%) with cavity dilation. He was started on antibiotics, he required vasoactive drugs and invasive mechanical ventilation. At second day, a control echocardiogram showed dilation of coronary system. Laboratory exams revealed thrombocytopenia, eosinophilia, elevated CRP, troponin and CKMB. Bacterial cultures were negative. Virals PCR were negative for CMV, ADV in plasma and EV in stool. Maternal serum Toxoplasma IgG and IgM were positive with high avidity. Neonate serum Toxoplasma IgM was negative and IgG was positive but it became negative at 2 months old. Toxoplasma PCR (plasma and CSF) were negative. KD was suspected, therefore he received intravenous immunoglobulin 2 gr/kg and oral aspirin at day 5. He had sheet-like desquamation of fingers on day 8. He clinically improved, control

echocardiograms showed stabilization and regression of coronary dilation. He was discharged at 27 days old.



Learning Points/Discussion

Neonatal KD is infrequent, it requires a high clinical suspicion. Usually their presentation is incomplete and coronary dilation may be the only manifestation

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0491

ATYPICAL PRESENTATIONS OF EXTRA PULMONARY TUBERCULOSIS – CASE SERIES

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Title of Case(s)

ATYPICAL PRESENTATIONS OF EXTRA PULMONARY TUBERCULOSIS – CASE SERIES

Background

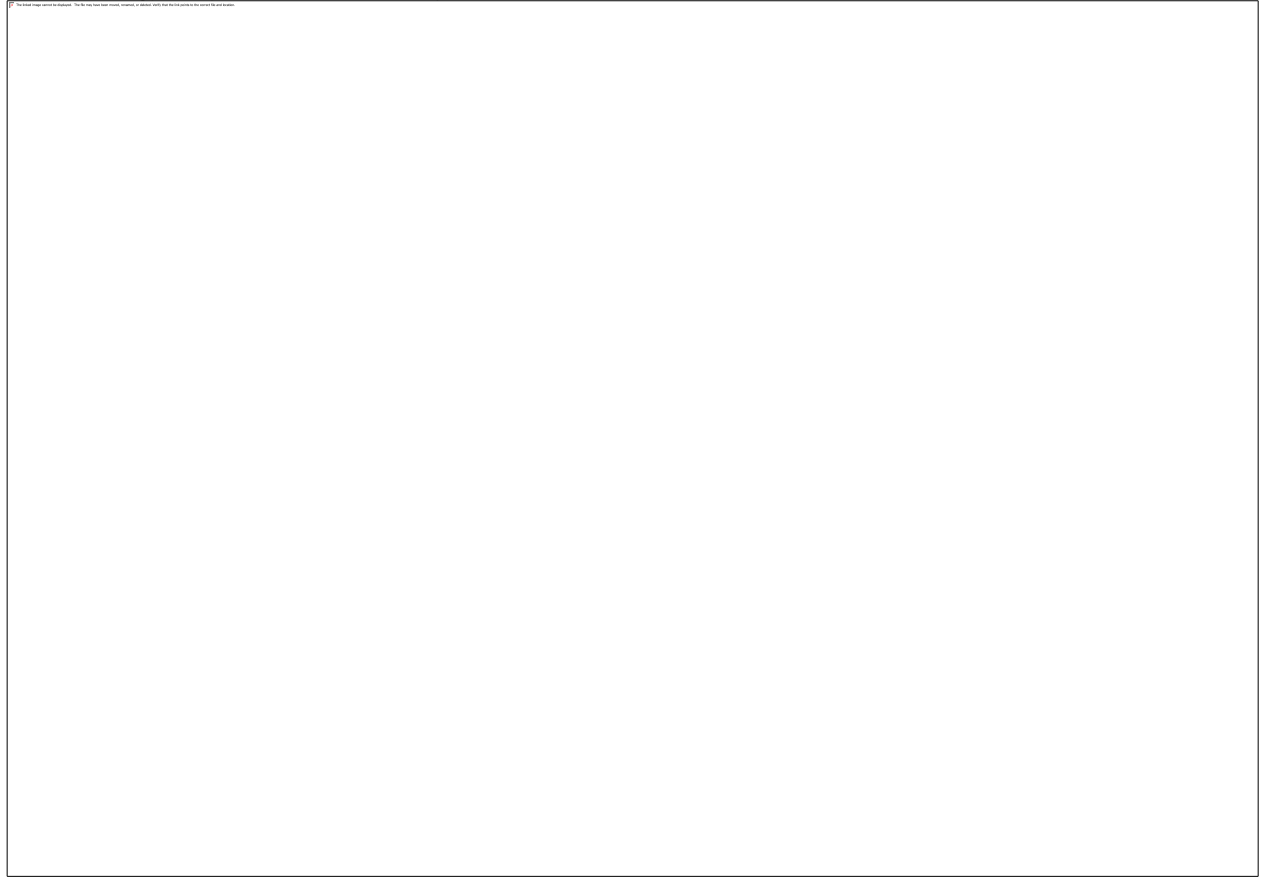
Tuberculosis(TB) is a worldwide pandemic and remains the seventh leading cause of death globally despite the accelerated efforts to control the disease for decades. The manifestations of TB in children varies from nonspecific symptoms to severe clinical presentations.

Although pulmonary involvement is frequent, extra pulmonary tuberculosis(EPTB) account for upto one third of all cases. The diagnosis of EPTB is a difficult challenge and frequently delayed since the symptoms are nonspecific and mimics other diseases necessitating high index of suspicion. Extrapulmonary lesions are paucibacillary and samplings, are difficult to obtain, so diagnosis is often presumptive.

Case Presentation Summary

10 cases of varied manifestations of EPTB in children less than 18 years diagnosed at Manipal hospitals, Bangalore are presented here. They include 2 cases of TB lymphadenitis presenting as anterior mediastinal mass and PUO for 2 months, TB genitourinary tract involving the salpinx, 4 month old with TB meningitis presenting as PUO of 1 month and hydrocephalus, abdominal tuberculosis presenting as pseudocyst formation at the site of ventriculo-peritoneal shunt, miliary tuberculosis with tuberculoma formation, tubercular arthritis of knee joint, acute onset of respiratory distress in massive tubercular pleural effusion, an immunocompetent infant with BCG adenitis and persistent swelling post DPT vaccination due to Mycobacterium abscesses. A prompt and definitive diagnosis of TB was made by either Gene Xpert, TB cultures or

histopathology. They were all successfully treated with antituberculosis treatment.



Learning Points/Discussion

TB involvement of superficial lymphnodes is common presentation of EPTB in children. But there are other varied and atypical presentations, which are reported here. The morbidity and mortality increase when the diagnosis and management of the condition is delayed due to its complications. Increased awareness about the atypical manifestations of the disease, high index of suspicion, early diagnosis and prompt antitubercular treatment can reduce the mortality and complications.

05B. EDUCATION: PREGNANCY AND THE NEONATE

ESP17-0492

PREVALENCE OF GARDNERELLA VAGINALIS AND BACTERIAL VAGINOSIS IN PORTUGUESE PREGNANT WOMEN

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Background

Bacterial vaginosis (BV) is an important risk factor associated to many pregnancy complications, such as preterm labor and perinatal infections. Vertical transmission of BV-associated bacteria such as *Gardnerella vaginalis* can occur during delivery and can cause several neonatal infections and jeopardize the newborns survival. Here, we determined *G. vaginalis* and BV prevalence in Portuguese pregnant women and correlated the data with sociodemographic, medical, reproductive and behavioral factors.

Methods

This study involved 206 pregnant women attending two public hospitals in the North region of Portugal. BV was defined by a Nugent score equal or higher than 7 and *G. vaginalis* presence was confirmed by polymerase chain reaction. Epidemiological data were collected regarding age, gestational trimester, educational level, history of previous BV, pregnancy, premature birth, chronic diseases, smoking, vitamin supplements and intimal hygiene products use.

Results

The prevalence of *G. vaginalis* and BV among Portuguese pregnant women was 67.48% and 3.88%, respectively. A higher risk of *G. vaginalis* colonization was found in women with basic educational level (odds ratio (OR)= 2.77; 90% confidence interval (CI)= 1.50-5.13), in second trimester of pregnancy (OR= 6.12; 90% CI= 2.19-17.12) and smokers (OR= 2.96; 90% CI= 1.17-7.51). Conversely, history of chronic disease (OR= 3.80; 90% CI= 1.09-13.25) and previous premature birth (OR= 5.17; 90% CI= 1.24-21.59) were identified as BV risk factors in pregnancy.

Conclusions

Our findings showed that BV prevalence is low but *G. vaginalis* colonization is high among Portuguese pregnant women, possibly increasing health risks for the mother and the newborns. Furthermore, BV was significantly associated with a history of chronic disease and previous premature birth.

Acknowledgments

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11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0494

PNEUMOCYSTIS JIROVECI PNEUMONIA IN CHILDREN. RETROSPECTIVE STUDY IN A SINGLE CENTRE ALONG THREE DECADES

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Background

Pneumocystis jirovecii pneumonia (PjP) remains a life-threatening condition in immunocompromised children in spite of the advance in intensive care measures and the establishment of effective prophylaxis. Although it has been mainly described in HIV-infected children, almost all immunosuppressed patients are at high risk. Our aim was to analyze the epidemiologic and clinical characteristics of PjP cases to describe outcome and related risk factors.

Methods

Retrospective study including all pediatric patients (<18 yo) with PjP admitted at our hospital (January 1989-December 2016). Case definition: patient with acute pneumonitis and *Pj* detection in the bronchoalveolar lavage with traditional or direct antibody fluorescence staining or positive conventional or real-time PCR. Patients with positive RT-PCR over 32 cycles were considered as colonized and discarded.

Results

Twenty-five cases (0.9 cases/year) were included, 40% of them being diagnosed in the latter quarter of the period. Median age was 1.79 (IQR: 0.48-12.37), 64% were male. 12% received prophylaxis. The commonest underlying disease were PID (36%), 16% were HIV+. Eighteen cases were admitted to the PICU and overall 30-day mortality was 20% (31.25% in HIV- vs 0% in HIV+ patients; OR: 0.33 CI95% 0.02-7.24 p=0.55). HIV+ patients had a lower probability of being admitted in ICU (OR: 0.08 CI95% 0.01-0.97, p=0.05). CMV was detected in 26% of BALs.

Conclusions

PjP has increased in the last years at our institution, probably as a consequence of the rising use of immunosuppressive therapies. PjP must be suspected in high risk immunosuppressed pediatric patients despite appropriate prophylaxis. Similarly to adults, mortality and admission in the PICU are higher in HIV- children, with the latter being borderline statistically significant. CMV is the most co-infective agent detected.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0495

INCIDENCE OF IMMUNODEFICIENCIES IN AN INFECTIOUS DISEASE OUTPATIENT SETTING

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Background

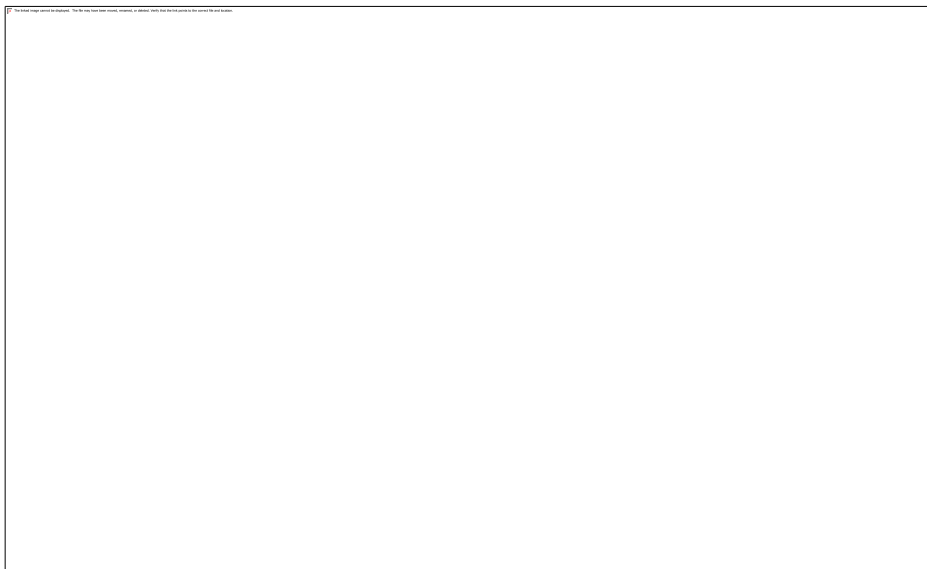
Children suffering from immune deficiencies are prone to have an increased number of infections, a more severe course of the disease, or infections by fastidious organisms. We aimed to evaluate the number of children with immunodeficiency among those seen in a recently established outpatient infectious disease consultation service.

Methods

The records of patients referred to an outpatient infectious disease consultation service in a Tertiary Hospital during an 18-month-period were systematically reviewed. A descriptive analysis of those suffering from defined immunodeficiencies was done.

Results

The clinical records of 259 patients were reviewed. 17 of them (6,5%) had any form of immunodeficiency (Image 1). Of those 10 (58,8%) were humoral defects, 3 (17,6%) phagocytic deficiencies (Chronic granulomatous disease), 3 (17,6%) suffered from sepsis due to complement deficiency, and 1 (5,8%) had immunodeficiency as a manifestation of a syndromic disease (DiGeorge Anomaly). In 8 patients the immune defect was already known, 4 of them were referred for updating their immunization schedule, 1 for testing vaccine response and 3 for follow-up. All the other 9 were diagnosed in our practice. All of 17 patients are still alive, six (35,3%) are currently receiving antibiotic prophylaxis with co-trimoxazole, three regularly take itraconazole, and one underwent immunoglobulin replacement therapy. Complications seen included recurrent sinopulmonary infections with wheezing (35,3%), bronchiectasis (5,8%) and poor growth (23,5%).



Conclusions

A considerable proportion of patients with immune defects were seen in our practice, although the true prevalence was likely overestimated. Pediatric Infectious Diseases specialists should keep an eye out for any sign of immunodeficiency.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0498

RESPIRATORY SYNCYTIAL VIRUS INFECTION IN PAEDIATRIC PATIENTS IN SOUTHERN BRAZIL: EPIDEMIOLOGY AND OUTCOME FEATURES

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Background

Respiratory syncytial virus (RSV) is the most important pathogen associated with severe lower respiratory tract infection in infants. It is usually associated with bronchiolitis and pneumonia, and causes regular seasonal epidemics, usually during winter months in temperate countries or rainy season in tropical areas.

Methods

It was carried out a retrospective study from 2014 to 2015, in which all cases of severe acute respiratory infection (SARI) caused by RSV hospitalized in a reference paediatric hospital were reviewed. Clinical data, comorbidities, and outcome were analyzed. Hospital Pequeno Principe Hospital has 360 beds and with an average of 1500 admissions/month.

Results

During the study period, a total of 306 cases of SARI were attended, of which 118 (38.5%) were due to RSV. The mean age was 5.2 months, 62% male, sat. O₂ < 95% was detected in 90% of patients, and the mean length of stay was 13.8 days. Comorbidities were associated in 26% of children, and viral coinfection occurred in 18%. 59% (70/118) of patients needed intensive care, 18% (21/118) used ventilatory support, and 5% (6/118) evolved to death.

Conclusions

RSV infections present important impact in children health, particularly in those < 6 months of age and are associated with more than one-third of hospitalization for SARI, most requiring intensive care and long hospital stay. Currently, there is no vaccine or specific treatment for RSV infections, and the only intervention available to prevent severe infections in high-risk patients is the use of immunoprophylaxis with humanized monoclonal antibody, which was found in only a few patients evaluated. These data reinforce the need for new therapeutic, and prophylactic approaches for the paediatric population.

08C. EDUCATION: HIV/AIDS

ESP17-0499

A SEIZURE CAN OPEN ANOTHER DOOR – AT THE RIGHT TIME

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Title of Case(s)

A SEIZURE CAN OPEN ANOTHER DOOR – AT THE RIGHT TIME

Background

For the work up of a non-febrile generalised seizure in a child usually EEG and often cranial MRI are performed. Imaging can reveal an unexpected pathology that may not have been associated with the primary clinical presentation. These unexpected findings however, may have serious consequences.

Case Presentation Summary

A 3-year-old girl was referred to our neurology department for evaluation of 2 recent non-febrile generalised seizures. EEG detected a focal epileptogenic area with sharp-slow wave complexes suggesting structural epilepsy. Cranial MRI showed a focal subcortical heterotopia. On second look we noticed bilateral cystic lesions of the parotid glands. The child was referred to our paediatric infectious disease specialist. An HIV screen was positive. From personal history she had been well and had a normal development, no recurrent or severe infections, only mild flares of atopic eczema and self-limited papular skin lesions. On examination, parotid glands appeared normal. Her parents had adopted her at the age of 14 months from Kenia. Screening in Kenia allegedly had been "normal" and had not been repeated after arrival in Switzerland. Further HIV work-up showed a viral load of 53'000 copies/ml and a CD4 count of 730/μl (29%). No clinical, laboratory or radiological signs of opportunistic diseases were evident. Treatment with ABC, 3TC, LPV/r was started.

Learning Points/Discussion

When imaging is done, all organs should be judged and, if abnormal, evaluated. In children bilateral parotid enlargement as well as cystic lesions found by imaging should always prompt to search for HIV. Retrospectively she had no warning signs for this chronic viral infection. Every adopted child should have repeated screening, preferably by a paediatric infectious disease specialist lead adoption/immigration clinic.

22A. EDUCATION: OTHER

ESP17-0500

A DIFFERENT MONONUCLEOSIS

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Title of Case(s)

A different mononucleosis

Background

Epstein-Barr virus (EBV) infection is associated with low mortality and morbidity, but it may be accompanied by complications. Acute acalculous cholecystitis (AAC) is an inflammation of the gallbladder in the absence of gallstones and may be a complication of EBV infection.

Case Presentation Summary

A case of a healthy 17-year-old female with a 4-day history of right upper quadrant abdominal pain, vomiting and high fever is reported. On physical examination, periorbital edema, cervical adenopathy and non-exsudative tonsillopharyngitis were noticed. Abdominal examination revealed tenderness in the right upper quadrant and liver and spleen were enlarged. Laboratory tests revealed lymphocytosis (25% of atypical lymphocytes), elevation of liver enzymes and CRP 33mg/L. Abdominal ultrasonographic examination demonstrated hepatosplenomegaly, distension of the gallbladder with a thickened wall and pericholecystic fluid, localized tenderness over the gallbladder, sludge and absence of gallstones or dilatation of the biliary tract. An acute EBV infection was suspected and serologically confirmed. EBV DNA was detected by real-time polymerase chain reaction. She was hospitalized, oral feeding was stopped and intravenous fluids and antibiotic treatment were started. On the second hospital day, she began respiratory distress with growing needs of supplemental oxygen. Chest X-ray showed consolidation of lower pulmonary lobes and costophrenic angle blunting. Echocardiogram and chest ultrasound revealed pericardial and pleural effusions. Oxygenotherapy and systemic corticosteroids were started, with gradual improvement. After ten days of hospitalization, the patient was discharged home in good clinical condition. Two weeks later, a follow-up examination was performed and did not show deviation from normal.

Learning Points/Discussion

The case described regards the development of several complications during the course of primary EBV infection. It illustrates the heterogeneity of clinical manifestations of EBV infection, highlighting the rare association with AAC.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0501

PERINATAL TUBERCULOSIS AFFECTING THE CENTRAL NERVOUS SYSTEM: UTILITY OF MAGNETIC RESONANCE IMAGING IN A PRACTICAL CASE

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Title of Case(s)

PERINATAL TUBERCULOSIS AFFECTING THE CENTRAL NERVOUS SYSTEM: UTILITY OF MAGNETIC RESONANCE IMAGING IN A PRACTICAL CASE.

Background

Perinatal forms of tuberculosis are rare and nonspecific, being difficult to diagnose and highly lethal.

We report the case of an infant with perinatal tuberculosis and intracranial injury, one of the most severe disease presentations, with few cases reported, highlighting its brain magnetic resonance (BMR) findings.

Case Presentation Summary

An asymptomatic three-month female infant was admitted in the hospital for study after living with a chronic cough (2 weeks before birth until 6 weeks after), later diagnosed with active tuberculosis. Physical examination, cerebral ultrasonography, oftamological exam and lumbar puncture without alterations; three gastric aspirates and a lymph node biopsy were taken for culture. 48 hours later, she convulsed and developed a central facial palsy, entering the PICU. A BMR was done, revealing a pontine tuberculoma and a middle cerebral artery stroke, with surrounding vasculitis. Suspecting perinatal tuberculosis with intracranial affection, treatment with amikazin+isoniazid+rifampicin+pyrazinamide was started, adding corticosteroids, antiplatelet and antiepileptic drugs.

She progressed well, being discharged 20 days later. A susceptible *Mycobacterium tuberculosis* grew in the samples, continuing the 4-drug-treatment two months, and keeping isoniazid+rifampicin for 12 months.

Periodical neuroimages showed vasculitis resolution, allowing safe corticosteroids retirement. Secondly, tuberculomas appeared in the stroke area (due to immune reconstitution after treatment) without new clinical symptoms.

Learning Points/Discussion

An early diagnosis of perinatal tuberculosis (even if asymptomatic) improves the prognosis. Important complications, as arterial strokes, may come along with vasculitis.

Treatment requires amikazin+isoniazid+rifampicin+pyrazinamide for 12 months; corticosteroids, antiepileptic and antiplatelet agents may be needed, not being settled for how long.

BMR is helpful for diagnosis (tuberculomas), as well as to establish the severity of complications and monitor the length of the adjuvant treatment.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0503

GROUP B STREPTOCOCCUS LATE-ONSET DISEASE: SHOULD WE DO ANYTHING ELSE?

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Background

Group B Streptococcus (GBS) late-onset disease (GBS-LO) is a significant cause of sepsis and meningitis in young infants. SGB maternal colonization is recognized as the most important risk factor for infection. Universal maternal prenatal screening and intrapartum antibiotic prophylaxis (IAP) in colonized mothers have dramatically decreased the incidence of GBS early-onset (GBS-EO) disease but, in GBS-LO disease probably other factors are implicated.

Methods

A retrospective analysis from January 2011 to December 2016 was performed on cases of GBS-LO disease. Case: Infant aged 7 to 90 days admitted to the hospital with an isolation of GBS in a normally sterile site as blood or cerebrospinal fluid (CSF). Meningitis was considered if GBS was isolated in CSF or abnormal CSF parameters (pleocytosis).

Results

24 episodes in 22 infants (2 recurrent infections). The mean age was 39 days (range: 7-90) Antenatal maternal screening was available in only 16 mothers (72.7%), 8 of them (50%) were colonized. IAP was correctly administrated in four. 68% had a vaginal delivery and 59% were exclusively breastfed. Fever was presented in 80% (sole sign in 33.3%), C-reactive protein level > 1 mg/dl in 41.6%; and Procalcitonin >0.5 ng/ml in 70%. 18 (75%) presented sepsis/bacteremia, 4 (17%) meningitis and 2 (8.3%) other focal infections. The mean duration of therapy was 11 days and all recovered.

Conclusions

SGB-LO disease incidence is high in our population (0.5 per 1000 live births). The most common clinical presentation is sepsis. The prompt evaluation and initiation of antibiotic therapy is required. Though in many cases the maternal SGB status at delivery was unknown other factors as horizontal community or nosocomial transmission could be implicated and new strategies need to be developed.

20B. SCIENCE: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-0504

ANTIGEN-SPECIFIC ANTIBODIES FIVE YEARS AFTER IMMUNISATION WITH A 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINE IN ASPLENIC ADULTS WITH BETA-THALASSEMIA

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Background

We have previously shown that a 13-valent pneumococcal conjugate vaccine(PCV13) induces antigen-specific memory B cells(MBCs) and antibodies in asplenic adults. However, the longevity of vaccine protection in this population is unclear. Here we enumerate antibody persistence 5years post-PCV13 and investigate any correlation with early immune response and immunisation history.

Methods

Thirty-four splenectomised adults(24-53y.o.) with β -thalassemia received 1dose of PCV13 5years earlier. MBCs and IgG antibodies had been enumerated at baseline(Day0)and 28days(Day28) post-immunisation. All patients had also received 1dose of PCV7 and 1-4 PPSV23s in the past. A single blood sample was obtained from each patient 5years post vaccination with PCV13(Year5,Y5). The WHO ELISAprotocol was used for the detection of Immunoglobulin G(IgG) antibodies(Abs) against pneumococcal serotypes(PS) 3, 9V, 19A, 19Fand 23F.

Results

PS-specific antibodies had declined significantly at Year5 in comparison to Day28: Geometric Mean Titers(GMTs) 0.93vs4.02 μ g/ml, $p<0.001$;2.76vs7.76 μ g/ml, $p<0.001$;12.15vs15.01 μ g.ml, $p=0.043$, 8.53vs18.42, $p<0.001$;8.75vs17.47, $p<0.001$ for serotypes 3,9V,19A,19Fand23F respectively.

IgG Abs GMTs at Year5 were positively correlated with antibody GMTs at Day28: $r=0.35$, $p=ns$; $r=0.54$, $p<0.01$; $r=0.79$, $p<0.001$; $r=0.53$, $p<0.05$; $r=0.88$, $p<0.001$ for serotypes 3,9V,19A,19F&23F respectively. In contrast, no correlation was seen between Year5 IgG antibody GMTs and IgM or IgG MBC numbers at baseline or Day28. There was no significant correlation found between previous PPSV23 history and Abs persistence, except for PS19A, for which antibodies at Year5 were negatively correlated with number of previous PPSV23s($p<0.05$).

Conclusions

PS-specific antibodies remained at $>1\mu\text{g/ml}$ 5years post immunisation with PCV13 in PPSV23-experienced asplenic adults, except for serotype3. However, due to the significant decline of antibody levels over the 5years, we propose that such patients would be eligible for longitudinal monitoring of their immunity status from five years onwards and would eventually benefit from anamnestic pneumococcal vaccination when antibody levels fall under the threshold of protection.

Clinical Trial Registration (Please input N/A if not registered)

NCT01846923

20A. EDUCATION: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0506

EVALUATION OF IMMUNISATION DELIVERY IN CHILDREN AGED 0-59 MONTHS IN SOUTH ZANZIBAR DISTRICT, TANZANIA

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Background

Vaccine preventable diseases remain a major global cause of child mortality. Tanzania has adopted 'The Expanded Programme on Immunisation' (EPI) to facilitate the administration of recommended vaccinations. In 2008 the Zanzibar Ministry of Health created a Roadmap to increase the coverage of EPI vaccinations. We aimed to audit the progress of the Roadmap's immunisation objectives and to identify barriers faced by healthcare workers in vaccination delivery.

Methods

10 international doctors attended 'Child and Reproductive Health Clinics' at four healthcare facilities in South Zanzibar District over four consecutive days. Children's vaccination cards were examined with caregiver consent. Dates of vaccinations of children aged 0-59 months were recorded and missed vaccinations noted. We calculated whether vaccines had been given on time according to the Tanzanian EPI schedule and also according to WHO standards. Healthcare-workers were interviewed to identify challenges faced in vaccination administration.

Results

Electronic data was collected from 192 children. 51% (n=98) of children were fully vaccinated appropriately for age. 13 of the 16 EPI vaccines achieved coverage rates of over 90%. Exceptions included Oral Polio Vaccine at birth (coverage 85%), Vitamin A at 9 months (coverage 58%) and Measles Booster at 15-18months (coverage 65%). 27% (n=52) of children received all vaccinations on time according to the EPI schedule. Human resource shortages were identified as the biggest challenge, followed by vaccine shortages.

Conclusions

Our audit showed that although the Zanzibar Road Map has resulted in good progress in vaccination coverage, a number of barriers in administration of the EPI remain. This has led to less than satisfactory total vaccine coverage and timeliness. Significant human resource and system challenges act as limiting factors to vaccine administration.

11A. EDUCATION: INFECTIONS IN THE ONCOLOGY PATIENT

ESP17-0507

MICROBIOLOGICAL DOCUMENTATION OF FEBRILE NEUTROPENIA IN CHILDREN: COMPARISON OF TWO METHODS FOR BLOOD CULTURE COLLECTION

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Background

Infections are the major cause of morbidity and mortality in febrile neutropenic patients with malignancy. To improve the diagnosis of bloodstream infection during febrile neutropenia (FN), we provide a comparative study between two protocols for blood culture collection.

Methods

We reviewed all the medical records from patients presenting à FN and a blood culture hospitalized in the pediatric oncology center of the Montpellier's hospital between 2010-2011 (period 1) and 2013-2014 (period 2). The blood volume cultured was between 1 and 2 ml for each blood culture during the period 1 vs a volume of 0.5 to 60 ml during the period 2.

Results

53 patients were reviewed in each period, 110 FN were identified during period 1 vs 124 during period 2. FN with bacteremia were respectively 17 (15.5%) vs 26 (21%), $p=0.277$. Overall, 431 blood culture were provided during period 1 vs 336 during period 2. Rate of positive blood culture increased during period 2: 10.4% vs 5.8% during period 1 ($p=0.018$). All the bacteremia were diagnosed by blood culture drawn during the first four days of fever within clinical evolution.

Conclusions

The increase of blood volume cultured significantly rose the positivity of blood culture but not the rate of documented FN. Overall, changes in practices resulted in a 22% blood culture ordering decrease together with a similar rate of bloodstream infections detected. No diagnosis of bacteremia was done after the fourth day of fever so we aim to propose a strategy for reducing blood culture collection after the fourth day of fever within a clinical evolution.

22A. EDUCATION: OTHER

ESP17-0508

CAT SCRATCH DISEASE IN CHILDREN.

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Background

The most common presentation of *Bartonella henselae* (BH) infection among children is subacute adenitis, and less commonly causes prolonged febrile syndrome with visceral and ocular involvement. Clinical outcomes in immunocompetent patients are good, even without treatment.

Methods

Retrospective case-series of children diagnosed with cat scratch disease (CSD) in an Argentinian tertiary care pediatric center from Feb-2014 to Sept-2016 Demographic, clinical, image data and laboratory results were abstracted from medical charts.

Results

45 children were included, 89% had positive history of contact with cats. Mean age: 7.2 years (1-16), male/female ratio 1.3:1. Most common presentation was adenitis (73.3%, n=33), of which 30% had an axillary location, 24% cervical and 21% inguinal. The remaining 25% had lymphadenitis of other sites. Days of evolution at diagnostic: 34.4. Among these 33 patients, 63% had abscess and 78% were afebrile. Ten children (22%) had visceral organ involvement, which was diagnosed in the context of a prolonged febrile syndrome. One patient presented Parinaud syndrome and one had chorioretinitis. 27 patients (60%) required hospitalization. Diagnosis was confirmed by serology by indirect immunofluorescence. 77.7% received antibiotic treatment, the most used was trimethoprim-sulfamethoxazole. Surgical drainage was performed in six patients. Resolution occurred after 39.1 days for adenitis and 45 days in the visceral forms. There were not statistically differences between the group that receive treatment and the group that not. Neither the parameters of laboratory show statistically difference in located and systemic forms. All patients cured without sequelae.

Conclusions

The most common presentation was axillary adenitis. The higher observed rate of hospitalization compared to previous studies may be explained by hospitalization of patients with visceral forms to rule out other etiologies. Most received different schemes of antibiotic treatment.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0510

ATYPICAL OR TYPICAL – CHALLENGES IN HEMOLYTIC UREMIC SYNDROME DIAGNOSIS AND MANAGEMENT

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Title of Case(s)

ATYPICAL OR TYPICAL – CHALLENGES IN HEMOLYTIC UREMIC SYNDROME DIAGNOSIS AND MANAGEMENT

Background

Hemolytic uremic syndrome (HUS), a rare disease usually affecting children, may cause neurological sequelae, permanent renal failure or death. It is often classified as typical (secondary to infection) or atypical (aHUS), where no infective source is identified. However, novel therapeutic agents may call into question the relevance of this classification.

Case Presentation Summary

A 12 year-old girl from a rural Australian town presented with fulminant renal failure, in the context of psychotropic medication usage and a preceding diarrhoeal illness which had resolved fourteen days earlier. Blood film showed haemolytic anaemia and thrombotic microangiopathy. The patient was transferred to an urban paediatric referral hospital for dialysis.

The patient was diagnosed with atypical-HUS and responded well to four doses of eculizumab with hemodialysis and plasmapheresis. One week after admission, stool testing for Shiga-toxigenic *Escherichia Coli* detected Shiga-toxin (Stx)-2 by Polymerase Chain Reaction. Genetic testing for complement Factor H (CFH) mutation was negative. A second patient, a 58 year-old female from the same rural area, was admitted to a different hospital with Stx-HUS, with onset of illness a week after the child. Although STEC could not be cultured from stool for either patient, Public Health follow up identified a common exposure for both cases to a creek downstream of a cattle farm. The child recovered fully and was discharged without sequelae. **Learning Points/Discussion**

HUS presents a diagnostic dilemma, as recommended management differs depending on classification. Typical HUS may be underreported, as presentation frequently occurs after diarrhoea has resolved, rendering *E. coli* isolation problematic. Although this presentation likely represented Stx-HUS, it responded well to off-label use of eculizumab, illustrating the need for randomised controlled trials investigating this application.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0511

CLINICAL FEATURES OF THE COURSE OF GENERALIZED MENINGOCOCCAL INFECTION CAUSED BY W-135 MENINGOCOCCUS. (CLINICAL OBSERVATION)

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Background

Invasive Meningococcal Disease (IMD) and especially its generalized form are considered to be very dangerous due to high risk of developing life-threatening complications and lethal outcome. Serogroup peizage of Meningococcal bacterias that cause severe and generalized forms of IMD is heterogenic and may vary.

Methods

Recent retrospective analysis of meningococcal serogroups that caused developing severe IMD in children in St. Petersburg shows that the number of cases caused by W-135 strain has been growing significantly. In earlier studies there were stated that W-135 meningococcal strains are responsible for sporadic incidents of meningococcal infection.

Results

In 2016 we observed and treated six patients with IMD caused by W-135 serotype (31.6 % from all cases for referred period). In 2013-2015 the percentage of W-135 cases not exceeded 6.1 % from total. Age of patients was 4 month, 4 years (2 patients), 5, 12 and 17 years. All patients were male, and mixed form of meningococcal infections has been diagnosed in all cases. The analysis of clinical course of the disease showed that the severity depends on the age of a patient. The most severe and complicated course was observed in children of older age.

Conclusions

There are determined clinical features of IMD caused by W-135 meningococcal strain. They include a sub-acute onset; appearance of non-plentiful hemorrhagic rash on the 4-6th day of the disease with predominant localization on distal parts of the extremities; low level of neutrophil pleocytosis with normal indicators of protein level in CSF; insignificant leukocytosis with formula shift to the left. Taking into account the load of the disease course, especially in children of older age, vaccination by tetravalent (A, C, W, Y) conjugated vaccine is recommended for children an adolescents.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0512

VACCINATION AGAINST RABIES IN A PEDIATRIC INTERNATIONAL VACCINATION UNIT

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Background

Rabies is a fatal zoonotic viral disease, present in all continents and endemic in Africa and Asia. Spain is free of terrestrial rabies since 1978 and currently bats figure prominently as a reservoir and vector for transmission.

Objective: To analyze the incidence of pre-exposure vaccination and management of lesions caused by suspected rabid animal.

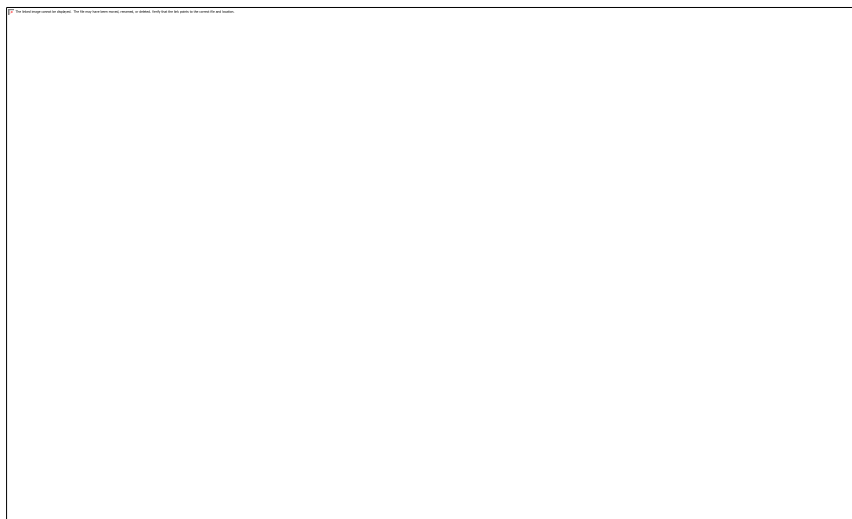
Methods

A retrospective descriptive study of cases of vaccination pre and postexposure rabies in children < 16 years in a pediatric international vaccination unit from May 2015 to December 2016. We analyzed epidemiological characteristics, clinical, prophylaxis and treatment used.

Results

15 children were included; 4 patients who received pre-exposure prophylaxis, (100% were women, average age 12.5 years old) and was administered 45 days before travelling. 2/4 cases traveled to Africa, 1/4 to Costa Rica and 1/4 to India. In all cases the reason for travelling was international cooperation, medium stay 25 days.

Of the 11 patients who received post-exposure prophylaxis, 90% were men: average age, 4.8 years old. None developed symptoms. 2/11 cases there was fever with the first dose of vaccine. Time between the bite and prophylaxis: 1.1 days.



Conclusions

In Spain the incidence of bites by potentially rabies transmitter animals is low, most of them correspond to bats. In our cases, the onset of prophylaxis began soon. The presence of rabies in Europe, and Morocco, places us in a position of a constant threat of importing cases. Vaccination of children at risk remains the primary indication for pre-exposure prophylaxis.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0513

IMPACT OF PCR CYCLE THRESHOLD CLOSTRIDIUM DIFFICILE FECAL FREE TOXINS PREDICTION ON THE MANAGEMENT OF PEDIATRIC C. DIFFICILE INFECTION

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Background

Reliance on tests that detect only the presence of toxigenic *Clostridium difficile* may result in the overdiagnosis and overtreatment of *C. difficile* infection (CDI). Data indicates that the *C. difficile* PCR cycle threshold (CT) can accurately predict the absence of *C. difficile* free toxins; however, the clinical application of this testing strategy remains unexplored. We sought to evaluate the impact of *C. difficile* toxin absence, as predicted by PCR CT, on pediatric CDI management and outcomes.

Methods

Beginning 10/05/2016, testing for *C. difficile* at Lucile Packard Children's Hospital included detection of *C. difficile* using the GeneXpert *C. diff* Epi *tdcB* PCR assay (Cepheid, Sunnyvale) as well as the presence or absence of free toxins, as predicted by PCR CT. The *C. difficile* test result included a statement discouraging CDI treatment when PCR-positive/toxin-negative. Demographic and treatment-related data were collected, with patient outcomes followed-up at 30 days.

Results

There were 32 positive *C. difficile* PCR results and 21 (65.6%) were toxin-positive by PCR CT. All 21 cases were treated. Within 30 days of initial testing, 3 of these patients underwent repeat testing and 1 was retreated. Of the 11 toxin-negative cases, 8 (72.7%) did not receive CDI treatment. None of the toxin-negative patients underwent repeat testing, received additional CDI treatment, or had a *C. difficile*-related complication, regardless of treatment.

Conclusions

The majority of children who were toxin-negative by PCR CT were not treated and none required repeat *C. difficile* testing or experienced *C. difficile*-related complications. This suggests the *C. difficile* PCR can be used as a stand-alone test for the identification of patients in whom the presence of *C. difficile* is likely to reflect colonization and who are unlikely to benefit from CDI treatment.

20A. EDUCATION: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0515

PARENTAL PERSPECTIVE ABOUT PAEDIATRIC VACCINATION: A FOCUS GROUP STUDY IN BRUSSELS

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Background

Parents' concerns about vaccine efficacy and safety are growing in developed countries leading to a suboptimal immunization coverage. Reasons for vaccine refusal or delay are various and change according to time, political context, demographic variables and vaccines themselves.

The WHO recommends every country to investigate the determinants leading to vaccine hesitancy. In that purpose, qualitative surveys provide us with new and deep insight into parents' perspective.

Aim: assess the determinants of vaccine acceptance or refusal, characterize parents' knowledge about vaccination, identify their information sources. This will allow improvement in immunisation acceptance among parents.

Methods

We decided to conduct a qualitative study using focus groups. This approach is an open group discussion exploring a defined topic under the supervision of a facilitator.

Groups are composed of 6 to 12 parents having at least one child under 6 years old and attending nurseries or preschools in Brussels. Parents were contacted through an information leaflet. Preschools were selected among two different socio-economic backgrounds (low and high-income settings) according to an official Belgian ranking.

Results

More than 5 schools and 8 nurseries accepted to participate. We aim to reach around 30 parents by the end of our study, dividing them into 4 focus groups. The interviews are currently in progress and results will be described at the meeting. Specific issues upon socio-economic background will be exposed.

Conclusions

We are currently conducting a qualitative study using focus groups to identify factors driving vaccine hesitancy in Brussels, Belgium.

Better understanding of parents' decisions about universal immunisation program will give potential tools to better address their needs.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0518

DIFFERENT VIRAL ETIOLOGIES IN HOSPITALISED CHILDREN WITH RESPIRATORY INFECTIONS

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Background

Viral respiratory infections and its complications have an important effect in paediatric morbi-mortality, being the first cause of hospitalization. Also, they have a great impact on seasonal patient load.

Apart from RSV or influenza, the relevance of other viruses, such as Metapneumovirus, has been recently known. Not only are there few publications about its incidence and effect, but also their routine detection is not available everywhere.

Methods

All children hospitalized for viral respiratory infections in a year were included. All had a nasopharyngeal swab taken the first day for antigen determination (MariPOC©) for RSV, Adenovirus, Metapneumovirus, Influenza A-B and Parainfluenza 1-2-3.

Results

202 children were studied (from 1 month to sixteen years, median 2.21), admitted for bronchoespasm (57,4%), bronchiolitis (28,7%), pneumonia (11,4%) and laryngobronchitis (2,5%).

Children with a positive nasopharyngeal swab were older, but had to stay longer, needing more supplementary oxygen and respiratory support (invasive and non-invasive), being this findings statistically significant.

The most frequent virus was RSV (83,61%), followed by Influenza (8,20%) and Parainfluenza (4,92%). It was rare to find Metapneumovirus (1,64%). RSV is still the most aggressive, affecting younger patients and extending the stays and the needs of oxygen therapy and respiratory support, compared to the rest.

Adenovirus and Parainfluenza associate more leukocytosis (up to 30.000) but less severe disease. Influenza requires more days of non-invasive ventilation.

Conclusions

RSV remains the most important pathogen in children, due to its prevalence and severity.

Our rate of Metapneumovirus and Parainfluenza is lower than expected, probably because they usually cause mild disease, so patients are not hospitalized.

Systematising detection of multiple respiratory viruses will allow finding its real effect on the paediatric respiratory infections.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0522

NEW GENETIC MYCOBACTERIUM AFRICANUM STRAIN CAUSING STERNAL OSTEOMYELITIS IN AN ADOLESCENT REFUGEE FROM SOMALIA

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Title of Case(s)

NEW GENETIC MYCOBACTERIUM AFRICANUM STRAIN CAUSING STERNAL OSTEOMYELITIS IN AN ADOLESCENT REFUGEE FROM SOMALIA

Background

Young migrants arriving from high tuberculosis (TB)-incidence countries contribute significantly to incidence rates of TB in children and adolescents in the European Union (EU) and European Economic Area (EEA). Sometimes, rare extrapulmonary TB manifestations have to be considered in this vulnerable population.

Case Presentation Summary

We describe a 17-year old female refugee from Somalia with sternal mycobacterial osteomyelitis one year after arriving in Germany. She presented with weight loss, night sweats, chest pain and a parasternal mass growing out of her chest (**Figure**). Ultrasound-guided needle-aspirate was PCR-positive for *Mycobacterium tuberculosis complex* with no evidence for Isoniazid resistance tested by Genexpert (Cepheid®). Cultures grew *Mycobacterium africanum* fully sensitive to standard anti-TB drugs, while sputum samples were negative. Apart from multiple splenic calcifications no further specific active or residual signs of TB were detectable. Because *M. africanum* has rarely been described in Somalia, we performed MIRU–VNTR (mycobacterial interspersed repetitive units (MIRU)-variable number of tandem repeats (VNTR)) genotyping which is a valuable tool for molecular typing of *Mycobacterium tuberculosis* strains to monitor TB epidemiology and detect the spread of drug resistance. Hereby, we identified a new *M. africanum* West African 2 strain unknown to existing databases (**Figure**). The patient showed a good therapeutical response to Rifampicin, Isoniazid, Pyrizinamid and Ethambutol, which could be documented by ultrasound.

Learning Points/Discussion

Sternal mycobacterial infections show a much higher incidence than non-TB sternal osteomyelitis. Early identification of sternal mycobacterial infections is important and treatment with standard four drug-regimen is able to produce good response. Although *M. africanum* is reported to be highly restricted to West Africa, genotyping can provide new epidemiological information.

22A. EDUCATION: OTHER

ESP17-0523

TREATING PFAPA WITH VITAMIN D

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Title of Case(s)

PFAPA Syndrome (a.k.a. Marshall Syndrome) is a clinical entity encompassed by the spectrum of autoinflammatory pathologies. It has been proposed that children with PFAPA Syndrome have low levels of vitamin D and that its supplementation could led to resolution of the symptoms, but evidence on this matter is still scarce.

Background

We present four cases of children diagnosed with PFAPA syndrome who received vitamin D supplementation. Patient 1 was an 18-month-old female with febrile episodes lasting for four days and recurring every 4-5 weeks. Patient 2 was a four year-old male, suffering from febrile episodes reappearing every 3-4 weeks. Patient 3 and 4 were respectively a 3 and 9 years old boys, both of them presenting with a shortened interval after receiving recurrently single doses of corticoids for previous flares.

Case Presentation Summary

After six months on vitamin D, patients were reassessed: In Patient 1 and Patient 2 this supplementation led to resolution of symptoms. Patient 1 only experienced one febrile episode, swiftly stopped after a single dose of oral steroids. Patient 2 did not present new flares of the disease. Patients 3 and 4 did not experience any improvement of the symptoms, and no changes in the length of the asymptomatic interval were recorded.

Learning Points/Discussion

Vitamin-D supplementation is an option to be considered, as it is safer than the treatments currently recommended by PFAPA syndrome guidelines (steroids, cimetidine, surgery, colchicine). Nevertheless, strong evidence is still lacking. Symptoms disappeared in half of our patients. Whether the failure in improving the symptoms in the other two children was due to the heterogeneity of this clinical entity or to the existence of a shortened symptom-free interval is a question that must be addressed in the future.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0524

HIGH CONSEQUENCE INFECTIOUS DISEASES PATHWAY FOR SUSPECTED PAEDIATRIC CASES IN NORTH WEST ENGLAND

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Background and Objective

Pathways exist for children who test positive for high consequence infectious diseases (HCID) but not for low risk but potential cases. PHE recommends every hospital should be able to manage these children but it is recognised that the facilities and training for high risk Personal Protective Equipment (PPE) do not exist in every hospital. Therefore designated specialist centres need to be identified and equipped, whilst avoiding families having to travel excessive distances.

A number of high consequence infectious diseases (HCID) have been identified in recent years, such as contact transmission HCID e.g. Ebola and other viral haemorrhagic fevers; and respiratory transmission HCID e.g. Middle Eastern respiratory syndrome Coronavirus (MERS). Greater Manchester (GM) has a large international airport and communities with close links to affected areas, resulting in risk of HCID.

Methods

In the last 5 years, 51 suspected cases of MERS (5 Paediatric) have been tested but this under-represents potential cases. The risk of catastrophic spread of rare infectious would be reduced by specialist teams; this in addition to potential case numbers highlights the need for a specialised paediatric pathway.

Learning Points Discussion

The process of developing a Paediatric specific pathway has raised several issues which are applicable to other regions. The main issues are identifying suitable paediatric isolation facilities to receive patients (see fig 1) and determining which provides the best possible care for the patient and family as locally as possible, contains the infection risk, and is deliverable with current resources.

The discussions raised through our attempts to identify the best possible pathway for managing HCID in children are applicable elsewhere and would be useful points to consider for other areas developing their own regional guideline.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0525

ASSESSMENT OF THE IMPACT OF NATIONAL GUIDELINES ON DIAGNOSTIC APPROACH OF BONE AND JOINT INFECTIONS IN CHILDREN: THE SPANISH PEDIATRIC OSTEOARTICULAR INFECTIONS NETWORK (RIOPED)

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Background

In 2015 RIOPED, a Spanish Pediatric Network, was created for the study of osteoarticular infections (OAI).

Aim: 1. Assess the degree of compliance with the diagnostic recommendations established in the 2014 national guidelines. 2. Compare epidemiological and etiological changes in this cohort to a previously published retrospective study

Methods

Prospective study (September/2015-September/2016) at 37 hospitals belonging to RIOPED evaluating epidemiology, etiology and diagnostic approach of OAI in children compared with a previously retrospective, multicenter study performed between 2008-2012. Confirmed osteomyelitis (OM), osteoarthritis (OA), spondylodiscitis (SD) and septic arthritis (SA) required a positive isolate; otherwise, they were considered probable. SA with <40,000 cells/mm³ in joint fluid were not included

Results

Two hundred and fifty-five children with OAI were included: 131 OM (50 microbiologically confirmed), 79 AS (45 confirmed), 30 OA (19 confirmed) and 15 SD. Mean age was 59.8 months; 60% male. An X-ray was performed in 87.8% of cases (SA 77.2%, OM 91.6%; $p=0,01$), sonogram in 87.3% of SA, and MRI in 93 OM (71%). In contrast, 40.2% of OM cases underwent bone scintigraphy, a significant decrease compared to the retrospective study (53.8%; $p<0.001$. See table). A microbiological isolate was identified in 50.6% of cases (no difference with the retrospective study), despite that blood culture was performed in 91.6% of cases (SA 92.3%, OM 88.5%; $p=0.82$), joint fluid culture in 100% of SA and bacterial PCR in 24.7% of children. The most frequent microorganism isolated was *S. aureus* (23.9%, 6 MRSA), followed by *K. kingae* (11.1%).

Conclusions

The adequacy of diagnostic tests following the guideline recommendations was optimum. Nevertheless, the microbiological isolation rate was still low despite that more blood cultures and determination of bacterial PCR in joint fluid were performed in the prospective study.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0526

VERIFICATION OF THE FINAL OUTCOME OF INFANTS WITH CONCURRENT HBsAg AND ANTI-HBs POSITIVITY FOLLOWING HEPATITIS B PERINATAL PROPHYLAXIS IN KOREA

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Background

The National Hepatitis B Perinatal Transmission Prevention Program has been introduced in Korea since July 2002. There have been reports of cases presenting viral markers of concurrent HBsAg and anti-HBs positivity on the 1st input report of prophylaxis outcome. In this study, we aimed to describe the final outcome of these cases with follow-up survey.

Methods

From 2002 to 2010, serologic tests following the perinatal prophylaxis were done in 69,999 (55.6%) out of enrolled 125,855 infants. Among those, 89 (0.13%) cases were concurrent HBsAg and anti-HBs positivity on the 1st input report. We monitored the 2nd and 3rd serologic reports of these cases and reassured the raw laboratory results from each tested institutions. The molecular testing was conducted to reinforce the verification status.

Results

Out of 89 cases with concurrent HBsAg and anti-HBs positivity, 75 (84.3%) cases were able to be monitored. Forty-two (56%) cases were the false positivity of HBsAg and 6 (8.0%) were identified as coding errors. The laboratory confirmation of concurrent HBsAg and anti-HBs positivity was verified in 27 (36.0%) cases. Of those, 22 cases with follow-up experimental results have shown HBsAg false positivity in 10 (45.5%) cases and the occurrence of hepatitis B viral infection in 12 (54.5%) cases. Among those, 8 (36.4%) cases showed only HBsAg positivity, 2 (9.1%) cases had recovered spontaneously, and 2 (9.1%) cases showed persistent concurrent positivity. Two cases with persistent concurrent positivity had the mutation of amino acid (F134L+G145R or I126T) in the major hydrophilic region of the surface gene of hepatitis B virus.

Conclusions

The concurrent HBsAg and anti-HBs positivity showed the greater possibility of HBsAg false positivity. The cases with concurrent positivity should be retested for the accurate diagnosis and management.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0527

NON-NEONATAL HERPES-SIMPLEX VIRUS-1 DISGUISED AS BILATERAL ACA AND MCA STROKES

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Title of Case(s)

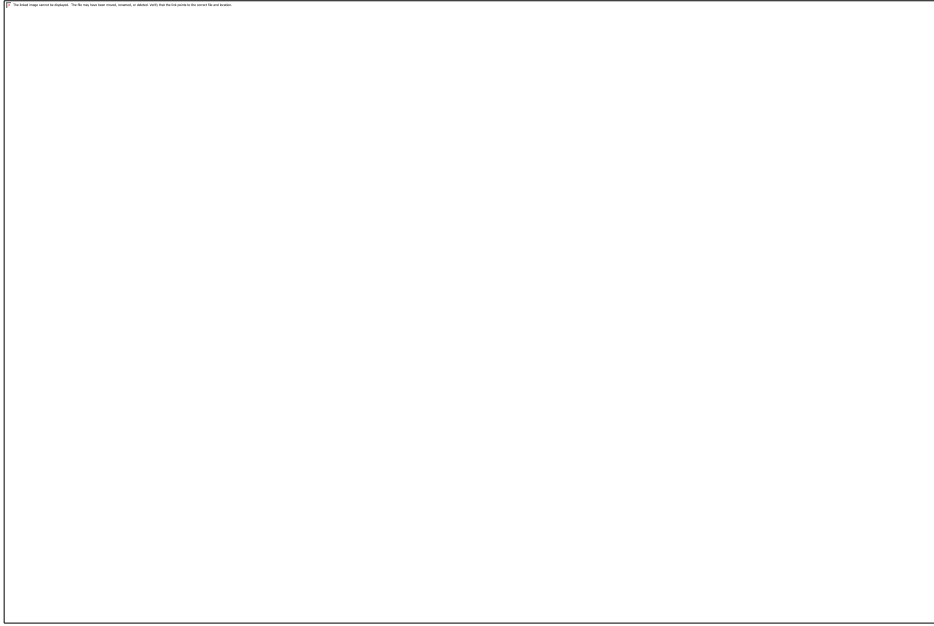
NON-NEONATAL HERPES-SIMPLEX VIRUS-1 DISGUISED AS BILATERAL ACA AND MCA STROKES

Background

While non-neonatal herpes-simplex virus encephalitis (HSE) is rare, it is the most common cause of focal encephalitis presenting in up to 25–30% of children. Presentation may mimic stroke with focal neurological symptoms, often leading to a delay in diagnosis and appropriate treatment. HSE outside of the neonatal period has also been associated with defects of the innate immune system. Knowledge of these atypical associations is crucial to hasten appropriate work-up and management.

Case Presentation Summary

A previously healthy 10-month-old male presented to our emergency department with worsening cough and fever. Viral testing was positive for rhinovirus and parainfluenza, and he was diagnosed with bronchiolitis. As he was being discharged, he developed right hemiparesis and right facial droop. Brain MRI revealed multifocal ischemic infarcts involving bilateral ACA and MCA territories, consistent with thromboembolic events. Incidental work-up revealed HSV-1 encephalitis, and he was subsequently treated with 21 days of acyclovir and rehabilitation. One month later, he was readmitted with increasing irritability, worsening right facial droop and right-sided weakness. Repeat HSV testing was negative and he was found to have anti-N-methyl-D-aspartate (NMDA) receptor encephalitis. He was treated with plasmapheresis, pulse steroids, rituximab, and high-dose IVIG with some improvement. He was transferred to rehabilitation and discharged home 2 months after his initial presentation. Blood sample and a skin biopsy were sent for more definitive research testing for a possible TLR3 pathway defect.



Learning Points/Discussion

- HSE should be included in the differential of ischemic stroke, especially in young patients.
- HSE-1 can trigger anti-NMDA receptor encephalitis, and prompt diagnosis is crucial to prevent rapid deterioration.
- HSE outside of the neonatal period is unusual and should prompt immunology work-up.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0528

EFFECT OF PREEMPTIVE RITUXIMAB THERAPY ON EPSTEIN-BARR REACTIVATION IN HEMATOPOIETIC STEM CELL PEDIATRIC TRANSPLANTS

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Background

Epstein-Barr virus (EBV) infection is a significant complication of hematopoietic stem cell transplantation (HSCT) that could lead to post-transplant lymphoproliferative disease (PTLD). We sought to determine the evolution and outcome of HSCT children who developed EBV reactivation and the effect of a preemptive treatment with rituximab.

Methods

Patients with a positive EBV viral load within 12 months after HSCT (2007-2015) were included in this retrospective analysis. EBV viral load was measured per standard of care, by a real time PCR in house method. Outcomes included 1) time between the first positive up to 2 negative EBV PCRs; and 2) the prevalence of a probable or definite PTLD. Probable and definite PTLD were based on imaging compatible with PTLD, and histopathologic findings, respectively. Outcomes were compared in children treated versus those not treated with preemptive rituximab, using a time to event analysis for the time outcome, and a chi-square for the PTLD outcome.

Results

Between 2007 and 2015, 214 children underwent HSCT. EBV DNA was detected in the blood of 87 (41%) children, at a median (range) time of 61 days (12-364) after HSCT. The median peak of EBV viral load was 4 log₁₀ copies/mL (2.3-7.2). Twenty-two (25.3%) children received preemptive rituximab. The median time to obtain an undetectable EBV viral load was 29 days (2-259). This delay was significantly different between the patients who received and did not receive preemptive rituximab, 21 vs 41 days, respectively (p=0,003). Ten (11.4%) children developed PTLD, all in the group of patients who did not receive rituximab.

Conclusions

EBV reactivation is a frequent event in pediatric HSCT recipients. Our results suggest that preemptive rituximab is associated with decreased risk of PTLD.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0530

VIRAL ETIOLOGY OF CROUP IN HOSPITALIZED CHILDREN IN TAIWAN

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Background

Viral epidemiology of croup among Taiwanese children has been fragmentary, and prospective data were insufficient. We conducted a prospective survey to investigate the viral etiology of croup in Taiwan.

Methods

From January 2009 to June 2011, up to three inpatient cases per week were enrolled for causative virus study during their hospitalization for croup. Throat swab specimens were obtained from each case and sent for viral detection via tissue culture and polymerase chain reaction. Clinical data were collected and analyzed.

Results

Of the 102 included cases, 83 (81.4%) had identified virus, while mixed viral infections were detected in 19 (18.6%) cases. Parainfluenza viruses (PIV) were the leading pathogen and were identified in 43 (42.2%) cases (PIV-1, 23; PIV-2, 9; PIV-3, 11), followed by influenza A virus (13, 12.7%) and human bocavirus (8, 7.8%). Other pathogens included respiratory syncytial virus in seven (6.9%) children, human coronavirus (HCoV)-OC43 (6, 5.9%), rhinovirus (6, 5.9%), HCoV-NL63 (5, 4.9%), adenovirus (5, 4.9%), and human metapneumovirus (2, 1.9%). The mean age was 20.6 months, mean length of stay was 3.5 days, and average fever duration was 2.2 days. All of the patients received nebulized epinephrine treatment, while only seven (6.9%) patients did not receive steroids.

Conclusions

Parainfluenza viruses were the most common viral etiologic agent of croup requiring hospitalization among children in northern Taiwan. A substantial proportion of the cases were caused by some newly identified respiratory viruses.

22A. EDUCATION: OTHER

ESP17-0531

MULTIPLE BRAIN ABSCESSSES: UNEXPECTED AETIOLOGY

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Title of Case(s)

MULTIPLE BRAIN ABSCESSSES: UNEXPECTED AETIOLOGY

Background

Brain abscesses are uncommon life threatening infections. Microorganisms may enter intracranial compartment via three routes: contiguous suppurative focus (45-50%), haematogenous spread from a distant focus (25%) and trauma (10%). At least 15% of cases are cryptogenic. Microbial aetiology depends on patient's age and immune system and site of primary infection.

Case Presentation Summary

A 9-year-old girl presented with a three day story of mild to moderate intensity frontoparietal headaches with morning predominance. Headaches grew in intensity, accompanied with nausea and night awakening. An episode of transient alteration of consciousness and clonic limb movements led her to the hospital. MRI revealed three huge intracranial abscesses: left frontal, right temporal and parietal lobe. Intravenous antibiotic treatment was started with cefotaxime, vancomycin and metronidazole. On day 10, because of clinical deterioration, cefotaxime was changed to meropenem and the frontal abscess was drained. DNA of *Streptococcus* from the anginosus group was detected on the pus. On aetiological investigation HIV, otitic and sinus infection were excluded, but multiple dental cavities were observed. The echocardiography revealed a patent foramen ovale (PFO) with right-left shunt during valsalva manoeuvre. Intravenous antibiotics were continued for 6 weeks and the teeth were treated, with clinical and imagiological improvement. The patient was discharged and completed 2 more weeks of oral antibiotic with amoxicillin/clavulanate. PFO closure was scheduled for 3 months later.

Learning Points/Discussion

PFO, which has a prevalence of 25% in general population, has been proposed as a route for oropharyngeal bacteria access the brain. In this case, the association of brain abscesses with dental sepsis is suggested by the isolation of oral *Streptococcus anginosus* group microorganisms, emphasizing a possible link between a silent PFO and the development of these infections.

22A. EDUCATION: OTHER

ESP17-0532

INTRALESIONAL IMMUNOTHERAPY USING MEASLES, MUMPS AND RUBELLA VACCINE FOR THE TREATMENT OF MOLLUSCUM CONTAGIOSUM IN CHILDREN

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Background

Molluscum contagiosum (MC) is a common viral skin infection that primarily affects children. Although physical ablative methods including curettage and cryotherapy have been mainly attempted, treatment is often painful or unsatisfactory. Recently, intralesional immunotherapy with mumps or candida antigen has been shown to be effective in the management of MC. We evaluated the efficacy of intralesional immunotherapy using measles, mumps and rubella (MMR) vaccine in children with MC.

Methods

A retrospective study was performed, and we enrolled 145 patients with MC into the study, which was for a duration of 3 years from June 2013 to June 2016. Patients were injected into the same site, at 2-week intervals until complete response (CR) was obtained or for a maximum of six treatments. The treatment response was classified into three categories, based on reduction in the size and number of MC. We used photographs and medical records to obtain clinical and demographic information. Patients with CR were followed up 6 months after the final treatment.

Results

Overall, 114 patients were treated with this immunotherapy. CR was seen in 49 (43.0%), partial response (PR) in 46 (40.4%), yielding an overall response rate of 83.4%. Participants with CR received an average of 4.06 treatments. Almost all the patients reported mild pain during the injection, but other serious side effects were not observed. Only 1.75% of patients who experienced CR had recurrence of MC after 6 months.

Conclusions

We suggest that intralesional immunotherapy with MMR vaccine is a tolerable and effective method for children having MC, who are sensitive to pain or concerned about recurrence in particular.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0533

RECENT CLINICAL CHARACTERISTICS OF PSEUDOMONAS AERUGINOSA BACTEREMIA IN FEBRILE NEUTROPENIC CHILDREN AND ADOLESCENTS

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Background

Bacteremia due to *Pseudomonas aeruginosa* in patients with febrile neutropenia still results in higher mortality compared with other causes of bacteremia, and the prevalence of antibiotic-resistant *P. aeruginosa* strains has been increasing. This study determined the recent characteristics of *P. aeruginosa* bacteremia and the antibiotic susceptibilities of strains isolated from children with febrile neutropenia.

Methods

Febrile neutropenic children and adolescents with underlying hematologic/oncologic disorders who were diagnosed with *P. aeruginosa* bacteremia between 2011 and 2016 were enrolled. Their medical records were retrospectively reviewed to determine the clinical characteristics and risk factors for mortality. The antibiotic susceptibility rates of the isolated *P. aeruginosa* were also evaluated.

Results

Thirty-six episodes of *P. aeruginosa* bacteremia were identified. The mean age of the enrolled patients was 9.5±5.4 years, and 26 (72.2%) episodes occurred in boys. Acute myeloid leukemia (41.7%) and acute lymphoblastic leukemia (33.3%) were the most common underlying disorders. The 30-day mortality was 38.9%, and 36.1% of the episodes were caused by multidrug-resistant strains. The deceased patients were more likely to experience breakthrough infection ($P=0.014$) and bacteremia due to multidrug-resistant strains ($P=0.005$) compared with the surviving patients. The surviving patients were more likely to receive appropriate empirical antibiotic therapy ($P=0.024$) and anti-pseudomonal β -lactam and aminoglycoside combination therapy ($P=0.039$) compared with the deceased patients. The antibiotic susceptibility rates of the isolated *P. aeruginosa* strains were as follows: piperacillin/tazobactam, 67.6%; meropenem, 72.2%; and amikacin, 100%.

Conclusions

Mortality due to *P. aeruginosa* bacteremia remained high, and more than one-third of the isolated strains were multidrug-resistant. In this context, empirical antibiotic combination therapy to expand the antibiotic spectrum may be a strategy to reduce mortality due to *P. aeruginosa* bacteremia in febrile neutropenic patients.

16A. SCIENCE: PUBLIC HEALTH: MOLECULAR EPIDEMIOLOGY AND OTHER ASPECTS

ESP17-0534

IMPROVED DETECTION OF *S. PNEUMONIAE* SEROTYPES BY AN AUTOMATED MICROARRAY SYSTEM WITH AUGMENTED UTILITY

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Background

Defining pneumococcal serotypes is a valuable epidemiological surveillance tool. Current serotyping methodologies are laborious and limited in their ability to detect multiple serotypes, consequently underestimating the rare or low abundant serotypes. We employed Agilent oligonucleotide Microarray on *S. pneumoniae* isolates, spiked samples and oropharyngeal swabs to estimate its capacity for specific and multiple serotype detection. This is the first Indian study to examine *S. pneumoniae* serotypes using Microarray platform.

Methods

39 invasive and 16 nasopharyngeal isolates which were earlier typed by Quellung were considered for microarray typing to examine the correlation in their results. 9 sets of spiked isolates (3 sets spiked with their corresponding two homologous types and 6 sets spiked with their corresponding one homologous type) were tested to detect the capacity of Microarray in accurately identifying the homologous types. In addition 7 oropharyngeal swabs were collected for detection of multiple serotype carriage and relative abundance. All the analysis was performed using BµG@S SP-CPS v 1.4.0 Microarray.

Results

Excellent concordance with established conventional serotyping methods was shown with the additional advantage of detecting multiple serotypes and relative abundance. 2-5 different serotypes were detected in each oropharyngeal carriage samples with their relative abundance ranging from 1% - 45%. The homologous types (6B& 6A, 22F&22A, 15B&15C, 9V&9A, 12F, 44&46, 33A, 33B&33F, 11A, 11D&18F) sharing very similar sequences were also identified accurately.

Conclusions

Identifying *S. pneumoniae* serotypes provides an invaluable tool to monitor the impact of vaccine introduction, by revealing the association of particular serotype with carriage or invasive disease besides providing surveillance for serotype replacement. The concept developed can be adopted for accurate serotype determination in clinical settings.

Clinical Trial Registration (Please input N/A if not registered)

N/A

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0535

MOLECULAR SURVEILLANCE OF REGIONAL S.PNEUMONIAE SEROTYPE DISTRIBUTION IN INVASIVE PNEUMOCOCCAL DISEASE AMONG CHILDREN ACROSS INDIA

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Background

Serotype distribution of pneumococci varies with age, time and geographical area. Limited data is available on region specific serotype prevalence of Pneumococci in India. This study reports the country specific prevalence data generated using PCR SeqTyping. This molecular typing strategy was improvised and standardized at our center to type all 91 serotypes uniquely from serum samples.

Methods

1504 serum samples were collected across 7 regions of India (Delhi-234, Kanpur-200, Kolkata-42, Ludhiana-87, Jodhpur-234, Bangalore-351 and Chennai-250) from children below 5 years with clinically suspected, radiological confirmed Pneumonia in addition to raised CBC, CRP and Procalcitonin. These samples were subjected to real time multiplex PCR for *S.pneumoniae* identification. 456 samples tested positive for *S. pneumoniae* were further subjected to PCR SeqTyping for serotype detection.

Results

The qmPCR positivity across the regions ranged from 28%- 32%. The 456 qmPCR positive samples belonged to 30 different serotypes among which 17 were Non-vaccine types. The percentage prevalence of the common serotypes 1, 6B, 14, 19F & 23F differed regionally. Serotypes 9V, 3&4, 7F, 9N & 23F were unique to Delhi, Kanpur, Jodhpur, Bangalore and Chennai regions correspondingly. Serotype-1 isolation was maximum at Delhi and least at Chennai.

Conclusions

The study emphasizes the need of a comprehensive and continued region wise reporting on serotypes/serogroups. A robust understanding of the serotypes in different regions, as well as linkage of data at national level would help produce wide ranging inputs. It is of importance from an epidemiological and public health perspective for the development of vaccines and policies. The added advantage of sensitive, specific, economical molecular typing methodology for pneumococcal surveillance is presented.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0536

A CASE OF LEPROMATOUS LEPROSY (LL) IN A BOY IS PRESENTED. THE CLINICAL CHARACTERISTICS, DIAGNOSTIC APPROACH AND BEST THERAPEUTIC OPTIONS FOR THESE INFECTIONS ARE DESCRIBED

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Title of Case(s)

Case report of pediatric patient with lepromatous leprosy

Background

Children are more susceptible to acquired Leprosy infection but incubation period is prolonged and the suspicion index is low. A case of lepromatous leprosy (LL) in a boy is presented. The clinical characteristics, diagnostic approach and best therapeutic options

Case Presentation Summary

A 10 years old boy presented with 2 weeks of fever and skin lesions in the limbs. At the beginning, these were painful nodules, then evolved to blisters and finally to non painful ulcers with elevated borders and irregular shapes covered by sero-hematic drainage and scabs. He denied malaise, respiratory, neuro, GI or GU symptoms. At PPMH, clinical cutaneous leishmaniasis was diagnosed 2 years ago and received Glucantime for 34 days. Denied other diseases. In social history he lived in a rural area in Chocó-Colombia and denied recent traveling, contact with animals, or with any sick person. At physical exam he was comfortable, without acute distress, had inguinal lymphadenopathies, hepato-splenomegaly and multiple lesions in the limbs in different stages: scars, non painful ulcers, painful violaceous nodules. Also he had swelling of the phalanges with signs of dactylitis. Remainder of PE was normal. The CBC, chemistries and LFTs were normal, HIV ELISA was negative. The skin biopsy reported: ZN staining identified acid fast organism. The lymph sample: ZN +, with Bacillary index 2.4. He was started on dapsones-rifampin and clofazimine.

Learning Points/Discussion

LL must be suspected when there are single or multiple hypochromic macules or plaques. In children, changes of sensitivity are more difficult to evaluate. Histopathology confirms and classifies large numbers of mycobacteria in the skin. The treatment is dapsones + rifampin + clofazimine for 2 years. This disease is curable, but can cause disability.

04E. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0537

EVALUATION OF BACTERIAL LOADS AFTER ANTIMICROBIAL TREATMENT IN GROUP A STREPTOCOCCAL PHARYNGITIS

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Background

Penicillin or amoxicillin are recommended for first-line therapy of group A streptococci (GAS) pharyngitis. Its clinical effectiveness is obvious, however, there are no reports about the amount of bacteria on infectious lesion. In this study, we evaluated GAS bacterial load on the pharynx after pharyngitis treatment by quantitative real-time PCR.

Methods

The subjects were 21 children diagnosed with GAS pharyngitis at two pediatric outpatient clinics in Japan from October 2015 to August 2016. They consisted of 15 males and 6 females ranging from 3 to 10 age. Pharyngeal swabs were collected at three times; pre-treatment (stage 1), post-treatment day 1 or 2 (stage 2), day 10 or 11 (stage 3). Isolation of GAS strains and quantitative real-time PCR were performed for these specimens. All patients received twice or three times dose of amoxicillin.

Results

Almost all culture of pharyngeal swabs after treatment were negative except for each one case in stage 2 and stage 3. On the other hands, the symptoms subsided quickly without recurrence in all cases. The median of bacterial load at stage 1 to 3 were 8.2×10^6 , 1.4×10^3 copies / μ L, and under measurable level. The number of GAS DNA at stage 2 was significantly decreased and stage 3 was eliminated in many cases.

Conclusions

The effectiveness of amoxicillin therapy for GAS pharyngitis was proven at genetic level.

Clinical Trial Registration (Please input N/A if not registered)

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0538

SEROTYPE CHARACTERISTICS OF GROUP B STREPTOCOCCI CAUSING INVASIVE INFECTION COMPARED WITH COLONIZING STRAINS ISOLATED FROM JAPANESE INFANTS

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Background

Group B streptococcus (GBS) is a leading cause of severe neonatal infections in many countries. The GBS serotype is correlated with pathogen virulence and clinical prognosis, and shows regional differences. Epidemiologic studies of the serotype are important when assessing changes in GBS distribution. The objective of this study was to clarify the serotype distribution of GBS causing invasive infection, and to compare it with that of colonizing GBS in Japanese infants.

Methods

Between April 2013 and November 2016, our laboratory received 71 GBS isolates from Japanese infants with invasive infections (iGBS), each accompanied by an anonymized questionnaire survey form that had been completed by the attending physician. We identified the serotypes of these GBS isolates by previously described real-time PCR. The iGBS serotypes and patient backgrounds were compared with our data of colonizing GBS (cGBS) in Japanese infants that has reported in a 2016 ESPID.

Results

We analyzed the 71 cases of iGBS and the 64 cases of cGBS. The most common serotype of invasive infections was III (49.3%), followed by Ia (32.4%) and Ib (9.9%). The respective percentages of early-onset disease (EOD) and late-onset disease (LOD) were 40.0% and 51.7% for meningitis and 40.0% and 41.4% for bacteremia. Significant differences in serotype between iGBS and cGBS were 49.3% iGBS and 23.4% cGBS for serotype III ($p < 0.001$), and in contrast, 4.2% iGBS (very low) and 25.0% cGBS for serotype V ($p < 0.001$).

Conclusions

Based on the above findings, it was concluded that the serotype distribution of iGBS causing invasive infection differed significantly from that of cGBS in Japan.

22A. SCIENCE: OTHER

ESP17-0539

STUDY OF URINARY TRACT INFECTION IN SEVERELY MALNOURISHED HOSPITALIZED CHILDREN

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Background

Malnutrition is widely prevalent among hospitalized children in most developing countries including Bangladesh. Though malnutrition accounts for the high rate of under 5 mortality sometimes it is overlooked. Keeping in this in mind the present study was designed & objectives was to evaluate the incidence, cause, and clinical pattern of UTI among severely malnourished hospitalized children.

Methods

A cross sectional study done over severely malnourished children admitted in department of Pediatrics MMCH from October 2009 to April 2010. Study population was 130 .Malnourished Children were 80 and Control well nourished children were 50. Clinical and Urinary findings were analyzed in groups and incidence, cause and clinical pattern of urinary tract infection were evaluated.

Results

Prevalence of UTI among severely malnourished children was 20.0% and well nourished controls were 4.0% with significant statistical difference ($P < .001$). 21.7% of malnourished children aged < 3 yrs & 17.6 % aged > 3 yrs had UTI . 18 % of male & 22.2 % of female malnourished children had UTI with no significant age & sex difference ($p > 0.05$). 15(93.85%) of UTI patients cases were infected with E.coli and 1(6.7 %) were proteus. Organism in all of controls were E.coli. Among 15 E.coli 13 sensitive to Ciprprofloxacin , 11 to Nalidixic acid and 12 to Gentamicin & Nitrofurantoin, 9 to ceftriaxone, 8 to Amikacin, 6 to Cephadrine. Only 1 sensitive to Amoxicillin and 2 to co -trimoxazole. All malnourished children with UTI gave history of feeding mismanagement.

Conclusions

The prevalence of UTI is significantly higher among severely malnourished children. Main organism is gram negative E.Coli & mostly sensitive to Quinolone & aminoglycoside groups less sensitive to amoxicillin & co-trimoxazole.

Clinical Trial Registration (Please input N/A if not registered)

N/A

18A. EDUCATION: TROPICAL VIRUSES

ESP17-0540

AN OBESE GIRL WITH COMPLEX SEVERE DENGUE: UNCOMPENSATED DENGUE SHOCK SYNDROME, DIC, MASSIVE BLEEDING, SEVERE LIVER INVOLVEMENT, AND RESPIRATORY FAILURE

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Title of Case(s)

AN OBESE GIRL WITH COMPLEX SEVERE DENGUE: UNCOMPENSATED DENGUE SHOCK SYNDROME, DIC, MASSIVE BLEEDING, SEVERE LIVER INVOLVEMENT, AND RESPIRATORY FAILURE

Background

Six billions people living in area with dengue as a serious risk. Most of patients only have minor problems, few others face severe situations and death. Severe dengue are consist of severe plasma leakage, bleeding, and organ impairment. It is very rare having patient suffered from all major conditions in the same time.

Case Presentation Summary

A 10 year-old girl, 49 kg, 141 cm, BMI 24.74, was admitted because of 4 days of fever, headache, and vomiting. The extremities were clammy, blood pressure 100/80, pulse 140 x/min, and respiratory rate 30 x/min. Liver enlargement and right pleural effusion were noted. The laboratory results : Hemoglobin 15.5 g/dl, leukocyte 1830/cmm, platelet 17.000/cmm, AST 593 U/L, ALT 91 UL/L, and positive Ig G. She had compensated dengue shock syndrome. Despite fluid treatment the patient suffered from recurrent shock. The intestinal and massive nose bleeding was found on the next day. PRC and platelet transfusion were given. For the next 2 days the bleeding was still present, the patient became unconscious and tachypneic and we put her into mechanical ventilation. The D-dimer 3812.68 ng/ml, fibrinogen 184.5, ALT 1255 U/L, and AST 3251 U/L. After 2 more days she became conscious, with minimal bleeding and stable hemodynamic state. We extubated her and reduced the medication. She was sent home on day 8th.

Learning Points/Discussion

Most dengue patients will have only single major problem. This patient had more and also obesity as a bad factor. She also showed DIC and respiratory failure. Despite all complexities, the major therapies for dengue are still conservative. Close monitoring is the key factor, too.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0542

EPIDEMIOLOGICAL AND CLINICAL CHARACTERISTICS OF HUMAN PARAINFLUENZA VIRUSES (HPIVS) TYPE 4 IN CHILDREN WITH ACUTE RESPIRATORY TRACT INFECTIONS IN SOUTH KOREA

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Background

- Human parainfluenza viruses (HPIVs) are one of the main cause of acute respiratory tract infections (ARTIs) in children. HPIV-4 was first defined in 1960 and was found to exist as two antigenically distinct subtypes called HPIV-4a and -4b in 1964. So far, HPIV-4 is responsible for mild respiratory infections, although they are infrequently detected in respiratory samples. But, according to recent study, HPIV-4 causes sever lower respiratory infections e.q. pneumonia, bronchiolitis. In this study we evaluated epidemiology and clinical presentation of HPIV-4 and compared HPIV-4 to parainfluenza types 1-3.

Methods

- We collected nasopharyngeal swab or nasopharyngeal aspiration from children with ARTIs and put them in -70°C freezer. The respiratory virus PCR used was xTag Respiratory Virus Panel, respiratory virus PCR (RVP) (Luminex Molecular Diagnostics), which can detect 16 respiratory viruses and subtypes including influenza A, influenza B, HPIV-1–4, adenovirus, RSV A and B, human metapneumovirus, human coronaviruses 229E, OC43, HKU1, and NL63, and human rhinovirus/enterovirus. xTag Respiratory Virus Panel is able to detect, but not differentiate, between HPIV-4a and HPIV-4b. .

Results

- We got 5776 samples from 5634 children. 594 (10.3%) samples had HPIV infection. In our study, HPIV-4 was epidemic in summer, July and August. HPIV-1 and HPIV-3 are more common in late spring and summer. HPIV-2 is the most rare virus among 4 types and common in summer. We had 10 severe pneumonia in HPIV-3 (4.6%) and 12 severe pneumonia in HPIV-4 (12.4%)

Conclusions

- HPIV-4 is common in summer. HPIV-4 is the main cause of ARTIs in children and sever respiratory infections. HPIV-4 plays an important role in paediatric ARTIs. The epidemiological and clinical characteristics reported here improve our understanding of the pathogenesis associated with HPIV-4.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0543

FULL-LENGTH GENOMIC SEQUENCE OF SAPOVIRUS ISOLATE IN SOUTH KOREA

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Background

Sapovirus(Sav) is an important gastroenteritis virus. It belongs to the family of Caliciviruses and its infection mostly occurs among children of tender age. Its transmission routes are person-to-person (fecal–oral), through aerosols, or through contaminated water or foods.

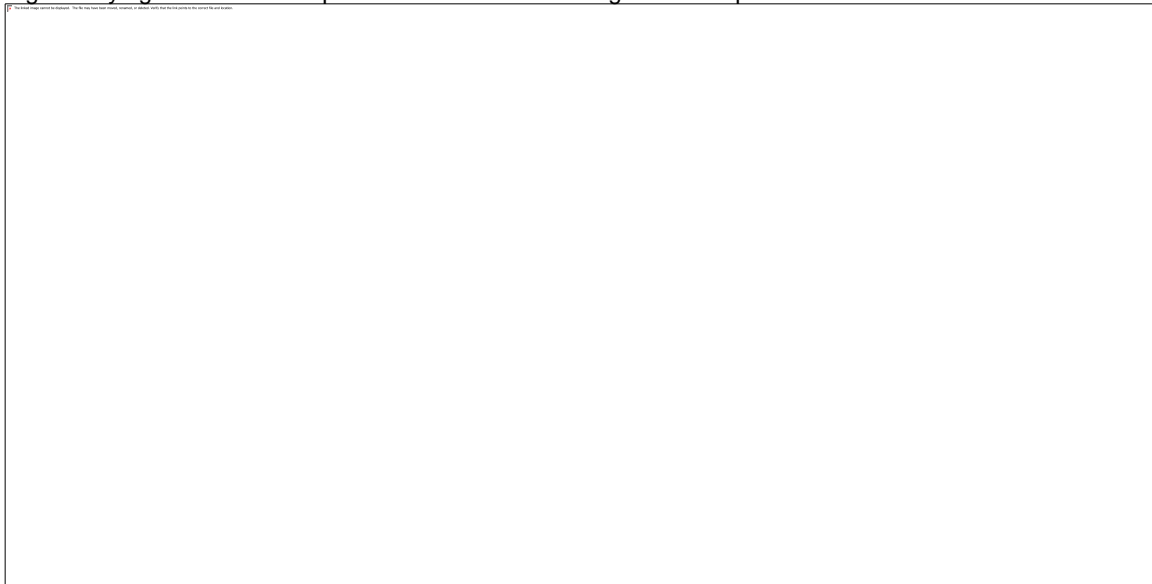
The purpose of this study is to analyze the full-length genome sequence of a SaV in South Korea for the first time. Full genomic analysis data are expected to be useful not only for molecular biology research but also for basic epidemiologic analyses such as tracking of international monitoring.

Methods

· The sample was obtained from the Waterborne Virus Bank (Seoul, South Korea). The stool sample was stored at -70°C . Viral RNA of SaV was extracted from 140 μL of supernatant using a QIAamp® Viral RNA mini kit according to the manufacturer's instructions.

Results

Fig. 1. Phylogenetic tree of sapoviruses based on whole-genome sequences



The numbers associated with each branch indicate the bootstrap values for the genotype. The neighbor-joining method in MEGA was used to construct the trees. The GenBank accession numbers of the reference strains are as follows:

Conclusions

This study is the first to reveal the complete genome sequence of SaV from South Korean patients with acute gastroenteritis. This study results indicate that SaV strain KOR62-628, detected in South Korea, belongs to GI-1. The comparative analysis with the greater amount of whole-genome sequencing data from a number of countries, the advancement could be made in the development of detection kits for the current predominant strain and in the prediction of future predominant strain. So, this study will prove its value and contribution both for fundamental epidemiological research and for the promotion of public health.

Clinical Trial Registration (Please input N/A if not registered)

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-0544

NOSOCOMIAL INFECTION IN NEONATAL INTENSIVE CARE UNIT: A THREAT FOR TERTIARY REFERRAL CENTRE OF BANGLADESH

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Background

Nosocomial infection is an important cause of mortality in neonatal intensive care units (NICUs). Globally the incidence of nosocomial infections varies from 9.3% to 26.5%. Therefore, this study was intended to determine the incidence of nosocomial infections and list the causative bacteria and their susceptibility pattern in a NICU of a tertiary care center of Bangladesh

Methods

This was a retrospective study based on data review from January 2014 to December 2016 in NICU of Bangabandhu Sheikh Mujib Medical University, Bangladesh. The records of newborn with nosocomial infections were analyzed on the basis of their clinical findings and laboratory investigations during hospital stay.

Results

Total number of admission was 1820 during the period of study. Among them, 595 were diagnosed as nosocomial infection resulting in an incidence rate of 32.7%. Yield of causative organism could be obtained in 18.48% (110/595) of cases. Acinetobacter infection found to be responsible for more than half (62%) of nosocomial infections. Other pathogens accountable for infection were Klebsiella (21.8%), E coli (9.6%) and Pseudomonus (6.8%). Most of the bacterial isolates had low sensitivity to commonly used empiric antibiotics and 75.4% (83/110) exhibited multidrug resistance. Best sensitivities among gram negative isolates were found against meropenem, imipenem, ciprofloxacin, netilmicin, colistin. The death rate was 34.4% (205/595) among newborn with nosocomial infection.

Conclusions

This study reveals high incidence of nosocomial infections and alarming emergence of multidrug resistance strains. The findings reaffirm the importance of continuous preventive and control strategies to address nosocomial infections in the NICU.

01A. SCIENCE: ANTIMICROBIAL STEWARDSHIP

ESP17-0546

COMPARATIVE EVALUATION OF POPULATION PHARMACOKINETIC MODELS OF VANCOMYCIN IN NEONATES WITHIN DOSOPT FRAMEWORK

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Background

Despite extensive investigation of vancomycin PK, the transferability of different models remains an open question. Our aim was to externally evaluate performance of neonatal vancomycin PK models (NVM) in a Bayesian framework and assess the effect of including individual concentrations on forecasting accuracy.

Methods

Systematic literature search established 18 relevant NVM published by September 2016. External evaluation was carried out on retrospective dataset (312 concentrations from 121 neonates) using Bayesian-based framework DosOpt (<http://biit.cs.ut.ee/DosOpt>). Simulation based diagnostics such as adjusted-R², mean absolute percentage error (MAPE), mean percentage error (MPE) and normalized prediction distribution errors (NPDE) were used to assess fit of models, forecasting accuracy and model goodness.

Results

Models described the data decently (model-wise average adjusted-R²-0.7). Number of individual concentrations included in modeling did not change model fits (min p-value 0.38). Inclusion of individual concentrations showed significant improvement of forecasting MAPE compared to population PK based model (p<1e-16). Increasing individual concentrations from 2 to 3 or from 1 to 3 resulted in further improvement in forecasting accuracy (p-value 0.0004 and 0.003, respectively). Three models required 1 and eight models at least 2 individual concentrations to remove systematic bias in model forecasting accuracies. Prediction distribution errors followed standardized normal distribution without individual concentrations only for a single model. This improved to thirteen with 1 and to all models with 3 included concentrations.

Conclusions

Differences in predictive performance of various NVM need to be considered in the implementation of model-based individual dose predictions into clinical practice. Prediction accuracy increases with increasing number of available concentration points, likely improving also probability of target

Clinical Trial Registration (Please input N/A if not registered)

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0548

A REVIEW OF CERVICAL LYMPHADENITIS AT NAGANO CHILDREN'S HOSPITAL, JAPAN

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Title of Case(s)

What is the common etiology of cervical lymphadenitis at the children's hospital?

Background

Cervical lymphadenitis is common illness among children and its etiology is various. We reviewed the patients of Nagano Children's Hospital who were diagnosed cervical lymphadenitis to investigate the cause of this illness.

Case Presentation Summary

【Method】 45 cervical lymphadenitis patients who are diagnosed at Nagano Children's Hospital from January 2006 to January 2017 were reviewed retrospectively; both inpatient and outpatient setting.

【Result】 Mean age was 6.9 years old (range 0-23 years old), including 35 boys and 10 girls. All cases were referred from other clinics/hospitals. The etiology of cervical lymphadenitis was as below; unknown etiology 13 cases (28%), bacterial infection 10 cases (22%), histiocytic necrotizing lymphadenitis (Kikuchi disease) 8 cases (17%), Kawasaki Disease 6 cases (13%), EBV infection 3 cases (6%), CMV infection 1 case (2%), Mumps 1 case (2%), SLE 1 case (2%).

Learning Points/Discussion

【Conclusion】 Many patients suffering from lymphadenitis improve with supportive therapy only, whereas the cases due to bacterial infection and Kawasaki Disease require specific treatment. It is important to try to draw cultures for diagnosis and appropriate use of antimicrobial agent. And the physicians need to consider Kawasaki Disease when they encounter cervical lymphadenitis.

22A. SCIENCE: OTHER

ESP17-0549

L-GLUTAMINE ATTENUATES DSS-INDUCED COLITIS VIA INDUCTION OF MAPK PHOSPHATASE-1

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Background

Background: Inflammatory bowel disease, encompassing ulcerative colitis and Crohn's disease), is a multifactorial inflammatory disease of the colon and rectum. Many investigators have reported that L-glutamine (Gln) therapy improves outcome of experimental colitis models, although the mechanism by which glutamine exerts its beneficial effects is not totally understood. In this study, we explore the possibility that Gln ameliorated DSS-induced colitis via MAPK phosphatase (MKP)-1, which is known to deactivate p38 MAPK and cytosolic phospholipase A₂ (cPLA₂).

Methods

Methods: Colitis was induced using dextran sodium sulfate (DSS), and was evaluated by examining colon length and histology. Gln (10 mg/kg/day) was orally administered daily. We used small interfering RNAs (siRNAs) to knockdown MKP-1. Phosphorylation and protein expression were detected by Western blotting.

Results

Results: Oral Gln intake attenuates DSS-induced Colitis. Gln inhibits p38 and cPLA₂ phosphorylation, and the colonic levels of NF-κB activation, TNF-α, LTB₄. Gln administration resulted in early and potential induction of MKP-1. Importantly, MKP-1 siRNA, but not control siRNA, significantly abrogated the Gln-mediated 1) induction of MKP-1, 2) attenuation of colitis (colon length, histological abnormality and inflammation), and 3) inhibition of p38 and cPLA₂ phosphorylation, TNF-α, and LTB₄ in colonic tissues.

Conclusions

Conclusion: These data indicated that Gln ameliorated DSS-induced colitis via MKP-1 induction.

Clinical Trial Registration (Please input N/A if not registered)

N/A

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-0551

EVALUATION OF CANDIDA SPECIES AND ANTIFUNGAL SUSCEPTIBILITIES AMONG CHILDREN DIAGNOSED WITH INVASIVE CANDIDIASIS

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Background

Non-albicans *Candida* species (NACs) and resistant microorganisms have been more commonly isolated in invasive candidiasis (IC) in recent years. Awareness of species distribution and antifungal susceptibility patterns in their own clinics will help clinicians to select proper antifungal agents. The aim of this study was to evaluate the distribution of *Candida spp* and antifungal resistance in our clinic.

Methods

Fifty four *Candida* isolates and antifungal susceptibility results obtained from the patients diagnosed with IC between December 2012- June 2016 were included. Clinical and laboratory data were retrospectively analysed. E-test method was used in order to determine antifungal susceptibilities of *Candida spp* for antifungal agents.

Results

Clinical diagnoses of the patients were candidemia (n=27,50%), catheter-related blood stream infection (n=1,1.8%), urinary tract infection (n=13,24%), surgical site infection (n=4,7.4%), intraabdominal infection (n=3, 5.5%), empyema (n=2,3.7%) and pneumonia (n=4,7.4%). Median age of the children was 19.5 months (range, 1-176 months) and 24 of them (44.4%) were female. The most common isolated agent was *C.albicans* (n=27, 50%) and the others were *C.parapsilosis* (n=13, 24.1%), *C.tropicalis* (n=6, 11.1%), *C.glabrata* (n=3, 5.6%), *C.lusitaniae* (n=2, 3.7%) and unspecified *Candida spp.* (n=3, 5.6%). *C.parapsilosis* (n=10, 37%) and *C.tropicalis* (n=3, 23.1%) were the most common NACs isolated from blood and urine, respectively. Fluconazole resistance was %7.4 among all isolates. Resistance against itraconazole, ketoconazole, andilafungin, voriconazole and caspofungin were 33.3%, 12.5%, 11.1%, 5% and 2.5%, respectively. Isolates presented intermediate resistance against itraconazole (41.7%), voriconazole (5.6%) and amphotericin B (3.7%) in varying extent. All of the isolates were susceptible to flucytosine .

Conclusions

In our clinic, *C. albicans* and NACs were equally distributed and antifungal susceptibilities against major antifungal agents such as fluconazole, amphotericin B and caspofungin were found to be considerably high.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0552

ACUTE RESPIRATORY ILLNESS IN CHILDREN: A NEW HOSPITAL SURVEILLANCE SYSTEM IN NORWAY

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Background

Norwegian Enhanced Pediatric Immunization Surveillance (NorEPIS) network aims to generate evidence to measure burden of vaccine-preventable diseases and evaluate effectiveness of vaccination. The network includes five hospitals accounting for 40% of Norwegian pediatric population. Surveillance data are used for burden-of-disease and vaccine effectiveness assessments and health economic evaluations.

Methods

NorEPIS conducts active surveillance for influenza, respiratory syncytial virus (RSV) and pertussis in children <18 years, <5 years and <1 year of age, respectively. Surveillance of influenza and RSV is implemented annually during October-May and pertussis year-round. Children with respiratory symptoms and/or fever are enrolled prospectively. Demographics, clinical data, and information about healthcare use are collected and linked to data in the national health registries. Nasopharyngeal swabs and aspirates are tested using real-time polymerase chain reaction.

Results

Between December 2015—May 2016, we detected influenza in 14.1% (n=141) and RSV in 39.8% (n=360) of children; 2.2% of those <5 years old were positive for both agents. Median age among influenza and RSV cases was 23 and 9 months, respectively. Proportions of severe cases among influenza and RSV-positive children, as measured by a Pediatric Early Warning Score of ≥ 3 , were 42.4% and 48%. Children with underlying conditions represented 21.3% of influenza and 8.7% of RSV cases. Overall, 5.1% of all tested children including 5.8% of influenza cases were reported to receive influenza vaccine in the 12 months before hospitalization. Between December 2016-October 2016, two pertussis cases were detected among 597 children aged <1 year. First patient was not age-eligible for vaccination; a second patient received a single dose of pertussis-containing vaccine five months before hospitalization. No deaths were identified during the study.

Conclusions

Active hospital surveillance provides important data for public health and vaccine policy decisions.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0553

CONGENITAL CHIKUNGUNYA INFECTION – A NEONATAL EMERGENCY?

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Title of Case(s)

CONGENITAL CHIKUNGUNYA INFECTION – A NEONATAL EMERGENCY?

Background

Congenital Chikungunya is rarely reported. We present different clinical manifestations and outcomes of neonates with congenital Chikungunya infection in a recent case series.

Case Presentation Summary

There was an outbreak of Chikungunya in New Delhi that started in August 2016. In this case series, the outcomes of neonates delivered to mothers infected with chikungunya, within 7 days prior to delivery (RT PCR +ve) were assessed. Ten such neonates were delivered in September 2016, at Sir Ganga Ram Hospital, New Delhi. Cord blood PCR was sent in all cases and neonates were kept under supervision. Out of these 10 neonates, 8 were detected to have a positive PCR for chikungunya. Amongst PCR positive neonates, 3 were completely asymptomatic and 5 developed symptoms in the neonatal period. All the five symptomatic neonates presented with fever, seizures, encephalopathy and thrombocytopenia in the first 5 days of life. One of them also developed typical chikungunya rash on day 8 of life. MRI was normal in one neonate while other four symptomatic neonates had abnormal MRI with reduced apparent diffusion co-efficient in periventricular area.

Learning Points/Discussion

Chikungunya infection in perinatal period may present with neonatal encephalopathy and has probability of adverse neurodevelopmental outcome.

03A. EDUCATION: GROUP A STREPTOCOCCUS

ESP17-0555

UNUSUAL PRESENTATION FOR USUAL ORGANISMS

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Title of Case(s)

UNUSUAL PRESENTATION FOR USUAL ORGANISMS

Background

Despite the resurgence of invasive group A streptococci (GAS) infection in the last decades, acute bacterial meningitis (ABM) caused by GAS remains rare. Reported cases of GAS meningitis associated with predisposing factors either direct spread from contagious sites like otitis media, rhinopharyngitis that was observed in majority of cases or post varicella disease. We are reporting a case of coinfection of varicella and GAS meningoencephalitis followed by varicella skin rash eruption.

Case Presentation Summary

A 7- year old girl presented with a fever for 6 days and vomiting. She also had headache, neck pain, excessive somnolence and disorientation for 2 days. Patient was diagnosed with otitis media one week ago. Patient was sleepy with normal vital signs, GCS score of 12 and positive meningeal signs. The remainder of examination was normal. Brain CT showed right-sided mastoiditis. Lumbar puncture done and the patient was covered with ceftriaxone, vancomycin and acyclovir. Laboratory tests showed elevated systemic inflammatory markers. CSF revealed a nucleated cell count of 205/ μ l (40% polymorphous /60% lymphocytes), a protein of 228 mg/dl and a CSF glucose of 30 mg/dl. CSF grew GAS, sensitive to benzyl penicillin. CSF PCR was positive for Varicella Zoster virus (VZV). Varicella skin rash appeared 2 days post-admission. Patient recovered but developed bilateral sensorineural hearing loss.

Learning Points/Discussion

Invasive GAS infections associated with varicella typically occur as a bacterial superinfection of skin lesions few days after the onset of skin eruption but also during the late incubation period of VZV as varicella-induced transient immunosuppression enables GAS to be invasive. Reported cases of GAS meningitis were preceded by VZV disease. Severe VZV–GAS coinfections must await detailed studies to improve our understanding of their pathogenesis and their occurrence.

22A. EDUCATION: OTHER

ESP17-0556

MUMPS IN THE CZECH REPUBLIC – A CHANGE IN THE SCHEDULE OF VACCINATION?

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Background

A vaccination for mumps was introduced in many industrialized countries including the Czech Republic during the 1980s. This resulted in a fast decline in the incidence of the disease. However, since the beginning of the 21st century the incidence of mumps has increased in many industrialized countries, including the Czech Republic.

Methods

We studied basic epidemiological data from the Czech national reporting system Epidat and data from the Regional Public Health Authority in Pilsen. We analysed the ages of patients with mumps reported to the information system from 1993 to 2016.

Results

The vaccination for mumps was introduced in the Czech Republic in 1987. The schedule is 2 doses administered at 15th months of age and a second dose 6-10 months after the first. MMR1+MMR2 coverage ranged between 97-100%. Since the year 2000 the incidence has increased, the incidence varying between 3.4-54.3/ 100,000 in the years 2000-2016. The highest incidence is in the age-group 15-19 years and 10-14 years of age. The incidence among older unvaccinated people (over 30 years old) has been increasing in recent years too. Reported cases were mostly comprised of patients with 2 vaccine doses in 2016. Among many such patients a delay in the first vaccination and a longer period between the two doses were observed.

Conclusions

After repeated epidemics of mumps in the Czech Republic, discussions began on a change to the schedule. Immunity after vaccination without boosters is waning – this was also documented in the published data from the national serological prevalence study in 2013. The recommended longer period between doses could change the immunity in the population of children and adolescents, but the change can not guarantee an improvement to the current unfavourable situation.

16A. SCIENCE: PUBLIC HEALTH: MOLECULAR EPIDEMIOLOGY AND OTHER ASPECTS

ESP17-0557

INVASIVE CRONOBACTER SPECIES INFECTION AMONGST INFANTS AND CHILDREN ADMITTED TO A RURAL KENYAN HOSPITAL WITH A HIGH PREVALENCE OF MALNUTRITION

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Background

For severe acute malnutrition, ready-to-use therapeutic foods (RUTF) are life-saving treatments for over 2.6 million children annually. Given the high susceptibility to invasive bacterial infections in malnutrition, their code of production was changed in 2009 to require *absence* of *Cronobacter species*.

In 2012, *Enterobacteriaceae* including *Cronobacter species* were detected at low levels in RUTF from *all* UNICEF-approved producers. Ready-to-use feeds were quarantined leading to a supply crisis, problems for local manufacturers and shortages in emergency feeding programs. In 2013, the acceptable limit of *Cronobacter* and its family *Enterobacteriaceae* was eased due to lack of evidence of harm. In 2016, a WHO report highlighted the on-going lack of knowledge regarding the burden of invasive *Cronobacter* disease in developing countries, including malnourished children who receive RUTF.

Methods

Since 1998, the KEMRI/Wellcome Trust Research Programme (KWTRP) has conducted routine blood cultures for every paediatric admission to Kilifi hospital or clinical deterioration. Possible *Enterobacter* and *Cronobacter* species from 1998 to 2013 were selected from their API-20E profile and repeated, together with the ID-32E profile and a positive control. Isolates were subcultured on Tryptone Soy Agar (TSA) and *Enterobacter sakazakii* Isolation Agar (ESIA). Finally, 16S rRNA gene sequencing was performed on the positive control sample and one clinical isolate to confirm its identity.

Results

Only 2 isolates consistent with *Cronobacter* were detected from 90,499 blood and CSF culture samples and neither case was related to exposure with malnutrition feeds.

Conclusions

Enterobacter and *Cronobacter* species may not be more problematic in this population than any of a range of other pathogens. There is no additional evidence of serious foodborne exposure to *Cronobacter* within malnutrition treatment after 2007, which was when RUTF and RUSF were introduced.

Clinical Trial Registration (Please input N/A if not registered)

01A. SCIENCE: ANTIMICROBIAL STEWARDSHIP

ESP17-0558

HIGH RATE OF ANTIBIOTIC RETREATMENT IN YOUNG CHILDREN TREATED FOR COMMUNITY-ACQUIRED LOWER RESPIRATORY TRACT INFECTION IN UK GENERAL PRACTICES

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Background

Antibiotics are the most common medications prescribed to children in UK primary care. A large proportion of antibiotic prescriptions in this patient group are for acute lower respiratory tract infections (LRTIs). Given that mortality from LRTI is very low, antibiotic retreatment after an antibiotic treatment course as an indicator of on-going symptoms or relapse of symptoms is an important outcome. Currently, the rate of antibiotic re-treatment for children with acute LRTI in general practice is unknown.

Methods

Data collected through the Clinical Practice Research Datalink (CPRD) from participating general practices were analysed. Children aged 1-5 years between 1st April 2007 and 31st March 2012 and registered with a general practice during the same period were included. Any antibiotic prescriptions during the 28-day follow-up period from the index episode, including the primary antibiotic prescription, were identified. The following were considered retreatment if observed within 28 days from the index consultation: (i) additional antibiotics prescribed; (ii) switch to another antibiotic; (iii) extension of an on-going antibiotic prescription (refill).

Results

A total of 2,494 prescribing events involving 2,826 prescriptions were observed for 2,201 episodes of LRTIs in 2,126 children during the study period. Amoxicillin (77.8%; 2,200/2,826) was the most commonly prescribed antibiotic followed by erythromycin (10.6%; 300/2,826). Of the observed prescribing events, 88.3% (2,201/2,494) were issued during an index episode. In addition, 293 prescribing events constituting retreatment were observed (11.7%; 293/2,494), of which 135 (5.4%) were antibiotic switching and 158 (6.3%) were antibiotic refills.

Conclusions

Our study demonstrates a very high antibiotic retreatment rate of 12% among young children treated for LRTI in UK general practice. The reasons for retreatment in this study population remain unknown and warrant further exploration.

Clinical Trial Registration (Please input N/A if not registered)

N/A

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0559

PREVALENT PATHOLOGY OF MINOR REFUGEES EVALUATED IN A PEDIATRIC TROPICAL PATHOLOGY UNIT

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Background

In recent years, the world is experiencing a growing crisis of refugees, many children are travelling illegally through many countries. Syria represents the largest source of refugees in the world, although Africa is one of the continents most affected. Due to precarious conditions of living and travelling and endemic diseases of their country, it is essential to discard pathologies for these children

Methods

Descriptive retrospective study of children <18years old from a Spanish Reference Unit of Tropical Diseases (January 2014-December 2016). We analyzed epidemiological and social aspects as clinical, diagnostic characteristics and treatments; considering the difficulties of the language barrier and the unrevealed details.

Results

We analyzed 72 children, 98,5%male (average age: 15,3 years old). 52(72, 2%) from Africa, 19(26,5%) from Asia and one from LatinAmerica. 94,4% lived in centers for minors with a median of stay in Spain 8 weeks [486-1] before the appointment.

13/72 presented symptoms (6/13 digestive, 4/13 skin, 3/13 respiratory). 69/72 had blood test, 11/69 showed eosinophils (8/11 mild y 3/11 moderate). 43%had BCG-scars. Tuberculin-skin-test was performed on all, positive 64/72(88.8%), IGRA-test 16/64 (9/16 positive, 6/16 negative, 1/16 intermediate) and chest x-ray in 64/64, one was pathological.

HIV, HCV, HBV and LUES serologies were tested on all, positive for HBV in 3 and LUES in 1. All were analyzed stool-testing parasites, isolating 5/72 non-pathogenic parasites.

According to epidemiology and symptoms, *Squistosoma* serology was carried out on26/72, *Strongyloides* 40/72 and 36/72 *Toxocara*.

Diagnosis and treatment in table 1.



Conclusions

Most of the refugees in our unit are male adolescents. The prevalent pathology is the latent tuberculous infection, regardless of their origins, followed by schistosomiasis. Communication was the main difficulty because of the different languages used.

05B. EDUCATION: PREGNANCY AND THE NEONATE

ESP17-0561

MANAGING HUMAN T-LYMPHOTROPIC VIRUS (HTLV) ASSOCIATED ADULT T-CELL LEUKAEMIA/LYMPHOMA IN PREGNANCY AND PREVENTION OF TRANSMISSION TO THE NEONATE: THE UK EXPERIENCE

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Title of Case(s)

HUMAN T-LYMPHOTROPIC VIRUS

Background

Adult T-cell leukaemia/lymphoma (ATL) is rare in pregnant women with HTLV infection. Management considerations include the prevention of HTLV mother-to-child transmission. HTLV transmission likely correlates with maternal proviral load (PVL). However, there are no published reports on infant outcomes or prevention of transmission strategies. We present three cases describing management and infant outcomes.

Case Presentation Summary

Case 1: Diagnosed with acute ATL at 28 weeks gestational age (GA) (HTLV PVL unknown). Steroids and zidovudine initiated. Caesarean section (CS) 9 days later for maternal indications. Infant formula fed and received zidovudine for 30 days. Infant PVL negative at delivery and 7 months but HTLV serology reactive and PVL 0.01% at 15 months. The child is now ten years old, thriving with stable PVL (0-01-0.03%).

Case 2: Relapsed ATL-lymphoma at 24 weeks GA. Received chemotherapy, zidovudine and interferon. CS at 29 weeks GA for fetal growth cessation (maternal PVL 1.2%). Infant formula fed and received 6-weeks zidovudine. Infant PVL negative day 1 and week 6.

Case 3: Diagnosed with chronic ATL at 7 weeks GA (PVL 94%). Received zidovudine and interferon and PVL reduced to 6-9%. Addition of raltegravir at 34 weeks GA to reduce vertical transmission. Planned CS at 39 weeks GA. Infant was formula fed and received 6-weeks zidovudine. Infant PVL negative day 1 and week 6.

Learning Points/Discussion

Case 1 transmission wasn't prevented presumably due to high HTLV burden. In cases 2 and 3, maternal PVL at delivery was low and early infant testing was negative, however follow up serology at 18 months is essential to ensure sero-reversion. Clinical data on antiretroviral use and planned CS are non-existent in HTLV. An international registry of pregnant women with HTLV would help address this.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0563

DOES THE ECONOMIC RECESSION INFLUENCE THE INCREASING INCIDENCE OF PERTUSSIS IN A COSMOPOLITAN EUROPEAN CITY?

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Background

Whooping cough is an infectious respiratory disease despite having high vaccination coverage remains a public health problem. In recent years there has been a re-emergence of the disease worldwide. The aim of the study is to describe the evolution of the incidence of pertussis in the city of Barcelona between 2000 and 2015 and to discuss the causes of the increase of the disease considering various options, including the economic crisis.

Methods

This is a descriptive cross-sectional observational population-based study conducted with data from the notifiable diseases register of the Public Health Agency of Barcelona. We calculated the rate of annual incidence of pertussis throughout the city from 2000 to 2015. We determined the proportion of cases under one year that received whole-cell and acellular vaccine and analyzed whether significant differences. To determine the effect of the variables: gender, age group, socioeconomic status and period in the incidence we carried out a Poisson regression analysis.

Results

There were 1,791 cases of whooping cough. From 2011 there was an increased incidence similar in all city neighborhoods. Although the most susceptible age group with the highest incidence were children under one year, there was an increase in the age of the cases. The incidence rates of immigrant children were lower than those of natives. The vaccination coverage remained high but the richest neighborhoods had a higher percentage of cases under 6 unvaccinated and with an incomplete immunization status. 88% of the cases under one received acellular and 95.5% whole-cell vaccine.

Conclusions

The economic crisis has not affected the functioning of the health system or vaccination coverage, therefore the observed increase would be due to other factors.

02A. SCIENCE: ANTIMICROBIAL RESISTANCE

ESP17-0564

TO IMPROVE THE EFFICACY AND SAFETY OF LINEZOLID IN THE TREATMENT OF CHILDREN AND ADOLESCENTS WITH MDR TB

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Background

Linezolid in the management of tuberculosis in children and adolescents

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Drug resistance of *M. tuberculosis* (MBT), especially multidrug resistance (MDR), is a serious reason for ineffective tuberculosis (TB) treatment. The new anti-TB drugs with a unique mechanism of action are essential, but currently published data on them, e.g. linezolid, in children and adolescents is insufficient.

Methods

In 2014-2016 12 children, 5-14 years old, with MDR-TB treated with linezolid by chemotherapy regimens IV or V. The primary TB diagnosed in 7 pts (3 of them – HIV-positive): TB of intrathoracic lymph nodes in 6 (with lung dissemination in 3) and miliary TB – in one. In 5 pts the lung infiltrates and/or nodules detected. Second-line drugs were administrated after laboratory confirmation of the MDR in 2 children, or based on the presence of MDR/XDR MBT in the family contacts in 9 children, and due to the advanced TB on the first-line TB treatment (one child). All patients received linezolid (10 mg/kg daily), fluoroquinolones (levofloxacin – 6 pts, moxifloxacin - 6 pts) and injectable drug (kanamycin – 7, capreomycin – 5); in 7 children PAS was include, in 4 – cycloserine, in 3 – protonamide. In cases of confirmed susceptibility, ethambutol (6 pts) and pyrazinamide (7 pts) administrated.

Results

Closing of broncho-nodular fistulas at 6th months obtained, and calcination of the lung changes – at 9th month. Tolerability was satisfactory in all children, even in two with toxic hepatitis after first-line TB treatment.

Conclusions

The use of linezolid and fluoroquinolones in the combined treatment of TB in children and adolescents is high effective and well tolerated for at least 9 months of treatment.

Clinical Trial Registration (Please input N/A if not registered)

20C. SCIENCE: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-0566

LONG-TERM IMPACT OF SELF-FINANCED ROTAVIRUS VACCINES ON ROTAVIRUS-ASSOCIATED HOSPITALIZATIONS AND COSTS IN THE VALENCIA REGION, SPAIN

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Background

Impact of RV vaccines in rotavirus acute gastroenteritis (RVAGE) hospitalizations has already been described in Spain. However, the hospitalization rate reduction directly attributable to vaccination remains unclear due to the large differences described in published studies. In addition, the direct economic impact of the reduction of hospitalizations has never been estimated. We analyze the impact of rotavirus vaccines on RVAGE hospitalizations and the national health system associated costs, minimizing potential confounders or biases.

Methods

A population-based, ecological study was performed, among Valencia Region's children <5 years old, during 2002 - 2015. RVAGE and AGE hospitalization risk was analyzed by vaccine coverage and adjusted by the total hospitalization rate for all causes to avoid external biases. The impact of AGE-associated health care utilization in prevaccine (2003–2006) versus postvaccine (2008–2014) years was also assessed.

Results

A general vaccine coverage-related reduction in RVAGE or AGE-hospitalizations risk was observed in all age groups. Compared with unvaccinated children, RVAGE hospitalization risk decreased by 67% (95%CI: 55-67), 71% (95%CI: 58-81) and 68% (95%CI: 18-92) in children 0, 1 and 4 years of age, respectively, with a vaccination coverage between 40-42%. Overall, the average hospital related costs were reduced around EUR1.6 Mill per year.

Conclusions

The introduction of rotavirus vaccines had a specific coverage-related response impact in the hospitalizations for RVAGE and AGE and their use substantially reduced hospital related costs. The model used reassures that the estimated impact is due to the vaccination and not to other external factors.

Clinical Trial Registration (Please input N/A if not registered)

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0567

RISK FACTORS FOR RECURRENCE AT INFANTS WITH BRONCHIOLITIS

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Background

Bronchiolitis is one of the most common hospital admittance reason at infants and toddlers.

Aim of the study: primary objective was to identify risk factors for bronchiolitis at infants under 2 months. Secondary objectives were: a.) to estimate the risk of recurrence in the following two years, b.) to evaluate the effectiveness of the treatment with dexamethasone.

Methods

A one year (2011-2012) retrospective study was conducted, including 135 infants under 2 months old (53% from urban area and 75% boys) with bronchiolitis that were admitted to the Children's Clinic Hospital Brasov, Romania.

Results

In the analysed group 20.4% of the patients did present recurrence in the next years. The analysis carried out on the patients associated the following risk factors: gender ($p=0.01$), low gestational age ($p=0.02$), low gestational weight ($p=0.005$), lack of breastfeeding ($p=0.026$). Exposure to maternal smoking, living in crowded conditions and/or in unhealthy households, cesarean delivery were not risk factors for the disease.

Dexamethasone was not associated with any clinically improvement, length of hospital stay or less new bronchiolitis episodes in the next 2 years of follow-up.

Conclusions

Relevant risk factors for hospitalization for bronchiolitis in our study at infants under 2 months in our region are prematurity, formula feeding and male gender. One fifth of the infants with first episode of bronchiolitis under the age of 2 month presented recurrences in the next two years.

22A. EDUCATION: OTHER

ESP17-0569

STIKO@RKI – GERMANY’S FIRST INTERACTIVE IMMUNIZATION INFORMATION APP FOR PHYSICIANS

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Background

In Germany, the Standing Committee on Vaccination (STIKO) with its secretariat hosted by the Robert Koch-Institute (RKI) develops national immunization recommendations. Most vaccines are administered by pediatricians and general practitioners in private practice. Given the increasing complexity in the field of immunization and an increasing number of medical professionals using mobile devices, we developed an app with the aim to support physicians by providing all relevant vaccination-related information at their fingertips and actively informing about new recommendations or information materials.

Methods

Based on an open call for tender, a publishing company specialized in developing medical apps was selected for the technical development. The app was developed and optimized through an iterative process between the RKI immunization unit, the IT department and the publisher. Google Analytics is utilized to monitor the usage of the app. The project was funded by the German Ministry of Health.

Results

“STIKO@rki” was launched in September 2016, is free of charge and compatible with iOS and Android. The app provides access to all STIKO’s recommendations, background paper and more than 230 answers to frequently asked questions. It also provides an interactive immunization algorithm for routine and catch-up vaccinations based on patients’ individual vaccination status. Moreover, the app includes vaccine product leaflets, information about vaccine-preventable diseases, and a push notification function. Between 15 September 2016 and 25 January 2017, “STIKO@rki” was downloaded about 21,600 times, with about 54,100 app sessions.

Conclusions

“STIKO@rki” is the first app of its kind that provides comprehensive and interactive vaccination-related information for physicians. A structured evaluation, which will be conducted in February 2017, and continuous input via the App’s feedback function will further increase the app’s quality and usability.

20B. EDUCATION: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-0572

WANING SEROLOGICAL AND CELLULAR IMMUNITY > 5 YEARS FOLLOWING Q FEVER VACCINATION – DOES IT EQUATE TO ABSENCE OF PROTECTION?

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Background

Australia is the only country with a licensed Q fever vaccine for humans (QVax®). Protection following Q fever vaccination is estimated to last at least 5 years and repeat doses of Q fever vaccine are not recommended. However longevity of cellular and serological responses beyond 5 years post vaccination is poorly studied.

Methods

Individuals attending veterinary conferences in Australia (2013- 2016) provided a blood sample and completed a questionnaire, including sex, age, postcode, type of work, Q fever disease and vaccination status. Q fever serology (phase 1 and 2 IgA, IgM and IgG) was measured by the Australian Rickettsial Reference Laboratory, Victoria using standard immunofluorescence methods. Cell mediated immunity (CMI) was measured using Q-detect® (Interferon Gamma release assay -Inatoss Laboratories, Netherlands).

Results

Q fever serology was measured in 364 veterinarians, (n=208, 57% reported ever receiving Q fever vaccine (n=36 (17%) vaccinated 10-15 years and n=56 (27%) vaccinated >15 years prior to serology being measured. Of 208 vaccinees, only 10% and 13% were phase 1 IgG and phase 2 IgG positive, respectively. Seropositivity to phase 1 and 2 IgG decreased with increasing time since vaccination to only 2-5% > 15 years post vaccination. CMI was measured in 70 vaccinated veterinarians. Only 10% (n=7) were positive and all were vaccinated within 10 years of sampling. In a subset vaccinated >10 years (n=28) only 1 case was seropositive and none were positive for CMI.

Conclusions

In Australian veterinarians who reported receiving Q fever vaccine, over 85% were seronegative to phase 1 and 2 IgG and only 10% had demonstrable cellular immunity. At present re-vaccination with QVax® is not recommended in Australia, however, those vaccinated >10 years ago are potentially “at risk” of infection.

04E. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0575

DISCREPANT ANTIBODY RESPONSES TO THE RESPIRATORY SYNCYTIAL VIRUS F AND G GLYCOPROTEINS IN HOSPITALIZED CHILDREN UNDER TWO YEARS OF AGE

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Background

RSV bronchiolitis is the leading cause of hospitalizations among infants under 12 months of age. Immunity to RSV is incomplete, and serum antibody response against RSV is not fully understood.

Methods

The antibody responses to the two major respiratory syncytial virus (RSV) glycoproteins (F and G) were evaluated by ELISA in children under two years of age, hospitalized in the Gregorio Marañón Hospital (Madrid) with laboratory confirmed RSV bronchiolitis

Results

A strong negative correlation was found between the antibody levels in the acute phase, not so much age, and the fold change in the anti-F antibody titre after convalescence. In addition, strong discrepancies were observed at the individual level between the increase in antibody titres specific for the F and G glycoproteins. The anti-G response was not dependent on the acute phase level and was group specific, always correlating with the antigenic group of the infecting virus, also characterized in this study. Despite this correlation, limited group-specificity was noted in the neutralizing response which nevertheless did not discriminate between the infecting and historical viruses. Finally, as reported for adult humans, most of the neutralizing antibodies were not depleted when sera were incubated with the F glycoprotein folded in the postfusion conformation.

Conclusions

These results provide important insights about the anti-RSV antibody responses in children that experience a primary severe infection.

Clinical Trial Registration (Please input N/A if not registered)

03A. SCIENCE: GROUP A STREPTOCOCCUS

ESP17-0576

PCV13 AND NON-PCV13 INFECTIOUS PNEUMOCOCCAL DISEASES (IPD) SEROTYPES CASES EVOLUTION IN MADRID CHILDREN: HERACLES STUDY (2007-16)

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Background

The 13-valent pneumococcal conjugate vaccine (PCV13) replaced the 7-valent (PCV7) in the Madrid regional immunization program (RIP) in May 2010 but was excluded in May 2012 (except boosters for previous primary vaccinations) with the consequent drop in the uptake to 82% in 2013 and 67% in 2014. PCV13 was finally re-introduced into the RIP in March 2015 increasing the uptake to 73% and 95% in 2016. This study analyzed the evolution of PCV13 and non-vaccine types of pediatric IPD.

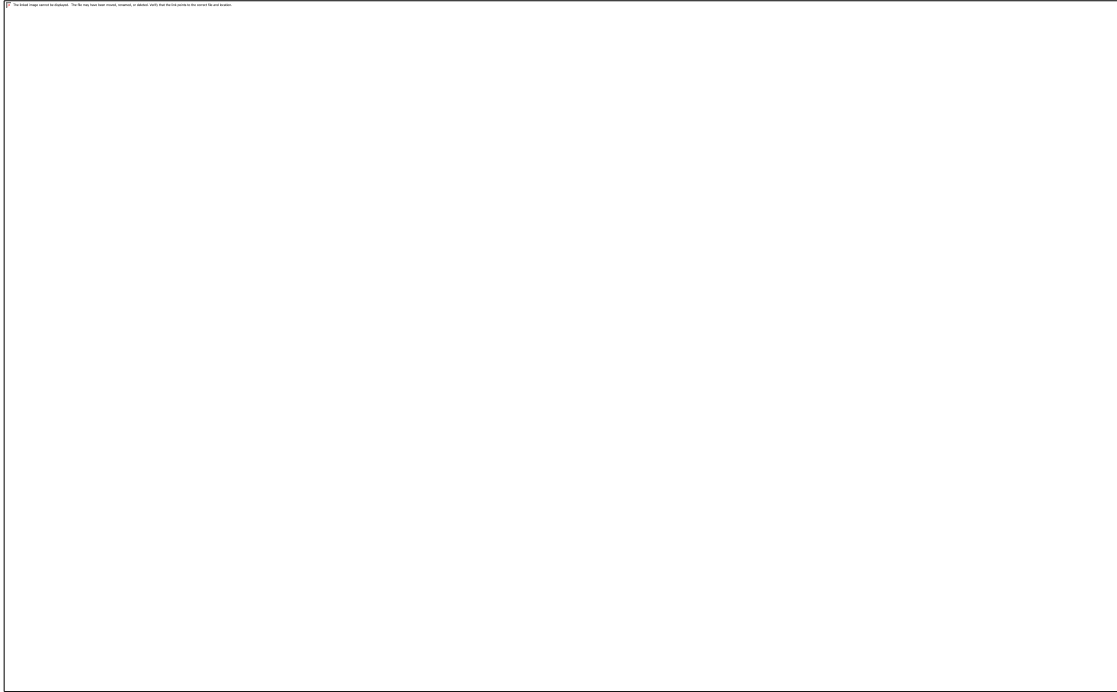
Methods

A prospective, laboratory-confirmed (culture and/or PCR) surveillance of all hospitalized children younger than 15 years with IPD in Madrid was performed. All isolates (for serotyping) and culture-negative pleural/cerebrospinal fluids (for PCR detection) were sent to central laboratory.

Results

Results show in Table1. There was a 91% reduction of IPD caused by PCV13 serotypes 2015-16 vs 2009-10 IRR (95% IC): 0.09, (0.04-0.16), $p < 0.0001$, specially due to a significant decrease (comparing 2015-16 vs 2009-10 IRR (95% IC)) of ST1: 0,06 (0.02-0.17); $p < 0.0001$, ST7F: 0.09 (0.01-0.69); $p < 0.05$ and ST19A: 0.02; (0.00-0.15); $p < 0.0001$. Non-significant changes in the incidence of NVT (2015-16 vs 2009-10 IRR (95% IC):1.15 (IC95%: 0.71-1.87), NS) were observed.

In the PCV7 period, 53% of penicillin resistant meningeal isolates belonged to 19A serotypes, while in the PCV13 period only 13% of the resistant strains belonged to this serotype. Resistance to cefotaxime was not detected since April 2012.



Conclusions

PCV13 significantly reduced the cases of IPD caused by serotypes 1, 19A and 7F. After 6 years of PCV13 vaccination, an increase of non-vaccine serotypes has not been observed. A pronounced decline in IPD caused by penicillin and cefotaxime resistant isolates has taken place, mainly due to the marked reduction of IPD caused by serotype 19A.

Clinical Trial Registration (Please input N/A if not registered)

N/A

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0577

LOW GRADE CNS NEOPLASM MIMICKING TUBERCULOUS MENINGITIS

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Title of Case(s)

LOW GRADE CNS NEOPLASM MIMICKING TUBERCULOUS MENINGITIS

Background

At the ESPID 2016 we presented challenging case of TB meningitis. After 12 months of diagnostic and treatment odyssey, it appeared to be disseminated oligodendroglial-like leptomenigeal tumour. This type of neoplasm is extremely rare with only 36 cases described worldwide.

Case Presentation Summary

Previously healthy adolescent presented with fever, nausea, vomiting, severe headache and back pain. CSF revealed very high protein (22.7g/l) and glucose (6.2mmol/l) level. Brain and spine MRI(3T) showed contrast enhancing pachymeningitis with non-caseous granuloma and spinal cord arachnoiditis with compressive myelopathy. *CSF Xpert*MTB/RIF, AFB and CSF culture were negative. No history of contact with tuberculosis. TST and QFT were positive. Differential diagnosis included fungal infection, sarcoidosis and malignancies. Patient was diagnosed with tuberculous pachymeningitis and spinal cord arachnoiditis. Anti-TB treatment was started with high dose steroids.

One month later patient's status has improved, but the CSF profile remained abnormal. Repeated brain MRI showed persistent leptomenigeal and pachymeningeal contrast enhancement and circular contrast enhancement pattern in the lesion in the quadrigeminal bodies (caseous granuloma?). Anti-TB treatment was continued and 3 months later lumbalgia completely disappeared. However while on treatment patient lost weight, gradually became cachectic and his status deteriorated *9 months* later. He was shunted because of decompensated obstructive hydrocephalus. Thalidomide therapy was unsuccessful. *12 months* later due to worsening of neurological status decompressive C7 laminectomy was performed. Intraoperative biopsy revealed disseminated oligodendroglial-like leptomenigeal tumour. Curative surgery was impossible therefore chemotherapy was started, but unfortunately it didn't improved patient's condition. *13 months* later the patient died.

Learning Points/Discussion

This type of neoplasm is very rare condition worldwide. It often mimics chronic infectious diseases. Early diagnostic tests are uninformative, therefore the definite diagnosis is complicated and delayed.

16A. SCIENCE: PUBLIC HEALTH: MOLECULAR EPIDEMIOLOGY AND OTHER ASPECTS

ESP17-0578

GENETIC DIVERSITY OF PNEUMOCOCCAL SURFACE PROTEIN A IN INVASIVE PNEUMOCOCCAL ISOLATES FROM KOREAN CHILDREN, 1991-2016

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Background

Pneumococcal surface protein A (PspA) is an important virulence factor of pneumococci and has been investigated as a primary component of a serotype-independent pneumococcal vaccine. Thus, we sought to determine the genetic diversity of PspA to explore its potential as a vaccine candidate.

Methods

Full span of *pspA* was sequenced in 185 invasive pneumococcal isolates collected from Korean children between 1991 and 2016. The clade and family types were determined from the amino acid sequences of the clade-defining region. PspA subtype was defined by phylogenetic analysis of the N-terminal α -helical regions. The amino acid sequences of the most recent isolates in each subtype were converted to the corresponding antigenicity plot. Previously reported multilocus sequence typing data of study isolates was retrieved.

Results

PspA was identified in all the isolates of *S. pneumoniae* except for two (98.9%). The length of *pspA* varied, ranging from 1,719 to 2,301 base pairs with 25.8%-100% nucleotide identity. Clade 3 (49.7%) and its family 2 (68.7%) were the major PspA types. PspA clade types were correlated with sequence types than serotypes. Clade types divided into several subtypes, which showed sequence identities of 29.4%-100% in nucleotides and 12.1%-100% in amino acids. Antigenicity plots were also diverse among individual clade types and subtypes. The differences in antigenicity patterns were concentrated within the N-terminal 120 amino acids.

Conclusions

The N-terminal α -helical region, which is known to be major immunogenic portion in PspA, is genetically variable and should be further evaluated for antigenic differences and cross-reactivity between various PspA types of pneumococcal isolates.

Clinical Trial Registration (Please input N/A if not registered)

N/A

20A. EDUCATION: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0581

MATERNAL EDUCATION IS INVERSELY RELATED TO VACCINATION DELAY AMONG INFANTS AND TODDLERS

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Background

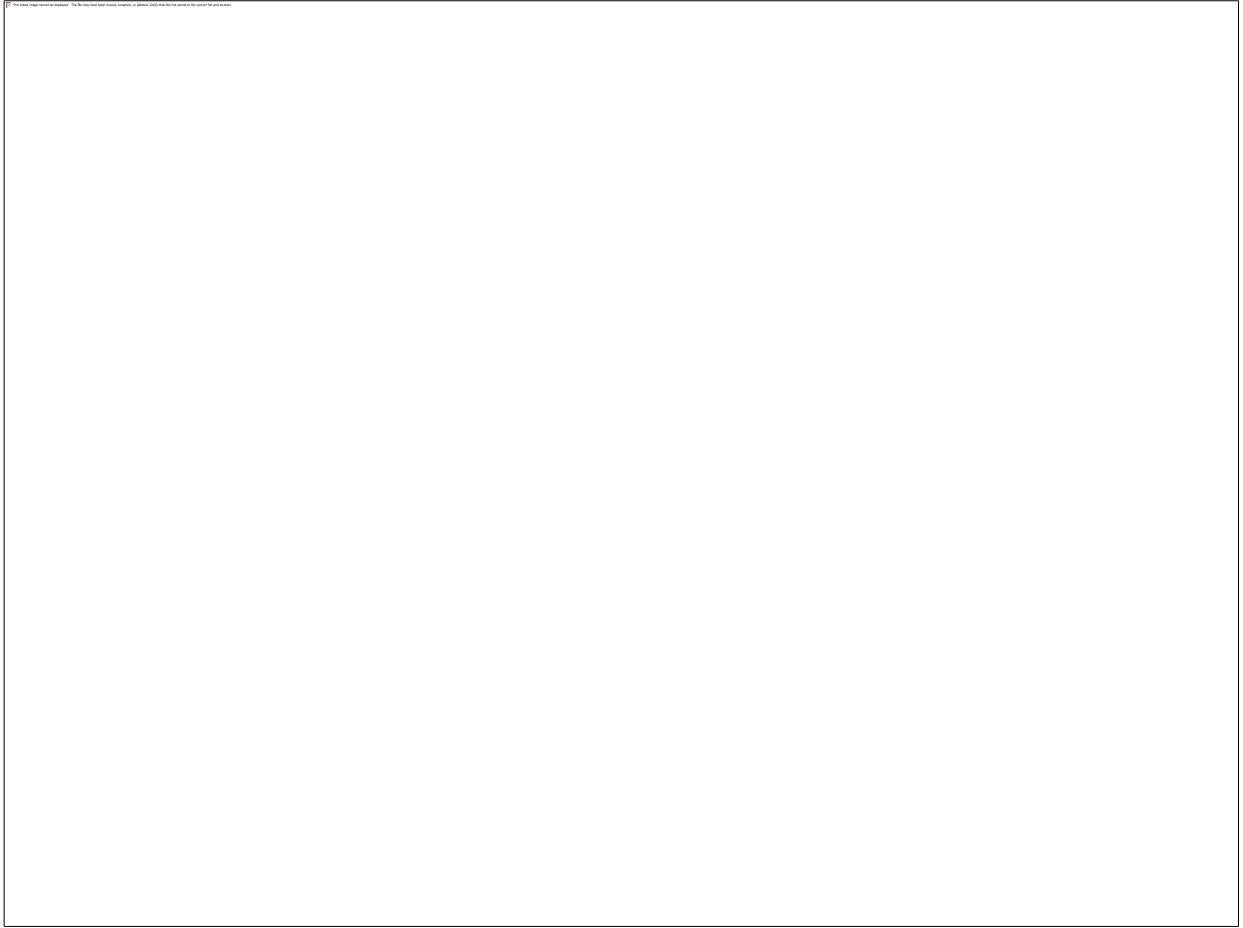
Timeliness of vaccination is important, but vaccination delays (VDs) are frequent. The association between VD and maternal education (ME) level is controversial. Furthermore, no consensus has been reached in defining VD, ranging from delay ≥ 1 days to ≥ 1 months post planned date. None of the reviewed studies defined delay in relative terms accounting for variation of the population within which the child lives (i.e. socio-economic and cultural environment and local logistic characteristics). Using a “relative delay” (RD) approach, we attempted to determine association between ME level and VD in infants and toddlers.

Methods

We studied Jewish children 2-4 years, in southern Israel, vaccinated at 5 vaccination centers. For RD, VD (expressed by days of absolute delays from planned date) was divided in each center into 5 temporal quintiles. Children in the 5th quintile with >7 days delay from planned vaccination date were defined as VD. The following vaccines were studied: HBV3; DTaP4; MMR1/MMRV1; and HAV1 (**Figure 1A**). Using multivariate logistic analysis, we studied association for VD and ME level (expressed by years of education) controlled for other significant variables in univariate analysis.

Results

2072 children were studied in 5 vaccination centers (range 398 to 426). The distribution of ME levels is shown in **Figure 1B**. The adjusted ME ORs showed that increasing of ME reduced VD (**Figure 1A**).



Conclusions

Maternal education was inversely related to vaccination, highlighting a new angle in the relationship between education and health behavior.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0582

FEVER WITHOUT A SOURCE IN CHILDREN UNDER 3 YEARS OF AGE: THE ROLE OF RESPIRATORY VIRUSES

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Background

The aim of this study was to identify the role of respiratory viruses among the children presenting with fever without an apparent source.

Methods

The records of 168 patients below 3 years of age who had been hospitalized for undifferentiated fever initially and then were detected to have respiratory viruses from nasopharyngeal aspirate specimens, in an university hospital in Istanbul between January 2014-August 2016 were examined retrospectively.

Results

The median age was 11 months (1-35). The majority of the children were between 3mo- 3yr of age . The most frequent virus was parainfluenza virus (n=25, 14.9%). Thirty one patients (18.4%) were detected to have multiple viruses. The duration of fever was more common in the presence of multiple viruses (p=0.01). On attendance, the presence of febrile seizure and leukocytosis were more common among the patients with human bocavirus infection (p values are 0.001 and 0.02, respectively). Patients with influenza virus infection more commonly had increased CRP values (p=0.01). Antibiotic use was more common among the patients with hiovirus infection (p=0.04) as opposite to influenza virus infection (p=0.01). Median length of hospital stay was longer in the presence of respiratory syncytial virus and enterovirus infections (p values are 0.01 and 0.04, respectively). Pediatric intensive care unit requirement was higher among children with respiratory syncytial virus infection (p=0.003) and the length of pediatric intensive care unit stay was longer for patients with human bocavirus infection (p=0.01).

Conclusions

Respiratory virus infections can be presented as undifferentiated fever initially. Minimal invasive and more observative approach can be applied to the children presented with FWS provided that they are clinically well and are being closely followed-up.

04E. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0583

EVALUATION OF THE ASSOCIATION OF HIV-1 INFECTION AND DENSITY OF COMMON NASOPHARYNGEAL BACTERIAL COLONIZERS USING FLUIDIGM IN PCV7-IMMUNIZED CHILDREN LIVING IN SOUTH AFRICA

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Background

Approximately 5% of children <5 years in South Africa are infected with HIV, with *S. pneumoniae* being the most important cause of invasive bacterial disease. Due to limitations in standard culture methods, the association between PCV-immunization on bacterial carriage density is still unclear, including among HIV-infected children.

Methods

We used a quantitative nanofluidic real-time PCR assay to evaluate the association on infant immunization with PCV7 and HIV-infection on the prevalence and carriage density of multiple pneumococcal serotype as well as other common nasopharyngeal bacterial pathogens in South African children at 9 and 15-16 months of age.

Results

The prevalence of overall pneumococci (58.6% vs. 69.9%; $p=0.02$), non-vaccine serotypes (23.1% vs. 34.7%; $p=0.01$) and *H. influenzae* (64.2% vs. 42.3%; $p=0.01$) was lower in PCV7-immunized, HIV-infected children compared to HIV-uninfected children at 9 months. No difference in the prevalence of overall pneumococci was found at 16 months ($p=0.20$), although the carriage prevalence of non-vaccine serotypes (28.9% vs. 40.9%; $p=0.02$) and *H. influenzae* (56% vs. 73.4%; $p=0.02$) was lower in HIV-infected children. The density of overall pneumococcus was higher in HIV-infected children (4.81 vs. 4.44 CFU/ml; $p=0.014$) at 9 months, which was driven by a higher density of vaccine serotypes/serogroups (5.22 vs. 4.66 CFU/ml; $p=0.014$). No difference in the density of *H. influenzae* was found between HIV-infected and HIV-uninfected infants at 9 months ($p=0.18$); however, by 16 months HIV-uninfected children had a higher density of overall *H. influenzae* colonization (4.95 vs. 4.32 CFU/ml; $p<0.001$).

Conclusions

The higher carriage density of overall pneumococcus in HIV-infected children, despite the lower carriage prevalence might explain the higher invasive disease burden in HIV-infected compared to HIV-uninfected children even in the era of antiretroviral therapy treatment and PCV immunization.

Clinical Trial Registration (Please input N/A if not registered)

N/A

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0585

ETIOLOGICAL SPECTRUM OF ACUTE VIRAL RESPIRATORY ILLNESSES AMONG CHILDREN AGED UNDER FIVE YEARS IN BULGARIA

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Title of Case(s)

ETIOLOGICAL SPECTRUM OF ACUTE VIRAL RESPIRATORY ILLNESSES (ARI) AMONG CHILDREN AGED UNDER FIVE YEARS IN BULGARIA

Background

A wide spectrum of different viruses can cause acute respiratory illnesses (ARI) of varying severity in infants and young children. This study aims to determinate the contribution and clinical impact of the most common respiratory viruses in cases of ARI among children aged <5 years during the 2014/15 and 2015/16 winter seasons in Bulgaria.

Case Presentation Summary

A total of 610 nasopharyngeal specimens of children ambulatory treated (18.2%, 111/610) or hospitalized (81.8%, 449/610) in different regions of country were tested using Real Time PCR for influenza viruses A/B, respiratory-syncytial virus (RSV), metapneumovirus (MPV), parainfluenza viruses (PIV 1/2/3), rhinoviruses (RV) and adenoviruses (AdV).

A total of 437 respiratory viruses were detected in 404 (66.2%) patient's samples. A single infection was found in 374 (61.3%) children; co-infection in 29 (4.8%) and one child (0.2%) was positive for 3 viruses. Among all detected viruses, 144 (33%) were influenza viruses. The number (%) of identified non influenza viruses was following: RSV - 165 (37.9%); MPV - 30 (6.9%); PIV-1 - 4 (0.9%), PIV-2 - 8 (1.8%), PIV-3 - 10 (2.3%), RV - 48 (11%) and AdV - 28 (6.4%). The detection rate of influenza viruses among patients with laryngotracheitis was 27%; bronchiolitis - 19%; pneumonia - 17% and neurological complications - 16%. Regarding to the non-influenza viruses these proportions were 60%, 68%, 57% and 36%, respectively. RSV was the most common virus identified in children with bronchiolitis (48%) and pneumonia (38%) ($p < 0.05$).

Learning Points/Discussion

The study showed the leading role of RSV and influenza viruses as causative agents of serious respiratory diseases in early childhood.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0586

POST-INFECTIOUS GLOMERULONEPHRITIS ASSOCIATED WITH PNEUMOCOCCAL PNEUMONIA IN A CHILD

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Title of Case(s)

Pneumococci as a possible cause of post-infectious glomerulonephritis

Background

Post-infectious glomerulonephritis (PIGN) is most often associated with *Streptococcus pyogenes*. The PIGN following infection by *S. pneumoniae* has rarely been described in children.

Case Presentation Summary

A previously healthy six-year-old boy was admitted with a two-week history of cough. He developed high fever and right chest pain three days before. On examination, he appeared ill and his temperature was 39.8°C. Breath sound was decreased over the right upper lung field. Chest X-ray showed a consolidation in right upper and lower lobes with pleural effusion. Laboratory studies showed an elevated C-reactive protein level of 20.0 mg/dl, but white blood cell count was normal (10,300/mm³). Urinalysis revealed 2+ protein and 2+ blood, and the spot urine protein/creatinine ratio was 0.87. The serum C3, C4, and CH50 were decreased to 11 mg/dl, 16 mg/dl, and <10 U/ml, respectively. Serum anti-streptolysin O was elevated to 550 IU/mL, but rapid antigen test and culture of throat swab for *S. pyogenes* was negative. However, pneumococcal antigen test of pleural fluid was positive, and blood culture grew *S. pneumoniae*, identified as serotype 13. Intravenous cefotaxime and maintenance hydration were started. Over the next three days, fever disappeared but proteinuria and gross hematuria continued, and he developed peripheral edema and hypertension. After 13 days of hospitalization with cefotaxime, amlodipine, and enalapril, he clinically improved except proteinuria and hematuria, so he was discharged and scheduled to ongoing outpatient follow-up.

Learning Points/Discussion

This is the first case of PIGN associated with bacteremic pneumonia caused by serotype 13 pneumococcus. *S. pneumoniae* should be considered in the differential diagnosis of PIGN in children presenting with pneumonia.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0587

CLINICAL DIFFERENCES OF INFLUENZA SUBSPECIES AMONG HOSPITALIZED CHILDREN

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Background

Clinical findings, mortality, and morbidity rates differ among influenza subspecies. Awareness of these differences will lead physicians to choose the proper diagnostic and therapeutic strategies and to foresee possible complications. The aim of this study was to evaluate the clinical differences of influenza subspecies among hospitalized children.

Methods

Hospitalized children with proven influenza infection by polymerase chain reaction on nasopharyngeal swab specimens in our clinic, between December 2013 and March 2016, were enrolled. These children were separated into 3 groups as Influenza A/H1N1 (n=42), Influenza A/H3N2 (n=23), and Influenza B (n=35).

Results

The median age of the children was 51.5 months (range, 3-204 months). The most common presenting symptoms were fever (n=83), cough (n=58), and difficulty in breathing (n=25). The most common non-respiratory findings were lymphadenopathy (n=18) and gastrointestinal system involvement (n=17). Sixty-two percent of the patients (n=62) had chronic diseases. H1N1 and H3N2 were significantly more common among patients with chronic neurologic disorders and renal failure, respectively. Leukopenia (n=32) and thrombocytopenia (n=22) were the most common pathologic laboratory findings. Neutropenia, elevated CRP levels, and antibiotic use were significantly more common among patients with H1N1 infection. Seven patients were transferred to the ICU with diagnoses of ARDS (n=4), encephalitis (n=2), and bronchiolitis (n=1). Two patients with chronic diseases and H1N1 infection died secondary to ARDS.

Conclusions

Influenza A/H1N1 infection represented more severe clinical disease.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0589

ASYMPTOMATIC CONGENITAL TUBERCULOSIS

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Title of Case(s)

Asymptomatic congenital tuberculosis

Background

Congenital tuberculosis (TB) is described as a rare, but severe disease. In contrast to the cases with severe symptoms reported so far, we describe a child with asymptomatic congenital TB.

Case Presentation Summary

A mother presented after birth with a cough that emerged at 21 weeks gestation, during treatment of indeterminate colitis with the anti-TNF- α antibody adalimumab. Her CT scan showed numerous nodules and tree-in-bud opacities, a pattern characteristic for miliary TB. Lung biopsy tissue specimens revealed necrotizing granuloma with a single acid-fast bacillus (AFB), and *Mycobacterium tuberculosis* (MTB) was detected by PCR. Bronchoalveolar lavage was negative for AFB smear and culture, arguing against postnatal transmission of MTB. TB contact investigations were negative.

The daughter, 8 weeks of age at first assessment, was in excellent general condition. Pregnancy, birth, and neonatal period were unremarkable. Physical examination, laboratory evaluation, and abdominal ultrasound were normal. Chest X-ray showed accentuated peribronchial structures. Surprisingly, a tuberculin skin test (TST) was positive with an induration of 9x6mm, and increased to 20x10mm after 2 weeks. Three gastric aspirates did not show AFB by microscopy, but one grew MTB on culture after 3 weeks. The child was diagnosed with congenital TB fulfilling the current diagnostic criteria. The diagnosis was supported by the strongly positive TST at 8 weeks of age and the mother's miliary TB. The child received ambulatory tuberculostatic treatment for 6 months. The 18 months follow-up was uneventful.

Learning Points/Discussion

This case of asymptomatic congenital TB in a young infant raises the question whether congenital TB is underestimated, and if infants born to pregnant women at high risk for TB should be screened for congenital TB to prevent eventual life-threatening disease progression.

12B. EDUCATION: INVASIVE FUNGAL INFECTIONS

ESP17-0592

CENTRAL NERVOUS SYSTEM ASPERGILLOSIS AND PULMONARY ASPERGILLOSIS IN A CASE WITH PULMONARY ALVEOLAR PROTEINOSIS

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Title of Case(s)

CENTRAL NERVOUS SYSTEM ASPERGILLOSIS AND PULMONARY ASPERGILLOSIS IN A CASE WITH PULMONARY ALVEOLAR PROTEINOSIS

Background

Aspergillus infections may cause life-threatening complications in immunodeficient patients. Usually, it can be controlled with anti-fungal therapy, but in some cases surgical interventions may be needed.

Here we report a 14-year-old boy with pulmonary alveolar proteinosis. Pulmonary and CNS aspergillosis has developed during his follow-up and he was treated with voriconazole and liposomal amphotericin B. CNS abscess drainage was performed for CNS aspergillosis. Patient is still under control with home mechanical ventilation and in need of sequential whole lung lavage and had been on follow-up for 14 months.

Case Presentation Summary

He presented with fever and hemoptysis when he was 9-years-old. He was diagnosed as pulmonary hemosiderosis cause of pigment-laden macrophage presence in his broncoalveolar lavage fluid and pulse steroid and cyclophosphamide therapies were given. When he was 12, pulmonary wedge biopsy was performed. Histopathological examination and DNA sequence analysis were consistent with pulmonary alveolar proteinosis (PAP). Nodular and cavitory lesions were detected in thorax CT and broncoalveolar lavage fluid galatomannan antigen resulted as positive. Then, voriconazole and liposomal amphotericin B combination therapy was started. After 2 months of anti-fungal therapy, he suffered from headache and left fascial paralysis. Cranial MRI showed focal hemorrhagic lesions, abscess and decreased diffusion pattern in his left parietal and occipital lobes and left cerebellar hemisphere. Brain abscess culture yielded *Aspergillus* spp. His brain abscesses and pulmonary nodules were regressed under combined antifungal therapy and his disease is under control during his 14 months follow-up.

Learning Points/Discussion

Combined antifungal use is an important treatment option for management of severe Aspergillosis cases and surgical interventions increase the success of medical therapy.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0593

TUBERCULOSIS AMONG ADOLESCENTS IN A NON-ENDEMIC COUNTRY

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Background

Tuberculosis (TB) in adolescents differs from the disease in children since there is a higher probability of symptomatic presentation, culture positivity and radiographic findings common in adults. Our aim was to describe adolescent TB in a non-endemic area by presenting current epidemiological, clinical and microbiological characteristics of the disease.

Methods

We retrospectively reviewed the files of adolescents (12-18 yrs old) with active TB diagnosed between 2004 and 2014 at two TB clinics in Athens, both referral centers for the disease in central and southern Greece.

Results

A total of 107 cases were recorded (mean age 14.8 (SD 2.1) years old, 61 (57%) males), with 22 % being native Greek. Almost half of the study population was symptomatic, while there were significantly more symptomatic adolescents among immigrants ($p=0.02$). Pulmonary disease was the most common presentation (77.6%) and significantly more common in the native population compared to immigrants (93.8% vs 70.7%. $p=0.010$). Concerning extrapulmonary disease peripheral lymphadenopathy and TB pleurisy were common (37.5% and 41.6% respectively). Almost half of the pulmonary TB cases had parenchymal lesions in the initial X-ray. TST was performed due to symptomatic disease in 42 (39.3%) of the patients, and due to contact investigation and universal screening in 17 (15.9%) and 23 (21.5) % respectively. Bacteriological confirmation was achieved in 57% of samples taken and only one strain was resistant to INH. Concerning response to treatment 79 (73.8%) of the patients showed full recovery, while the rest were lost to follow up.

Conclusions

Tuberculosis in adolescents has features seen in both children and adults. Higher numbers of symptomatic cases and parenchymal lesions in chest x-ray as well as higher rates of bacteriological confirmation are findings resembling TB in the adult population.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0594

OSTEOARTICULAR INFECTIONS IN CHILDREN - A REVIEW OF 180 CASES FROM A 10-YEAR PERIOD

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Background

The recognition and management of osteoarticular infections (OAI) in children is challenging. The aim of the study was to evaluate management and outcome of OAI in children at our centre in the last 10 years.

Methods

A retrospective review of all OAI cases in children treated at our centre from 2006 to 2015 was performed. Treatment duration and outcome in 2006-2011 vs. 2012-2015 was compared.

Results

In a 10-year period there were 180 cases of OAI with a 2:1 male preponderance. There were 93 osteomyelitis (OM) cases, 56 septic arthritis (SA) cases and 31 OM+SA cases. Among risk factors, 37% of children had a history of trauma or were participating in sport. There were 81 (45%) culture-positive OAI and the major causative agent was *Staphylococcus aureus* (51 cases), followed by *Streptococcus pyogenes* (9), *S. pneumoniae* (6), and gramnegatives (12 cases, respectively). All *S. aureus* isolates were methicillin-sensitive.

Surgery was required in 57% of culture-positive and in 20% of culture-negative OAIs. Three children with severe or relapsing course had Panton-Valentine leukocidin (PVL)-positive *S. aureus* infection. One girl sustained a fracture at the infection site after treatment completion. Other children recovered without sequelae.

When comparing treatment duration, treatment was shorter in 2012-2015 (median 28 days) than in 2006-2011 (34 days, $p < 0.01$), particularly due to shortening of parenteral treatment (7 days vs. 12 days, $p < 0.01$) with no difference in outcome. **Conclusions**

OAI in children often occur in children who engage in sport or have a history of recent trauma. The majority of infections are caused by *S. aureus*, which can be severe and/or complicated in PVL-positive cases. Antimicrobial treatment can be shortened and earlier switch to oral treatment seems to be safe.

04E. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0596

CUMULATIVE META-ANALYSIS OF HYPERTONIC SALINE INHALATIONS IN INFANTS BRONCHIOLITIS

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Background

Hypertonic (>3%) saline (HS) inhalations for infants bronchiolitis were actively studied during the past two decades. We used cumulative meta-analysis for evaluating the effectiveness of HS inhalations compared to normal (0.9%) saline (NS) inhalations or no inhalations in infant bronchiolitis.

Methods

We did the literature search in PubMed and Scopus, and with hand search. We included in the meta-analysis published randomised controlled trials (RCT), which compared HS inhalations to NS inhalations or no inhalations in <24-month-old infants with bronchiolitis. The outcomes were length of stay (LOS) in hospital in inpatients and admission rate in outpatients.

Results

The LOS data were available from 19 RCTs (2168 infants). The cumulative mean difference (MD) between HS and control groups was -0.463 days (95% CI -0.746 to -0.180), but the heterogeneity between the studies was substantial (I^2 72%). Reporting bias was not seen in the funnel plot or in Egger's test ($p=0.26$). In the subgroup analysis including the studies where the upper age limit for bronchiolitis was 12 months, cumulative MD was -0.465 days (-0.736 to -0.194) without heterogeneity (I^2 0%). The admission rate data were available from 8 RCTs (1132 infants). The cumulative risk ratio for hospitalisation was 0.723 (95% CI, 0.559 to 0.935), and the heterogeneity was moderate (I^2 42%).

Conclusions

This meta-analysis showed that HS inhalations offer limited clinical relevance, though the differences between HS and control groups were marginally significant. Since 2011, cMD has moved to closer to zero and since 2014, the average difference in the LOS, favouring HS inhalations, was constantly 0.5 days (12 hours).

Systematic Review Registration (Please input N/A if not registered)

N/A

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0597

INVESTIGATING IMMUNODEFICIENCY AFTER INVASIVE PNEUMOCOCCAL DISEASE IN CHILDREN

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Background

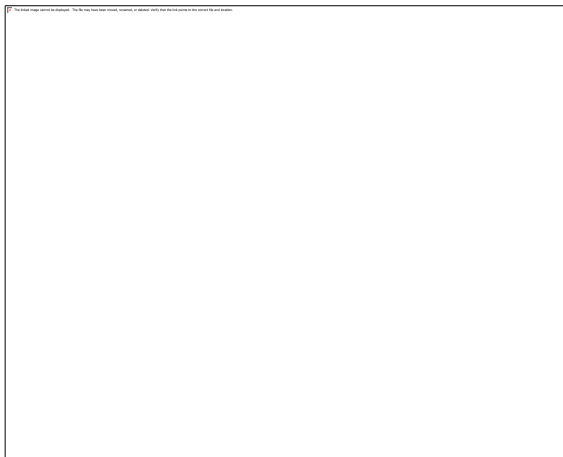
Immunodeficiency has previously been shown to be associated with up to 26% of children with invasive pneumococcal disease (IPD). From 2014-2016 we investigated all children presenting with IPD for an underlying immunodeficiency with a standard set of immunological investigations. The aim of this audit was to review that practice.

Methods

We performed a retrospective review of patients with confirmed IPD, and determined the completeness of immunological investigation, as well as diagnosis, age at diagnosis and pneumococcal serotype (vaccine or non-vaccine). Recommended investigations included: complement function (alternative and classical pathways), immunoglobulins (IgG, IgA, IgM), tests for asplenia (abdominal ultrasound and Howell-Jolly bodies), lymphocyte subsets, vaccine responses (HiB, tetanus and serotype specific pneumococcal antibodies) and CD62L shedding (if maximum CRP <100).

Results

23 children were included (median age: 12 months), see Table 1 for diagnoses. In 1 of 23 (4.3%) cases a PID was identified. This was a terminal complement component deficiency in a two year old who presented with spontaneous bacterial peritonitis. Amongst the whole cohort only 4 had all recommended investigations (mode: 5/7 investigations in 8 patients). Of the 20 patients undergoing at least 4/7 tests, all showed minor abnormalities, that were transient and normalised on repeat testing. Most transient abnormalities were associated with being tested during the acute phase of illness.



Conclusions

We identified one child with a significant immunodeficiency by investigating 23 children diagnosed with IPD since the introduction of the guideline. Immunological testing should not be undertaken during the acute illness to avoid repeating spurious abnormal results. Immunodeficiency screening of patients with IPD is valuable to identify significant diagnoses and education should be disseminated to all paediatric teams to ensure all children with IPD are appropriately investigated.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0600

THE IMPORTANCE OF COAGULASE-NEGATIVE STAPHYLOCOCCI IN LATE ONSET NEONATAL SEPSIS

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Background

Late onset neonatal sepsis, a healthcare-associated infection, has been described as a major cause of neonatal mortality. It is estimated that about 60% of child mortality occurs during the neonatal period in Brazil. Our aim is to describe late onset neonatal sepsis associated pathogens, thus allowing improvements in antibiotics stewardship in the neonatal intensive care unit (NICU) of a tertiary hospital in Sao Paulo, Brazil.

Methods

We conducted a retrospective descriptive study performed on a NICU from January 2011 to December 2015. Information was retrieved from patient charts.

Results

Clinically diagnosed late onset neonatal sepsis incidence was 9/1000 episodes per patient-day. The incidence of cases with a positive blood culture was 5.8/1000 patient-day. The average age and weight at diagnosis were 12 days and 1.726 grams, respectively. Extreme prematurity rate was 52.2%.

Gram-positive bacteria were the most frequent pathogens identified in this sample. Coagulase-negative Staphylococci (CNS) was the most prevalent pathogen (40%) and presented 82% of oxacilin resistance. Around 84% of the patients whose blood culture was positive for CNS presented a central venous catheter. The 30-days mortality rate of those with late-onset neonatal was 20% after diagnosis. CNS was the main pathogen associated with neonatal death (48%), presenting a lethality rate of 25%.

Conclusions

CNS is usually considered a contaminant pathogen in blood cultures due to its ubiquity and low virulence. However it is an important agent causing late-onset neonatal sepsis. Active surveillance in NICU is crucial for establishing the epidemiological situation, in order to properly act in the prevention of healthcare associated infections, as well as an adequate treatment of late onset neonatal sepsis.

22A. EDUCATION: OTHER

ESP17-0601

CURRENT SITUATION OF HERD IMMUNITY AGAINST MEASLES IN SLOVAKIA

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Background

In Slovakia measles vaccination started in 1969. Trivalent vaccine (MMR) applied in two doses schedule is currently used. Our objectives include analysis of the first and second doses of MMR vaccine coverage in Slovakia according to the years of birth and to point to the possible risk of measles and their further transmission in the population.

Methods

Retrospective-prospective review of measles incidence and vaccination coverage reported from 2001 to 2016 was done. Cohort studies evaluating measles vaccination coverage in 24 and 36-months-old children born between 1999-2014 (MCV1) and 10-years-old children by age-group from 1989 to 2004 (MCV2) were conducted. The epidemiological data were obtained from the Epidemiological Information System of the Slovak Republic and data on vaccination from the regular annual controls in Slovakia.

Results

The national vaccination coverage remained at the highest levels: MCV1:94.5-99.7% and MCV2: 97.5-99.6%. In 8 regions measles vaccination coverage ranged from 92.9% to 99.9% (MCV1) and 97.5-99.6% (MCV2). Four regions had less than 95% vaccination coverage (in the youngest cohorts 2012, 2013) with 92.8% coverage in the capital region of Bratislava. Vaccination coverage declined below 95% in 54 districts (from total 79 districts) MCV1 2012 (31 in check 2015, 23 in 2016); 60 MCV1 2013 (31 in 2015, 29 in 2016); 13 MCV2 (5 in 2003, 8 in 2004).

Conclusions

The decline in vaccination coverage against measles poses a significant risk, particularly in connection with the current epidemiological situation in neighbouring countries, with the influx of migrants and the lack of vaccination of minority - Romany population. Increasing anti-vaccination activities and risk population are the main risk factors affecting vaccination coverage.

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05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0606

ASSESSMENT FOR MISSED OPPORTUNITIES FOR PREVENTION OF CONGENITAL SYPHILIS

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Background

Brazil is currently living a syphilis and congenital syphilis (CS) epidemic. According to the most recent data by the Brazilian Ministry of Health, there were about 33,000 cases of syphilis in pregnant women in 2015, with a detection rate of 11.2 cases for every 1,000 newborns. There were about 19,000 cases of CS in 2015, with an incidence rate of 6.5 cases for every 1,000 newborns. Our aim is to evaluate the prevalence of syphilis in our hospital and missed opportunities for prevention of CS.

Methods

We conducted a prospective transversal study including women admitted to delivery in our hospital who presented a syphilis diagnosis during pregnancy or at admission, from May 2013 to July 2015. A missed opportunity for prevention of CS was considered when a patient was not investigated for syphilis or when the treatment was inadequate. Demographic, clinical and laboratorial data were collected. Patients signed an Informed Consent. The Research Ethics Committee approved the study.

Results

There were 5,188 deliveries in our hospital, of which 108 women presented a positive test for syphilis. 67.6% of the cases were diagnosed during prenatal care, of which 65.7% were inadequately treated. The main cause for that was a non-treatment by the partner (54.1%). The syphilis prevalence in pregnant women was 2%. 74.3% of the women who were diagnosed at admittance had not attended prenatal care. We assessed a 76.8% prevalence of missed opportunities for prevention of CS.

Conclusions

We observed a very high prevalence of syphilis in pregnant women in our hospital and missed opportunities for prevention of CS. This data shows a failure in our health system, in regard to diagnosis and adequate treatment of syphilis in pregnant women.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0607

INVASIVE PNEUMOCOCCAL DISEASE AT PATAN HOSPITAL, NEPAL: 2005–2016

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Background

Childhood invasive bacterial disease (IBD) surveillance has been undertaken at Patan Hospital, Nepal, since 2005. Routine pneumococcal conjugate vaccination (PCV10) was introduced in August 2015 at 6 weeks, 10 weeks and 9 months of age.

Methods

Children aged <14 years with suspected IBD (pneumonia, meningitis, sepsis, other) were enrolled. We analysed prospectively collected data on invasive pneumococcal disease (IPD; *Streptococcus pneumoniae* cultured from blood, CSF or pleural fluid) from 2005–2016.

Results

Of 13791 children enrolled since 2005, 12726 (92.3%) had cultures from blood, CSF or pleural fluid available for review. Of these children, 124 (1.0%) had pneumococci isolated, 19 from CSF. Of the 124 children with IPD, none were aged <1 month, 9.7% were from infants aged 1–5 months, 10.5% from infants aged 6–11 months, 9.7% from children 12–23 months of age, 30.6% from children 24–59 months of age, and 39.5% from children 5–14 years of age. In total 70.2% of pneumococcal isolates would have been covered by PCV10. Serotype 1 was the most prevalent serotype, isolated in 55/124 (44.4%) of cases of IPD, across all years, and found predominantly in children >2 years of age (49/83, 59.0%). By contrast, no serotype predominated in isolates from CSF, although the majority (78.9%) were from children <2 years of age.

Conclusions

The high proportion of PCV10 covered IPD in children >2 years of age supports the use of a PCV booster at 9 months of age to prolong antibody responses post-infancy. Additionally, the direct impact of PCV may not be detected by IPD surveillance until the current cohort of vaccinated children enter the age groups where the prevalence of IPD is greatest.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0608

CLINICAL AND LABORATORIAL EVALUATION OF PATIENTS WITH CONGENITAL SYPHILIS

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Background

The diagnosis of congenital syphilis (CS) is based on epidemiological, clinical and laboratorial data, especially treponemal (TT) and non-treponemal (NTT) tests. A positive TT after 18 months confirms CS diagnosis. However, about 20% of infected children may present seroreversion. Our aims are to assess CS transmission rate and to evaluate clinical and laboratorial data of patients with potential CS at birth.

Methods

We conducted a transversal prospective study, including women who had a syphilis diagnosis during pregnancy or at admission to the maternity and their children, between May 2013 and July 2015, with clinical and laboratorial follow-up in our PID clinic. The Brazilian Ministry of Health criteria were used to define the diagnosis of CS. Parents signed an Informed Consent. The Research Ethics Committee approved the study.

Results

During the study period, we evaluated 108 patients whose mothers presented a syphilis diagnosis during pregnancy or at admission to the maternity. The syphilis prevalence in pregnant women was 2%. 67,6% of the cases were diagnosed during pregnancy, however 65,7% were inadequately treated; 32,4% were diagnosed at admission. According to the Ministry of Health criteria, 87 patients presented with CS, a transmission rate of 80.5%. Mean gestational age at birth was 37.7 weeks, 29,9% were under 37 weeks. Mean weight at birth was 2801 grams. No newborn presented symptoms or bone abnormalities. NTT was positive in 70.4%. CSF analysis showed that 18.3% had the diagnosis of neurosyphilis. Serological follow-up was conducted in 28 patients and all of them presented a seroreversion.

Conclusions

This study shows a high prevalence of syphilis in pregnant women as well as a high transmission rate of CS. However, most newborns were born asymptomatic and presented good clinical and laboratorial outcomes.

20B. EDUCATION: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-0609

A SURVEY ABOUT PARENTAL PERCEPTION AND PATTERN OF ACTION ON CHILDREN'S INFLUENZA ILLNESS AND VACCINATION

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Background

Seasonal influenza is a significant cause of morbidity and mortality in children annually and the prevalence rate is the highest in children under 6 years old. However, there is very limited data on parental perception and their action against influenza illness in children. The purpose of this study was to characterize parental perception and pattern of action on prevention and treatment of influenza disease.

Methods

We conducted face to face survey in several big market places in the cities. We randomly interviewed 640 parents whose children aged 6-59 months on Sep to Oct 2015. The questionnaire was consisted with 25 questions about parental perception and pattern of action on prevention and treatment of influenza disease. The SPSS 17.0 was used for the chi square analysis.

Results

The total of 640 parents completed interview. Respondents tended to visit a hospital more often during influenza season when they had fewer or younger children. When child had fever at night, 38.8% of parents chose to visit emergency room (ER) in secondary or tertiary hospital. Respondents mainly got information on influenza disease from mass media. The most motivating factor of flu-shot was promotion from the government or the press. The main reasons of negativity on flu-shot were 'concern for side-effects of vaccination' and 'mistrust in effectiveness of vaccine'.

Conclusions

This study showed factors that influenced the parent's perception and action on influenza. The role of government and broadcasting for public good is one of the most important factors to provide proper information on care of influenza illness and promote influenza vaccination in Korean children.

02B. EDUCATION: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-0611

BACTERIOLOGIC PROFILE AND DRUG SENSITIVITY PATTERN OF URINARY TRACT INFECTION IN CHILDREN WITH GLOMERULAR DISEASE IN A TERTIARY CARE HOSPITAL, DHAKA, BANGLADESH

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Background

Development of regional bacteriologic profile and drug sensitivity pattern of urinary tract infection (UTI) is very important to treat early and appropriately. Our aim was to evaluate the bacteriological profile and antibiotic sensitivity patterns in children with UTI in different glomerular diseases.

Methods

This prospective study was carried out in the Department of Pediatric Nephrology, Bangabandhu Sheikh Mujib Medical University, Dhaka from January 2015 to December 2016. All the admitted child of 2-16 year age suffering from glomerular diseases were enrolled. Urine specimens were obtained by clean-catch method following careful preparation of the perineal area. Specimens were inoculated immediately in the Mackonky's media.

Results

Among 425 children only 47 (11%) had significant growth. *Escherichia coli* (51%) was the most common aetiological agent, followed by *Klebsiella* spp. (17%), *Pseudomonas* (15%), *Enterococcus fecalis* (13%), and *Proteus* (4%). The most sensitive drug was meropenem(89%), followed by nitrofurantoin(83%) and gentamycin(67%).

Conclusions

The low growth of micro-organisms in this study may be due to some patients were already getting antibiotics while collecting the specimen. The isolated organisms showed resistance to a large number of oral and parenteral antibiotics. Gentamycin may be the first option of empiric therapy while awaiting for culture reports. Meropenem can be reserved.

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-0614

ALIMENTARY OUTBREAKS OF TICK-BORNE ENCEPHALITIS IN SLOVAK REPUBLIC

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Background

Slovakia is in Europe known for tick-borne encephalitis (TBE) outbreaks. Last years increasing trend in alimentary TBE outbreaks is observed. One of the reasons is unpasteurised milk sheep and goat products are traditional delicacies. There are also recommendations to drink raw milk to boost immune system in children and adults. The goal of the study was to analyse occurrence of TBE alimentary outbreaks in Slovakia during last 5 years. We analyzed immunisation rate against TBE in children and adults.

Methods

We analysed TBE cases occurring in Slovakia during last 20 years. In more details we analysed last 5 years for occurrence of TBE alimentary outbreaks. The source of TBE case data export was Epidemiological Information system. Data on vaccination rate were used from the Annual Vaccination Control Report.

Results

Last 20 years 15% of children and young adults (1-18years old) were reported from 1731 TBE cases in Slovakia. Last 5 years 14 TBE alimentary outbreaks (2-44 cases per outbreak) were registered (148 cases), from which children and young adults were affected by 12%. There is a low level of vaccination against TBE in Slovakia – 1% of whole population and less than 5% of children younger than 15 years.

Conclusions

Most of Slovakia represents TBE endemic areas. There is a high risk of TBE infection by tick bite, but also by alimentary route. The number of TBE infected children can be higher, since disease in younger age groups have generally milder course with unspecific symptoms (Arnez a Avsic-Zupanc, 2009), however with possible long-term consequences (Sundin et al., 2012). p>

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-0620

EMPIRICAL ANTIBIOTIC PRESCRIBING PRACTICES IN ACUTE GENERAL PAEDIATRICS, A PROSPECTIVE AUDIT 2016/17

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Background

In March 2016 the Great North Children's Hospital introduced paediatric empirical antibiotic prescribing guidelines to improve antimicrobial stewardship. These guidelines were made available on the trust intranet and as an app. We audited antimicrobial prescribing patterns before and after implementation of the guidelines to assess impact.

Methods

We conducted a prospective audit over January 2016 and January 2017. Any general paediatric patient <16 years old, admitted and prescribed antibiotics was included. Exclusion criteria included patients with complex chronic conditions, previously identified infection and antibiotics for surgical prophylaxis. Demographic, diagnostic and prescribing data was collected.

Results

In January 2016 33% of patients had antibiotics prescribed that did not adhere to guidelines. We identified inconsistent prescribing for conjunctivitis where no guideline existed. 5/12 sepsis patients received two antibiotics unnecessarily as did 2/15 patients with respiratory infections.

In January 2017 20% received non adherent antibiotic prescriptions. We identified a high number of antibiotic prescriptions for upper respiratory tract infections which had not been included in the guidelines. This highlighted over-prescribing for tonsillitis possibly following a streptococcal out break and one streptococcal sepsis death in the previous year.

Conclusions

Antimicrobial stewardship has been identified as a global priority at the same time as management of sepsis requires early antibiotic treatment. With these competing pressures we have identified an improvement in our prescribing practice and also pockets of isolated poor practice where focussed initiatives can quickly make important changes. This audit highlights the importance of continuous improvement and monitoring of generic empirical prescribing practices and potential cost savings.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0621

VIRAL RESPIRATORY INFECTION AMONG IMMUNOSUPPRESSED CHILDREN - EPIDEMIOLOGY AND CHARACTERISTICS

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Background

Acute respiratory viruses may be associated with high morbidity and mortality among immunosuppressed children. **Aims:** To characterize clinical course and epidemiology of respiratory infections suspected as viral among children treated in a single Hemato-oncology Department.

Methods

Prospective, observational study during 1.10.2014–1.10.2015. All children with respiratory infection in the Pediatric Hemato-oncology department in Ruth Children Hospital, Haifa, who were tested for respiratory viruses, were included. Collected data included signs and symptoms, pathogens, background disease, epidemiological characteristics, complications and duration of illness. Viruses were detected by molecular methods.

Results

159 events were observed in 102 children (55 males). Age range: 3 months -19 years. Single event was observed in 62%. In 79 events (50%) a respiratory virus was detected. The proportion of children with ≥ 1 event was higher among those who underwent allogeneic bone marrow transplantation compared to those with other diseases (58% vs. 32%, $p=0.018$). Cough and rhinorrhea were associated with viral detection ($p<0.001$). Patients with negative virus test had a higher proportion of hospitalization due to the acute illness than those with positive viral tests ($p=0.007$). Patients treated with biological agents, methotrexate, cyclosporine and tacrolimus had higher proportion of virus detection ($p=0.006$). There was no prolonged hospitalization, secondary infections or significant delay in chemotherapy for any of the groups. No patient was admitted to the intensive care unit and there was no mortality.

Conclusions

In children after allogeneic transplantation or with high degree of immunosuppression with respiratory illness, virus was detected more frequently. Patients with viral etiology were less hospitalized. Other than that, there was no difference in the course of the disease between those with without viral detection were found. No severe course of illness was observed.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0622

PEDIATRIC TUBERCULOSIS IN A TERTIARY HOSPITAL IN JEONBUK PROVINCE, KOREA, 2014-2016

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Background

Although the socioeconomic status is developed, tuberculosis is still a major morbidity in Korea. We evaluated the profiles of childhood tuberculosis diseases in the recent 3 years in Jeonbuk Province which may represent the state.

Methods

We reviewed all confirmed pediatric tuberculosis cases in Chonbuk National University Children's Hospital, from January 2014 through December 2016. The hospital is the only tertiary medical facility dealing with pediatric tuberculosis cases in Jeonbuk Province, as a participant institute in Private-Public Mix Project, a national program to manage tuberculosis in Korean. The diagnosis of each case was made following the Korean Guidelines for Tuberculosis.

Results

There were no male to female difference. Among a total of 27 confirmed cases, 24 were diagnosed with pulmonary tuberculosis, 2 were with lymph node tuberculosis, and 1 with tuberculosis spondylitis. Two of pulmonary cases were typical primary tuberculosis in young children (10 months and 34 months of age, respectively) and they were close contacts of index cases (a father and a mother in different families). The rest of the pulmonary cases were in adolescents. Sixteen cases showed upper lobe lesions (5 in right, 8 in left, 3 in both) and 3 cases showed right middle and/or lower lobe lesions with effusion. Three previously healthy adolescent females showed miliary tuberculosis, but presented initially with fever of unknown origin. Among the lymph node tuberculosis cases, one was in left inguinal and the other was in right cervical area. All cases completed standard treatment regimen following the guideline and had neither complications nor recurrence so far.

Conclusions

Recently, childhood tuberculosis is more prevalent in adolescents in Korea. Pediatricians should, however, be familiar with various presentation of tuberculosis and perform thorough investigations.

04A. SCIENCE: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-0623

A CELL-BASED SYSTEM FOR THE POSSIBLE REPLACEMENT OF THE IN-VIVO SAFETY TEST FOR ACCELLULAR PERTUSSIS VACCINES

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Background

The histamine sensitization test (HIST) is a safety test for acellular pertussis vaccines (ACV) which monitors residual (or reversion to) active pertussis toxin (PTx). HIST is a lethal test, requires large numbers of animals and is difficult to standardise. Therefore, there is an urgent need to develop an alternative testing method.

Methods

A cell-based permeability assay was developed whereby a monolayer of Human Umbilical Vein Endothelial Cells (HUVEC) was cultured on transwell inserts. Acellular pertussis vaccine was spiked with active PTx and the ability of the system to detect it was assessed. Permeability was quantified by overlaying 10kDa FITC-dextran on to the HUVECs and measuring the concentration of FITC-dextran that penetrated the monolayer to the lower chamber. Advanced microscopical techniques, such as: Fluorescence Recovery After Photobleaching (FRAP) and Fluorescence Lifetime Imaging (FLIM), were then used to establish the mechanisms behind the changes permeability.

Results

The permeability assay was able to detect active PTx in vaccine preparations (Figure). Immunostaining demonstrated that the cells were unable to maintain intercellular tight junctional complexes or gap junctional complexes. Gap junctional functionality was quantified using FRAP and showed that PTx perturbs the HUVECs ability to maintain gap junctional connections. FLIM showed that there was a significant difference in the ratio of free and protein bound NADH between untreated HUVECs and their PTx intoxicated counterparts.

Conclusions

In this study a cell-based permeability assay was successfully used to detect PTx activity in an ACV preparation. Furthermore, junctional dysfunction between cells, driven by active PTx, was determined to be the underlying cause of the increased permeability. This assay may prove to be a suitable alternative to HIST and also provides valuable information about the toxic effects of PTx on endothelial cells.

Clinical Trial Registration (Please input N/A if not registered)

08C. SCIENCE: HIV/AIDS

ESP17-0625

HIV-1 SUBTYPE B MOLECULAR EVOLUTION ACROSS ANTIRETROVIRAL REGIMENS IN PEDIATRIC POPULATION

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Background

Higher HIV-1 evolutionary rates are commonly associated with faster disease progression and reduced viability of antiretroviral therapies (ART). Knowing how HIV evolves under different ART regimens could help solving the eligibility criteria for the first line regimen in pediatric patients.

Methods

Forty-six pediatric patients with available HIV-1 subtype-B retrotranscriptase (RT) sequences were enrolled in this study, being classified in two groups according to their first line regimen: Group 1 patients with regimes targeting the RT and the protease (PR) genomic regions (2NRTI + 1PI, n=18), and Group 2 patients with regimens targeting only RT region (2NRTI+1NNRTI, n=28). For both groups, phylogenetic trees for HIV-1 RT sequences either considering the complete genomic sequence and only positions associated with drug resistance (DRM) to NRTI were constructed. Genetic diversity (as a proxy of the rate of virus evolution) and selection pressures of the virus populations in both groups were estimated and compared.

Results

Patients included in this study presented similar gender, age, transmission route and immunologic and virologic status at sample collection. When the complete sequence of the RT was considered, Group 1 population presented higher genetic diversity and weaker purifying selection pressures than the virus population of Group 2 patients. The same trends were observed when only DRMs to NRTI, the only common drugs to both regimens, were considered.

Conclusions

When the ART regimen targets a single HIV-1 genomic region (RT) as in Group 2 patients, it exerts a stronger purifying selection pressure than the regimen targeting multiple regions (RT/PR) as in Group 1 patients. Thus, the higher the number of drugs targeting the same genomic region, the slower the evolution in this region, and therefore the lower the risk of emergence of DRMs.

Clinical Trial Registration (Please input N/A if not registered)

N/A

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-0626

MAP OF RESISTANCES OF URINOCULTURES IN OUR REGION

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Background

Urinary tract infections are one of the most common infections in children, mainly caused by *E.coli*. This study was conducted to assess the uropathogenic microorganisms in our region, their current antibiotic resistance rate in order to update our current protocols.

Methods

This study retrospectively reviewed the uropathogenic microorganisms (collected by sterile form) that causes urinary tract infections in children from 0 to 15 years old diagnosed from 1st January to 31th December 2015 in our public network region hospitals. Urinary tract infection was defined as a positive culture with a single species of bacteria and the cut-off points of the antibiotic sensitivities were performed according to EUCAST.

Results

We include 544 positive urine cultures, aged between 0 and 15 years, with predominance of female (67%). The most prevalent bacterias were *E.coli* (65%), *E.faecalis* (9.6%), *P.mirabilis* (6.6%) and *K.pneumoniae* (6.6%). *E.coli*, it has a sensitivity of 39% to ampicillin, 75% to amoxicillin-clavulanic, 92% to cefuroxime, 94% to cefotaxime, 94% to gentamicin, 99.7% to fosfomycin and finally 75% to cotrimoxazole. It is noteworthy that we have found up to 10% of *E.coli* BLEA in the regional hospital and up to 6% in the provincial hospital.



Conclusions

In conclusion, *E.coli* is the most common uropathogenic microorganism, but in a lower proportion than expected. We want to emphasize that our series presents a high infection rate of *E.faecalis*, *P.mirabilis* and *K.pneumoniae*. Following our protocols, we use cefixime as oral therapy and gentamicin as an intravenous therapy. We have found *E.coli*'s fosfomycin high sensitivity, increasing its prescription indications could be raised in the future. Continuous monitoring of the uropathogen resistance is necessary to know the sensibilities of each center and to optimize the use of antimicrobials.

22A. SCIENCE: OTHER

ESP17-0627

ROLE OF PARENTAL OBSERVATIONS IN EARLY DIAGNOSIS OF SERIOUS BACTERIAL INFECTIONS IN CHILDREN WITH FEVER ADMITTED TO THE HOSPITAL: A SEMI-QUALITATIVE PILOT STUDY

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Background

Although serious bacterial infections (SBIs) constitute only 5-15% of the cases of fever in children, early recognition and management is crucial to the outcome, therefore effective screening tools must be devised. In this pilot study we tried to assess the role of parental observations and concern in diagnosis of SBI.

Methods

The parents of children who had presented to the Emergency Department (ED) of Children's Clinical University Hospital with fever and were admitted to the hospital were recruited on voluntary basis in 2016. The data were collected via multiple choice survey and qualitative semi-structured interviews, conducted 24-72 hours post admission. The patients were divided into SBI and Non-SBI groups based on clinical diagnosis. The definition for SBI for this study included bacterial meningitis, bacteraemia, pneumonia, and urinary tract infection (UTI). The statistical significance was determined by Fisher's exact test.

Results

22 patients were recruited in this study, 12 of whom were diagnosed with SBI (1 bacterial meningitis, 7 pneumonias, 4 UTIs), the 10 Non-SBI cases consisting of viral respiratory tract infections, including influenza. The majority of parents in both groups (10 in SBI and 6 in non-SBI) stated that the course of the illness was atypical compared to previous illnesses of the child, as well as more severe (8 in SBI and 6 in non-SBI). Only drowsiness was significantly more prevalent in the SBI group. The diagnostic odds ratios (DOR) of each of the main

observations are listed in the Table.

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Conclusions

Apart from reported drowsiness, we did not assess a significant role of parental observations in diagnosing SBI. To reflect the general population more effectively, the sample size must be increased and must include children seen in outpatient settings.

Clinical Trial Registration (Please input N/A if not registered)

NA

03A. SCIENCE: GROUP A STREPTOCOCCUS

ESP17-0629

EVOLUTION OF INVASIVE PNEUMOCOCCAL DISEASE INCIDENCE RATES BY CLINICAL PRESENTATION IN MADRID, SPAIN: HERACLES STUDY (2007-16)

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Background

The 13-valent pneumococcal conjugate vaccine (PCV13) replaced the 7-valent (PCV7) in the Madrid regional immunization program (RIP) in May 2010 but was excluded in May 2012 (except boosters for previous primary vaccinations) with the consequent drop in the uptake to 82% in 2013 and 67% in 2014. PCV13 was finally re-introduced into the RIP in March 2015 increasing the uptake to 73% and 95% in 2016. This study analyzed the evolution of different clinical presentation of pediatric invasive pneumococcal disease (IPD).

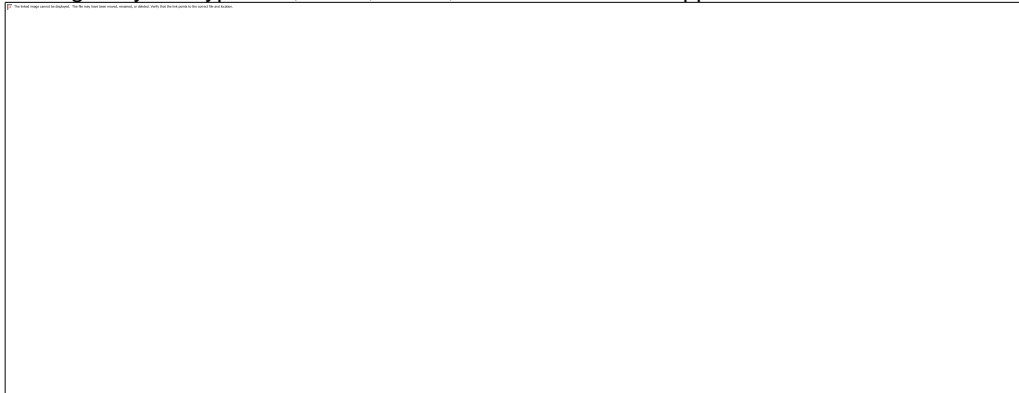
Methods

A prospective, laboratory-confirmed (culture and/or PCR) surveillance of all hospitalized children younger than 15 years with IPD in Madrid was performed. All isolates (for serotyping) and culture-negative pleural/cerebrospinal fluids (for PCR detection) were sent to central laboratory.

Results

Table 1 shows per-period, number of cases by clinical presentation. A 70% significant reduction of IPD (2015-16 vs 2009-10 IRR (95% IC): 0.30, (0.22-0.41)) was observed.

For meningitis, serotype 19A was the most common; accounting for 18.5% (21/113) of all isolates, while for the remaining serotypes there was a heterogeneous distribution. No increase was seen in non-PCV13 serotypes. The rate of cases of meningitis due to PCV13-only serotypes (1, 3, 5, 6A, 7F and 19A) was higher in the PCV7 period, 33/63 (52.3%), than in the PCV13 period, 8/50 (16.0%), $p=0.0001$. There was a near-elimination of meningitis by serotype 19A, which, in turn, led to an almost-disappearance of isolates resistant to cefotaxime.



Conclusions

PCV13 significantly decreased the number of cases of all clinical presentations of IPD and almost eliminated the cases of pneumococcal meningitis caused by isolates resistant to cefotaxime.

Clinical Trial Registration (Please input N/A if not registered)

N/A

20B. EDUCATION: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-0631

INCIDENCE AND NATURE OF SERIOUS ADVERSE EVENTS IN PAEDIATRIC VACCINE CLINICAL TRIALS; NINE YEARS OF EXPERIENCE

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Background

Serious Adverse Event (SAE) reporting is an important aspect of safety monitoring in vaccine clinical trials. However events reported as SAEs

occur frequently in healthy paediatric populations, primarily due to hospitalisation for intercurrent illnesses. We retrospectively viewed clinical

trial data to define background rates of SAEs.

Methods

SAE data was collected from 12 vaccine studies enrolling children at 2, 6, or 12 months of age in the Thames Valley, UK.

Results

2634 healthy children (1258 girls and 1376 boys) were enrolled and monitored for 42093 child months (not accounting for early withdrawals).

237 SAEs were reported at a rate of 0.089 per child enrolled, or 0.005 per child-month (pcm). Boys were 1.83 times more likely to experience

SAEs than girls (0.11/boy vs 0.06/girl, $p = 0.008$). SAEs were reported more frequently in 2-7 month-olds (0.0081 pcm) than 8 - 13 month-olds

(0.0047 pcm) and over- 14month-olds (0.0054 pcm). SAE rates were similar for children enrolled into 'routine vaccine' and 'investigational

vaccine' study arms (0.0074 vs 0.0061 pcm respectively).

In 8 studies enrolling at 2 months of age ($n=2093$), 207SAEs were reported at a rate of 0.0063 pcm(CI 0.0055-0.0073).

For every one hundred 2-month-olds observed for 12 months one can expect 7.59 SAEs (CI 6.62-8.67).

SAE aetiology was most commonly classified as 'Infections' (34%) or 'Respiratory' (30%).

15 SAEs out of 237 (6.33%) were considered possibly related to preceding vaccination, of which 10 (4.2% of all SAEs) were Suspected Unexpected Serious Adverse Reactions (SUSARS), at rate of 0.0038 per child enrolled.

Conclusions

The vast majority of SAEs experienced in vaccine clinical trials are not considered related to study vaccines. These results are a step towards

providing expected background rates of SAEs as a reference for future paediatric vaccine trials.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0633

PSEUDOTUMOR CEREBRI VS VZV MENINGITIS, WHAT WOULD YOU SAY?

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Title of Case(s)

Pseudotumor cerebri vs VZV meningitis, what would you say?

Background

Pseudotumor cerebri (PTC) is characterized by well recognized clinical features, with no other cause of intracranial hypertension evident on neuroimaging or other evaluation, and normal cerebrospinal fluid (CSF), except for elevated pressure.

Case Presentation Summary

An 11-year-old girl was hospitalized because of suspected PTC: bilateral papilledema, right abducens nerve palsy and headache. She was admitted 5 days ago because of headache, vomiting, and incipient unilateral papilledema; she was discharged after 24 hours surveillance with normal cranial CT scan and no other symptoms, no nuchal rigidity, nor signs of encephalopathy.

Ophthalmologic control 3 days later revealed diplopia and bilateral papilledema so she was readmitted to further studies: blood and urine test were unremarkable, lumbar puncture showed CSF with increased pressure (32 cm H₂O), erythrocytes 80/mm³, leucocytes 250/mm³ (lymphocytes 85%), and normal glucose and proteins. Magnetic Resonance Angiography of the brain was normal. A positive result by PCR to Varicella-Zoster Virus (VZV) was obtained from CSF; no bacterial/fungal growth at culture. The patient had VZV infection at the age of 18 months.

She received acyclovir iv for 10 days because of VZV positive, and acetazolamide and dexamethasone was required to decrease intracranial pressure and improve papilledema. She recovered ad integrum.

Learning Points/Discussion

This patient could be not considered as PTC, because the CSF was not completely normal. Nevertheless, there were no signs or symptoms of VZV infection, nor meningitis, at any moment, and image studies were normal.

We find three keypoints to discuss. First, what would be the right diagnosis: Varicella meningitis mimicking PTC (without signs of meningitis) or PTC triggered by VZV? Second one, was necessary the treatment with acyclovir? And finally, should the definition of PTC be revised?

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0634

FAIRYTALE SYNDROMES BY INFECTIOUS FACTORS

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Background and Objective

There are neurological and psychiatric syndromes, named after fairytales that are possibly related with infectious factors.

Methods

Our effort was to find, by systematic study of the literature, fairytale syndromes caused by infectious factors.

Learning Points Discussion

The syndrome of "Sleeping Beauty" or Kleine Levin Syndrome (KLS) is a rare disorder that appears with a frequency of 1/1,000,000. In 75% of the cases it manifests as a result of a viral infection. The viruses that are probably involved are Epstein Barr Virus, Varricella-Herpes zoster Virus (HSV3), subtypes of Influenza Virus type A and adenoviruses. The syndrome is related to Charles Perraults' famous same-titled fairytale, which was published in 1697, based on the older version of the fairytale by Giambatista Basile.

Alice in Wonderland Syndrome (AIWS) or Todd's syndrome (named after psychiatrist John Todd) or liliputian hallucinations is a neurological condition that affects the human perception. It is about a very rare syndrome for which only 169 cases have been formally recorded since 1955. In 50% of cases, the cause of the syndrome is unknown. In the rest of the cases it is usually related to infections that provoke encephalopathy. The most frequent reason is encephalitis caused by Epstein Barr Virus. Other reasons of the syndrome are the H1N1, Coxsackie B, Varricella viruses, as well as Borrelia. Its name is inspired by the homonymous fairytale of Lewis Carrol, which was published in 1865.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0637

CLINICAL AND LABORATORY CHARACTERISTICS OF HOSPITALIZED POLYMERASE CHAIN REACTION CONFIRMED PERTUSSIS CASES AMONG PEDIATRIC PATIENTS. A CASE SERIES

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Title of Case(s)

CLINICAL AND LABORATORY CHARACTERISTICS OF HOSPITALIZED POLYMERASE CHAIN REACTION CONFIRMED PERTUSSIS CASES AMONG PEDIATRIC PATIENTS. A case series

Background

Pertussis is most serious in young unprotected infants, necessitating pediatric intensive care especially among infants less than 3 months, too young to receive complete DTaP immunization. Pertussis in infants is often unrecognized, clinical suspicion has low sensitivity; PCR would be beneficial. We report clinical and laboratory characteristics of patients with PCR-proven pertussis.

Case Presentation Summary

During December 2015-November 2016 five cases with paroxysmal cough and PCR proven *Bordetella pertussis* were hospitalized for intensive care. Case-1, male 2 months, cough lasted for 3 weeks, along with fever, dyspnea, pneumonia, respiratory failure, hemoglobine 8.8 g/dL, leukocyte 82,900/cmm, lymphocyte 42.750/cmm, platelet 70,500/cmm. Treatment were erythromycin, ampicilline, gentamycine and discharged after 31 days. Case-2, female 1.5 month, 2-weeks cough, cyanosis, no fever, no dyspnea, leukocyte 18,900/cmm, lymphocyte 10,900/cmm, platelet 64,600/cmm. She discharged after 16 days of Azithromycin. Case-3, male 2 months, cough for 2 weeks, fever, seizures, decrease in consciousness, pneumonia, encephalopathy, and hemoglobine 8.9 g/dL, leukocyte 85,300/cmm, lymphocyte 17,650/cmm, platelet 94,100/cmm, CRP 71.27 mg/L. Azithromycin, ampicilline, gentamycine were prescribed, discharged on request after 5 days, expired one day later. Case-4, male 1 month and 12 days, cough for 2 weeks, pneumonia, episodes of apnea and cyanosis, associated with leukocyte 32,360/cmm, lymphocyte 23,110/cmm, platelet 82,600/cmm. Treatment were azithromycin, ampicilline, gentamycine. Discharged after 11 days. Case-5, female 1 year 4 months, cough for 3 weeks, post-tussive vomiting, leukocyte 22,890/cmm, lymphocyte 11,790/cmm, platelet 51,300/cmm. Azithromycin was given. Discharged after 5 days

Learning Points/Discussion

Young infants hospitalized with pertussis came with 2-3 week paroxysmal cough, accompanied by leukocytosis, lymphocytosis and thrombocytosis. Etreremely high count seen in the fatal complicated case along with high CRP.

20B. SCIENCE: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-0638

SAFETY AND IMMUNOGENICITY OF A QUADRIVALENT MENINGOCOCCAL CONJUGATE VACCINE (MENACYW-TT) ADMINISTERED IN HEALTHY MENINGOCOCCAL VACCINE NAIVE TODDLERS (12-23 MONTHS)

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³Sanofi Pasteur, Global Clinical Sciences, Swiftwater, USA

Background

MenACYW-TT, an investigational quadrivalent meningococcal (serogroups A, C, Y, W) conjugate vaccine is intended for use in individuals 6 weeks of age and older. This study evaluated safety and immunogenicity of a single dose in toddlers using a licensed quadrivalent meningococcal conjugate vaccine (MCV4-TT) as control.

Methods

A Phase II, randomized, open-label study in 188 meningococcal vaccine-naïve toddlers was conducted in Finland. Participants received one dose of either MenACYW-TT vaccine or MCV4-TT control vaccine. Serum bactericidal assays with human (hSBA) and baby rabbit (rSBA) complement were used to measure antibodies against representative meningococcal serogroup strains at baseline and 30 days after the dose. Safety data were collected up to 30 days after the dose. All analyses were descriptive.

Results

Percentage of subjects with hSBA vaccine seroresponse with MenACYW-TT vaccine was comparable to that with MCV4 for serogroups A, Y and W [range 96.7% to 98.9% (MenACYW-TT) and 91.9% to 98.8% (MCV4-TT)]. Percentage of subjects with seroresponse for serogroup C was higher with MenACYW-TT (100.0%) than with MCV4-TT (86.0%). The trend for serogroup C was similar using rSBA. MenACYW-TT elicited comparable immune responses to serogroups A, Y and W and higher for serogroup C, when evaluated using hSBA geometric means and percentage of subjects having post-vaccination hSBA titers $\geq 1:8$. Reactogenicity profile was comparable between both vaccines. Most unsolicited adverse events were of Grade 1 or Grade 2 intensity. Two serious adverse events reported were considered as unrelated.

Conclusions

The investigational MenACYW-TT vaccine was well tolerated and immunogenic. Single dose of the MenACYW-TT vaccine demonstrated excellent potential to be an alternative vaccine option for toddlers, receiving meningococcal vaccination for the first time.

Clinical Trial Registration (Please input N/A if not registered)

EudraCT# 2014-004367-20 (Funded by Sanofi Pasteur)

22A. EDUCATION: OTHER

ESP17-0641

MAKING STRONG, EFFECTIVE RECOMMENDATIONS FOR VACCINATION: USING THE ANNOUNCEMENT OR PRESUMPTIVE STYLE COMBINED WITH THE CASE APPROACH FOR VACCINE-HESITANT PARENTS AND PATIENTS

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Background and Objective

Vaccine hesitancy has resulted in significant decreases in vaccination uptake. Studies both with parents with regards to routine childhood vaccination as well as with the adolescent human papillomavirus vaccination show that clinician recommendations do affect vaccination uptake while directed patient and public education efforts fail to improve vaccination rates. The purpose of this literature review is to address just how clinicians should express their vaccine recommendations to maximize their effect as well as how clinicians should address vaccine hesitancy in the clinical setting.

Methods

Observational studies as well as clinical trials illustrate what works and what does not work in the clinical setting to improve vaccine rates. Systematic reviews of these interventions that successfully improve vaccination rates as well as interventions that have failed to improve vaccination rates indicate that the announcement or presumptive approach to expressing a clinical vaccine recommendation works better than a conversational approach better suited to shared decision making. Similarly efforts to educate or inform the vaccine-hesitant parent or patient fail. Building on the date, the presenter will present an efficient and feasible method of managing in the clinical setting vaccine hesitancy. This method builds on Aristotelian teaching regarding rhetoric or persuasion. It is called the C.A.S.E. approach and involves four steps: Corroborate (pathos), About Me (ethos), Science (logos), and Explain/Advise (telos). The presenter, a practicing clinician and population health scientist, will present working examples.

Learning Points Discussion

Upon completion of this presentation, participants will be able to 1) describe the science supporting the announcement or presumptive expression of a strong clinical recommendation for a vaccination, 2) summarize the data against relying on patient or community education to overcome vaccine hesitancy, and 3) relate the C.A.S.E. approach to vaccine hesitancy.

17A. EDUCATION: REFUGEE CHILDREN

ESP17-0642

HIGH RATE OF HEPATITIS B VACCINATION AND ABSENCE OF CHRONIC HEPATITIS B IN A COHORT OF MIGRANT CHILDREN

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Background

Worldwide coverage of hepatitis B (HB) vaccination is increasing. We expect a high rate of vaccine protection and a low rate of chronic hepatitis B in migrant children. Thus, we give a single dose of HB vaccine and check seroresponse subsequently. Our goal is to identify determinants of vaccine protection.

Methods

We enrolled prospectively new arriving migrant children followed in the Lausanne University Hospital. Inclusion criteria included age between 1 and 18 years and unknown immunization status. Patients received a dose of HB vaccine and after 4 to 6 weeks anti-HBs serology was performed. An anti-HBs result ≥ 100 IU/L was considered consistent with a booster type antibody response. In patients with anti-HBs antibodies less than 10 IU/L, HBs antigen was checked to exclude chronic HB before vaccination was continued. Potential determinants of vaccine response were collected.

Results

111 children were enrolled between October 2014 and November 2016. 86 patients (77%) had anti-HBs antibodies ≥ 100 IU/L (group1), 25 (23%) had titers <100 IU/L (group2) including 15 (14%) with titers <10 IU/L. They were all HBs antigen negative. Group1 patients were significantly younger (8.5 yo, IQR 4.8-11.6) than group2 (13.2 yo, IQR 10.9-14.8; $p<0.001$). Group1 was more likely to come from the Eastern Mediterranean region (63/86 (73%) vs 12/25 (48%), $p=0.03$) and from urban versus rural areas (71/82 (86%), $p=0.002$).

Conclusions

A high proportion of migrant children in this study had a booster type response after a single dose of HB vaccine and none of them had chronic HB. A younger age of patients with booster type response reflects the recent increase in the HB vaccination coverage worldwide. No single determinant could definitely predict seroresponse. Thus, post-vaccination serology remains necessary.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-0643

PRESCRIPTION OF ANTIBACTERIAL CHEMOTHERAPY IN URINARY TRACT INFECTIONS IN CHILDREN: A 6 MONTHS AUDIT IN A PARISIAN PAEDIATRIC TEACHING HOSPITAL

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Background

The French society of pediatrics infectious diseases (GPIP) has published new recommendations for urinary tract infections (UTI) treatment. Amikacine and third generation cephalosporin (3GC) are the probabilistic first line antibiotic recommended. Secondary adaptation to the narrowest spectrum, newly including amoxicillin is highly recommended.

The aim of this study was to evaluate the prescription in febrile UTI at Robert Debré's paediatric hospital, Paris.

Methods

Data were collected using the hospital database. Every febrile UTI diagnosed from 05/01/2015 to 10/31/2015 was screened. Exclusion criteria were Children less than 1 month and incomplete data. Over 208 febrile UTI screened 82 were excluded.

Results

A total of 126 febrile UTI were included. Mean age was 2.8 years. Thirty-two percent (n= 40) of patients had a known urinary tract malformation (UTM) and 30% (n= 38) had a previous story of febrile UTI.

Seventy-five percent (n=94) of the micro-organisms were *Escherichia coli*. Eight percent (n= 10) of the whole enterobacteriae had Extended Spectrum Beta-Lactamase, all sensitive to Amikacine.

First line antibiotherapy was intravenous 3GC in 56% cases (n=70), amikacin monotherapy in 8% (n=10), and oral 3GC 15% (n=19).

When receiving antibiogram, 64% (n=81) were switched to Cefixime, while 69% (n=56) of them were sensitive to cotrimoxazole and 33% (n=27) to amoxicillin.

Conclusions

In febrile UTI, the first line of antibiotic prescribed was intravenous 3GC, widely over amikacine (8%) despite its lower impact on microbiote and its high sensitivity to mostly all organisms. After documentation, oral 3GC was the first antibiotic despite of 74% sensitivity to Amoxicillin and/or TMP-SMX. Physicians must be more concern about cephalosporin impact on microbiote, and also probably need more confidence on amikacin tolerance, particularly in a context of high prevalence of UTM (31%).

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0644

TROPICAL DISEASES IN VFR AND INTERNATIONAL COOPERATING TRAVELLERS

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Background

The number of pediatric international travelers' been increasing in the last years, mainly in the VFRs group (Visit-Friends-and-Relatives), and so the risk of acquiring a tropical infection and its further transmission.

Methods

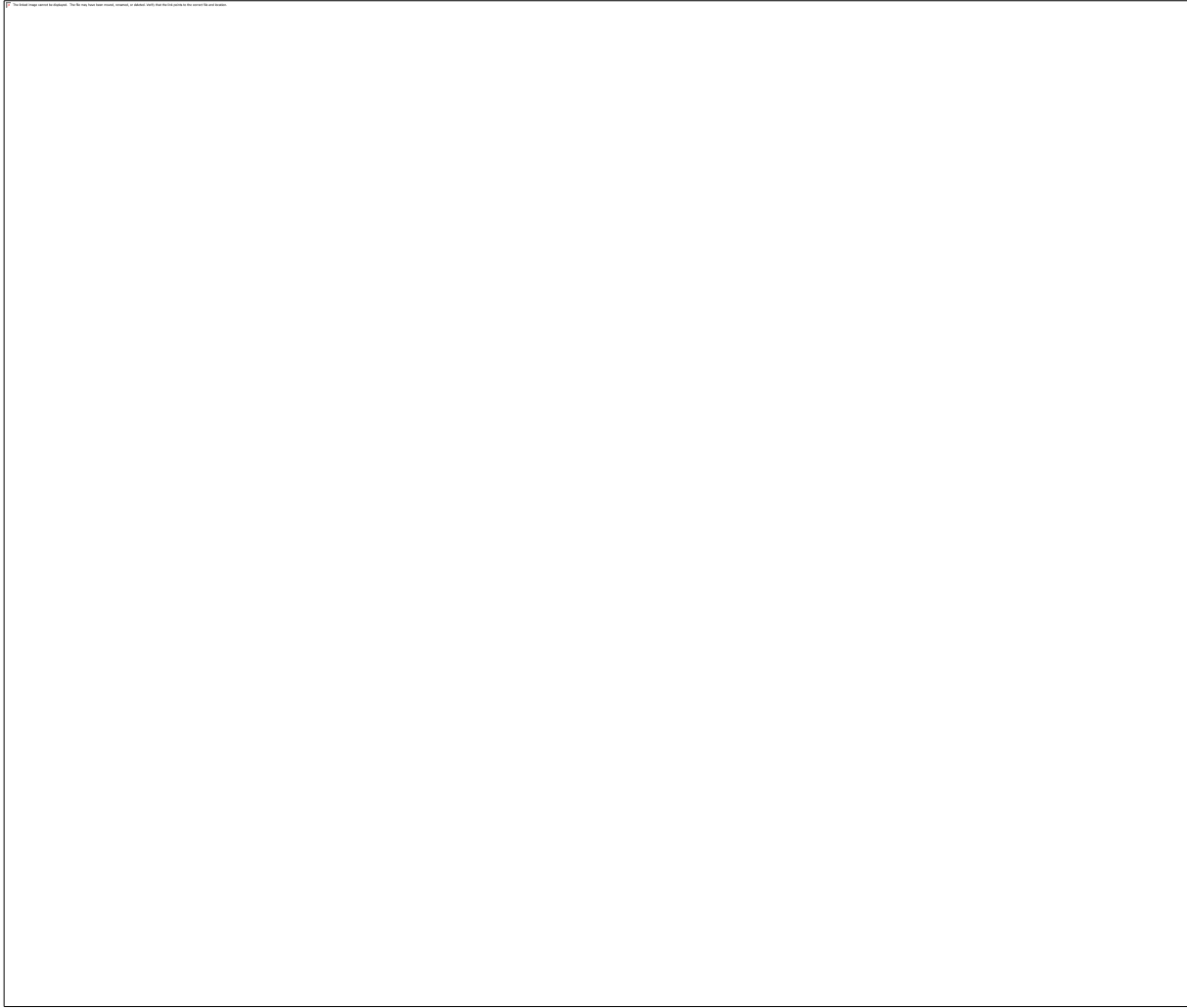
Retrospective descriptive study of children ≤ 16 years old, returning from a trip abroad, who consult for different complaints in a medical consultation specialized in tropical diseases and international vaccination, during 2015 and 2016. We studied the epidemiological, clinical, diagnosis and treatment data after the trip.

Results

72 patients were included, 51(79.8%) VFR, 17(23.6%) travelers and 4(5.55%) cooperatings. Median age 6 years and 5 months (RIQ 3.09-9.11), 8.3% ≤ 1.5 year old, 55.5% males. 5/72(6.9%) suffered malaria and 2/72(2.7%) giardiasis before travelling. 22/72(30.5%) attended to pre-travel counselling, 6/22(27%) required prophylaxis against malaria. The diagnosis was established in 7/72(9.7%) before arriving to our hospital, 37/72(51.38%) had received treatment and one was hospitalized during the travel.

Destinations: South-America/Caribbean countries 42/72(58,33%), 16/72(22.22%) Sub-Saharan-Africa, 6/72(8.33%) Asia, 5/72(6.94%) Europe, northern-Africa 2/72(2.7%) and 1/72(1.38%) North-America.

The reasons for consultation and the diagnosis are shown in Table 1. It's worth mentioning that 8/72 children (11.11%) were admitted at our hospital (3/8 malarías, 3/8 gastroenteritis (1 salmonellosis), 1/8 pyelonephritis, 1/8 spinal tuberculosis), while 42/72(58.33%) didn't require any treatment.



Conclusions

In our cohort the pre-travel counseling rate was low, VFRs group went to consultation more often and the most common destination was South-America. Fever and diarrhea were the most frequent complaints. 11% of the children had serious diseases requiring hospital admission. However, >50% of the children suffered common diseases that didn't require treatment.

09B. EDUCATION: HOST-PATHOGEN INTERACTION

ESP17-0645

INNATE IL-15 UP-REGULATION AFTER ORAL ROTAVIRUS-VACCINATION

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Background

The aim of this study was the evaluation of changes in cytokine innate mediated immune response to rotavirus specific antigen after oral rotavirus vaccination.

Methods

Concentration of 11 cytokines were determined in multiplex assay by *Luminex* (EGF, IFN- γ , IFN- α_2 , IL-1 β , IL-6, IL-8, IL-10, IL-15, IL12, TNF- α and IL-22; Millipore) after whole-blood stimulation release assay in fifty-nine children at pre-vaccination and post-vaccination (40 days after third dose) moment in response to two different rotavirus antigens: rotavirus wild-virus (RWV) and rotavirus vaccine antigen (RVA). Negative and positive controls of stimulation were assayed to check the specificity of immune response.

Results

An increased IL-15 response was observed in supernatants of whole blood assays of post-vaccinated samples in response to both antigens. Median value (pg/ml) for RWV and RVA antigen assay respectively in pre-vaccinated vs post-vaccinated samples were 0.5260 vs 1.005 (p -value=0.0013) and 0.4085 vs 0.8678 (p -value=0.0009)

Diminished TNF-alpha and IL-8 response in post-vaccinated samples in response to both antigens was also observed. Median value (pg/ml) for RWV and RVA antigen assay respectively were 51.22 vs 29.41 (p -value=0.0008) and 56.80 vs 28.30 (p -value=0.016) for TNF- α and 2801 vs 2347 (p -value=0.026) and 2644 vs 2293 (p -value= 0.0008) for IL-8 quantification.

Conclusions

Oral rotavirus vaccination modulates innate immune response of individuals in a specific way. Vaccination produces an IL-15 up-regulated release and TNF- α and IL-8 down-regulation in response to rotavirus specific antigens. This IL-15 up-regulation could mediate in part the protective effects of vaccination through activation of NK cells in response to virus.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0646

NEONATAL VARICELLA: REPORT OF TWO CASES

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Title of Case(s)

NEONATAL VARICELLA: REPORT OF TWO CASES

Background

Neonatal varicella is varicella zoster virus (VZV) infection during neonate. It may develop into a life-threatening illness when maternal disease occurs within five days before until two days after delivery, because lack of maternal antibody transfer and immature infant's cellular immune system. Maternal varicella can infect the baby by transplacental viremia, ascending infection during birth, respiratory droplet or direct contact with infectious lesions after birth.

Case Presentation Summary

A term, 11 days old baby boy was presented with vesicles, fever and dyspnea since 7 days old and diagnosed as varicella and pneumonia. His mother contracted varicella 3 days before delivery. He was treated with intravenous acyclovir, ampicillin and gentamycin for 10 days. Second case was a term, 13 days old baby girl suffered rash, and fever for one day and diagnosed as varicella with secondary skin infection. The mother contracted varicella one day before delivery. Same treatment were given, but four days later her condition worsen with pneumonia and thrombocytopenia, so antibiotics was switched to meropenem. Treatment were continued until days 14 of hospitalization. Both cases discharged in good condition.

Learning Points/Discussion

Neonatal varicella may present as a severe life threatening illness with 30% mortality, especially when maternal antibody transfer was not present. Intravenous varicella immunoglobulin was recommended to prevent transmission in infant if mother contracted varicella five days before until two days after delivery, but the drug wasn't available in Indonesia. Intravenous acyclovir prophylaxis was recommended by some experts if immunoglobulin was not available. The most common complication were secondary skin infection and pneumonia as occurred in our cases. Both cases improved with intravenous acyclovir and antibiotics given for 10-14 days.

12B. EDUCATION: INVASIVE FUNGAL INFECTIONS

ESP17-0647

RECURRENT MENINGITIS DUE TO CANDIDA GLABRATA

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Title of Case(s)

RECURRENT MENINGITIS DUE TO CANDIDA GLABRATA

Background

In pediatrics patients frequency of invasive candidiasis has increased lately, particularly in immunocompromised patients. The majority of cases are caused by *Candida albicans*, but *Candida glabrata* (CG) and *Candida parapsilosis* are increasingly isolated.

Case Presentation Summary

Female born at 29 weeks gestation. In the neonatal period she was diagnosed with sepsis (*E. Coli*) and NEC. After 4 weeks of treatment with broad-spectrum antibiotics, the blood culture was positive for CG. The child was treated for 6 weeks with micafungin. At the age of 2.5 months progressive hydrocephalus was noticed. Cerebrospinal fluid analysis showed pleocytosis (81 cells/ μ L) with lymphocytic predominance, CSF culture was negative for bacteria and fungi. At the age of 4 months she undergo ventriculoperitoneal shunt (VP) placement. CG (sensitive to micafungin and fluconazole; resistant to amphotericin B) was isolated from the CSF culture obtained during surgery. Antimicrobial therapy was started with intravenous fluconazole - without the improvement. It was decided to remove the VP and to start treatment with micafungin. Child was then diagnosed with hypogammaglobulinemia and was treated with intravenous immunoglobulin. Next multiple CSF cultures were negative; pleocytosis gradually decreases. The treatment was discontinued after a month. In control CSF culture CG was isolated again (sensitive to micafungin, amphotericin B and fluconazole) and treatment with fluconazole was started. After 2 weeks the treatment was changed (due to lack of improvement) to liposomal amphotericin B (intraventricular and intravenous). After 8 weeks the treatment was discontinued. In further observation no recurrences were observed.

Learning Points/Discussion

Risk factors of invasive candidiasis are: broad-spectrum antibiotics, immunosuppression, neurosurgical procedures or parenteral nutrition. Susceptibility may change during treatment. *Candida meningitis* can cause only subtle induction of inflammation in the central nervous system.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0649

IMMUNIZATION OF PREGNANT WOMEN AGAINST PERTUSSIS. ARE WE USING THE BEST APPROACH?

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Background

Pertussis vaccine administration is recommended for all pregnant women for protecting their newborns. Vaccine must be offered ideally prior 32 weeks gestation, in order to protect the newborn through the transplacental transport of these antibodies. Since March 2016, this vaccine was included in the systematic vaccination schedule of pregnant women (27-36 weeks of gestational age [WGA]) in Madrid. The objective was to describe immunization status against *pertussis* of pregnant women attending our hospital for labour.

Methods

A transversal descriptive study was performed in the Maternity Ward of Hospital La Paz (Madrid) during October 2016. Women who delivered before 34 weeks of gestational age were included. Data regarding pregnancy and vaccine status were collected.

Results

A total of 313 women were included, 25% not vaccinated (83/313), 86% of them because they were not advised about vaccine indication. Forty-two percent of women were not vaccinated at 36 WGA (131/313). Only 39% were vaccinated before 32 weeks gestation, and 47% were vaccinated 5 weeks or less before labour (147/313). Non-vaccinated women were younger than vaccinated ones ($32\pm 5,7$ vs $33,7\pm 4,5$ years; $p=0,01$). Immigrant women were more frequently not vaccinated than Spanish women (67/109 (61%) vs 163/204 (71%); $p<0,01$).

Conclusions

Sixty-one percent of newborn are not actually protected against *pertussis* in our community, even the inclusion of this vaccine in the official vaccine recommendation during pregnancy. Efforts should be made to improve *pertussis* vaccine coverage in pregnant women, providing vaccine at the earliest opportunity in order to improve newborn protection.

20A. EDUCATION: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0651

WHAT IS THE PUBLIC HEALTH BENEFIT OF PEDIATRIC PNEUMOCOCCAL CONJUGATE VACCINE (PCV) IMMUNIZATION PROGRAMS IN ADULTS ≥65-YEARS-OLD?

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Background and Objective

The primary objective of PCV immunization programs is disease prevention in children. Since PCVs introduction, reduced vaccine serotype transmission to older unvaccinated individuals has been observed (herd effect). However due to the variability in the magnitude of disease incidence, a better characterization of herd effects still needs to be performed. We assessed invasive pneumococcal disease (IPD) changes from the pre-PCV to PCV7 and higher-valent PCVs (HV-PCV: PHiD-CV, PCV13) eras in >65-year-olds.

Methods

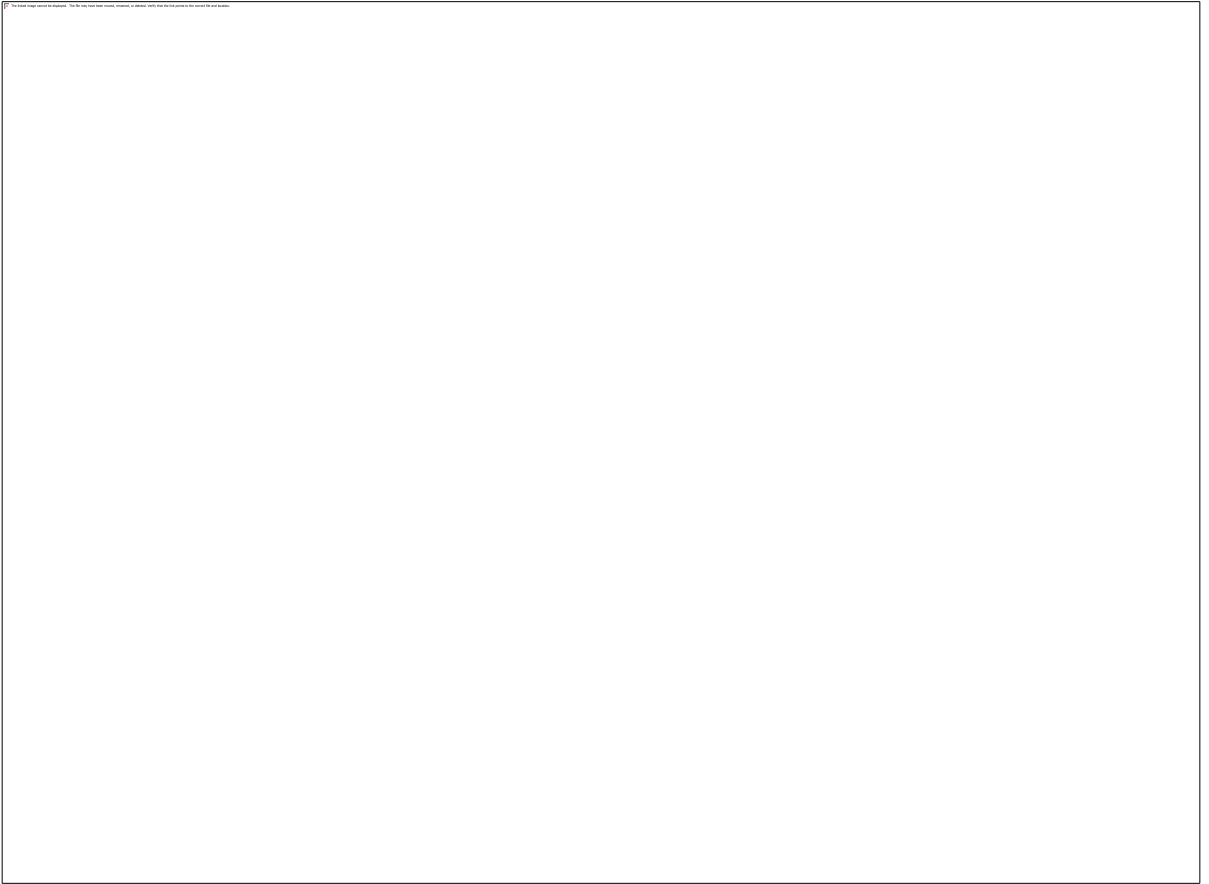
IPD datasets were identified by literature search/from publicly available surveillance reports until December 2016. Those fulfilling the following criteria were selected for analysis: robust well-described surveillance; incidence and/or case counts available (or possible to derive from available data) for >65-year-olds for overall IPD, PCV-preventable IPD (VT-IPD) and non-PCV-preventable IPD (NVT-IPD). Changes in incidence were assessed across pre-PCV, PCV7 and HV-PCV eras.

Learning Points Discussion

Datasets from 9 high-income countries met our selection criteria. Their analysis showed that:

- in pre-PCV era, overall IPD incidence ranged from 27.7-75.3 cases/100,000 person-years (table);
- VT-IPD incidence was consistently lower in HV-PCV era than in pre-PCV and PCV7 eras; however, reduction on the incidence of overall IPD was not consistently observed across analyzed countries and the magnitude of the absolute reductions, when observed, varied widely (table), irrespective of HV-PCV used, pre-PCV IPD incidence, PCV program duration or surveillance system changes;

- in most countries, NVT-IPD steadily increased from pre- to post-PCVs eras.



Due to the different methodology used on individual studies and surveillance systems to analyze herd protection data, we attempted to assess disease changes in a similar way for all datasets analyzed in this study. We aimed to ease the interpretation of IPD incidence changes in >65-year-olds, regardless of these differences.

Funding: GlaxoSmithKline Biologicals SA

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0653

MODELING POSSIBLE INCLUSION OF PNEUMOCOCCAL CONJUGATE VACCINE (PCV) INTO THE NATIONAL IMMUNIZATION PROGRAM FOR INFANTS IN INDIA

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Background and Objective

In India, 27 million infants are born annually. These children do not yet benefit from protection provided by pneumococcal conjugate vaccines (PCV). The Government of India, with support from the Global Alliance for Vaccines and Immunization (GAVI), has committed to a pilot implementation of PCV. Limited local pneumococcal disease burden data are available; therefore few evaluations of potential public health impact to inform policy-making exist. Our objective is to estimate impact of PCVs within India under various implementation scenarios.

Methods

Using a well-established pneumococcal disease impact model parameterized with local data when possible, we calculated impact of introducing the 13-valent PCV (PCV13) to an infant program for India. The analysis considered direct protection, while varying vaccination uptake based on implementation (i.e. State-level programs through GAVI funding or a Government-supported national immunization program [NIP] across India).

Learning Points Discussion

In India, an India-wide NIP with PCV13 and 100% vaccine uptake could prevent ~7.6 million cases of pneumococcal disease and ~0.32 million pneumococcal deaths annually in infants compared with no vaccination (Figure 1). With State-level programs resulting in 25% uptake across the country, ~1.9 million cases of pneumococcal disease and ~77,000 pneumococcal deaths could be prevented annually.

Even though these results, based only on direct protection, likely underestimate additional benefits of herd effects in the unvaccinated, incorporation of PCV into an Indian vaccination programs for infants is predicted to have a substantially positive health impact. GAVI funding of State-level programs is an important first step towards the full benefits of an India-wide NIP.

22A. EDUCATION: OTHER

ESP17-0655

ACUTE SUPPURATIVE THYROIDITIS: DESCRIPTIVE STUDY IN TWO SPANISH TERCARY HOSPITALS.

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Title of Case(s)

Acute suppurative thyroiditis: descriptive study in two Spanish tertiary hospitals.

Background

Acute suppurative thyroiditis is a rare pathology in children. It has a prevalence rate between 0.1% - 0.7%. Thyroid diseases and congenital remnants as pyriform sinus fistula are predisposing factors. Diagnosis is complicated and often delayed after several recurrences.

Case Presentation Summary

We reported five cases, 2 (40%) were females. The mean age at diagnosis was 5.8 years (range 3-18). The most frequent finding was a left laterocervical inflammatory tumor found in 3 patients. Pyriform sinus fistula was present in 4 children. Diagnosis was confirmed by cervical ultrasound in 100% of the cases and by cervical TC in 40%. Antibiotic therapy was required in all the cases. 20% required surgical drainage of the abscess. Diagnosis of pyriform sinus fistula was confirmed by cervical TC in 2 occasions, and 80% of the patients required an esophagram. 20% (1) of the fistulas suffered a surgical intervention. Concerning microbiological findings; in 60% of the cases no microorganism was isolated. In 1 case a *Streptococcus constellatus* was found in thyroid abscess culture. In the last patient a *Staphylococcus epidermidis* was obtained considering it as a skin colonizer.

Learning Points/Discussion

Acute suppurative thyroiditis is mainly caused by oropharyngeal flora and skin microorganisms. The etiology may be formed either on the results of abscess cultures or presence of congenital pyriform sinus fistula. Ultrasonography may be useful to make a proper diagnosis. An esophagram must be done to exclude the presence of sinus fistula. Several diagnostic tests are usually needed in order to reach a final solution. Treatment of choice for the abscess is intravenous antibiotics sometimes combined with surgical drainage. If fistula is found, its closure by microsurgery will be required.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0656

DETECTION OF MOST COMMON GRAM-NEGATIVE BACTERIA PRODUCING PULMONARY INFECTIONS IN CYSTIC FIBROSIS

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Background

Background: Cystic fibrosis (CF) is a genetic disease that make pulmonary involvement. *Pseudomonas aeruginosa* as an airway pathogen is the dominant gram-negative bacteria in lung infection. On the other hand, pulmonary infection in CF patients can make morbidity and mortality. The aim of this study was, to determine the kind of gram-negative bacteria that can cause pulmonary infection in children with CF.

Methods

Method: In this cross sectional study 64 samples of the sputum, deep pharyngeal swabs or BAL samples of 51 admitted or outpatients with CF, were examined for identification of bacterial infection by PCR and 16srRNA detection methods. Identification of *Pseudomonas* Spp., *Acinetobacter baumannii*, *Stenotrophomonas maltophilia* and *Burkholderia cepacia* has been done by PCR and specific genes.

Results

Results: All samples were positive by 16srRNA. The mean age was 6.7 ± 5.2 years in this study. *Pseudomonas* Spp. and *A. baumannii* were detected in 47% and 14% of 64 positive bacterial samples, respectively by molecular test. Mix infection by *Pseudomonas* SPP. and *A. baumannii* has been observed in three (5%) samples. *S. maltophilia* and *B. cepacia* complex have been not detected in any of samples.

Conclusions

Conclusion: The results of current study in children with CF have showed the most prevalent gram-negative bacteria isolated from Sputum or deep pharyngeal swabs or BAL samples were *Pseudomonas* Spp. in. *Pseudomonas* is the high early adaptation bacteria and can make serious problem for CF patients. So, early detection of that may lead to prevent make a lethal respiratory infection in CF children.

22A. EDUCATION: OTHER

ESP17-0657

THE ETIOLOGIC AGENTS AND RATE OF INFECTION RELATED TO CEREBROSPINAL FLUID SHUNTS PLACED IN THE NEONATAL PERIOD: A FIVE-YEAR EXPERIENCE

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Background

Cerebrospinal fluid (CSF) shunt infection is a common complication in children with hydrocephalus. We aimed to determine the etiologic agents and rate of infection related to CSF shunt placed in the neonatal intensive care unit.

Methods

We retrospectively reviewed the files of patients with CSF shunt placed in the neonatal period and had one year follow-up. We documented the episodes of shunt infections in these infants, from January 2011 to December 2015.

Results

We detected 67 patients with CSF shunts placed for hydrocephalus with a total 145 procedures. Hydrocephalus developed after spina bifida operation in 27 newborns, after intracranial hemorrhage in 6 newborns, and was congenital in 34 newborns.

There were 33 confirmed shunt infections in 17 patients (25%) and in 23% of the procedures; 71% of these patients had recurrent episodes. Infection rate was 25% after initial shunt insertion, but was more often (71%) following shunt revisions. Of the shunt infections, nearly one third (36%) occurred within one month, and 58% occurred throughout the first two months following insertion.

Single pathogen was isolated in all episodes. Coagulase-negative staphylococcus (CoNS) was the predominant etiologic agent (61%), and *Staphylococcus epidermidis* represented 42% of isolated pathogens. Of the isolated agents, 24% were other gram-positive bacteria (*Enterococcus faecalis*, 12%; methicillin sensitive *Staphylococcus aureus*, 9%; *Streptococcus mitis*, 3%), and 15% were gram-negative bacteria (*Klebsiella pneumoniae* and *Pseudomonas aeruginosa*, 6% each; *Serratia marcescens*, 3%).

Conclusions

CSF shunt infection rate was relatively high in our center and was most likely due to the small age of patients. The high predominance of *Staphylococcus* species among isolates likely reflects the role of prominent skin flora and the importance of strict rules for preventing surgical infections.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-0659

HAND HYGIENE: HEALTH PROFESSIONAL'S KNOWLEDGE AND ACCEPTANCE OF AN ACTIVE WAY OF PATIENT ISOLATION IN A TERTIARY HOSPITAL IN SPAIN

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Background

Hand hygiene is the cornerstone of the prevention of health care –associated infections (HAI). According to published guidelines, changes in patient's isolation were introduced in the pediatric service in November 2016. Patient isolation was proposed to be syndrome-based and initiated by nurses in the ward. We conducted a survey to evaluate professional's knowledge and acceptance before their implementation.

Methods

In October 2016, "Hand Hygiene Knowledge Questionnaire for Health-Care Workers", WHO 2009, was presented to health professionals in electronic or paper forms, to pediatricians, surgeons, residents, nurses and nurse-assistants from the department of Pediatrics. Questions to evaluate acceptance of changes were added.

Results

72 surveys were sent back: 20 from nurses and nurse's assistants and 52 from clinicians (44.4% of participation in both groups). Response rate was higher for residents (48.9% vs. 41.7%).

81.9% considered hand hygiene of high importance and 72.2% declared being trained in the last 3 years. The correct answer rate was 63.1%, with higher rate in people under 30 (68.3% vs. 60.6%) and in clinicians compared with nurse and nursing assistants (64.4% vs. 59.6%). The highest proportion of wrong answers was in questions related to the source of microorganisms in HAI and the recommendations for using alcoholic-based products or plain soap and water.

Lack of alcoholic-based products and lack of time were the most important barriers described to perform hand hygiene. Professionals accept making working groups or receiving information regularly for improving hand hygiene.

Conclusions

In our survey, health professionals have a medium knowledge in hand hygiene and accept changes. Continuous actions are needed to improve and move to practical application.

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0662

COEXISTENCE OF LESNIEWSKI-CROHN'S DISEASE AND MYCOBACTERIUM TUBERCULOSIS INFECTION – CASE REPORT

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Title of Case(s)

Coexistence of Lesniowski-Crohn`s disease and mycobacterium tuberculosis infection – case report.

Background

We must take into account Lesniowski – Crohn`s disease, tuberculosis and Yersiniosis in diagnosis of inflammatory changes of ileocaecal intestine. On the second hand mycobacterium tuberculosis infection can be the result of immunosuppressive treatment of Inflammatory Bowel Disease.

Case Presentation Summary

We present case - actually 23-years old patient, in whom we have diagnosed in the 16 years of life Lesniowski-Crohn disease, on the base of clinical picture, results of laboratory tests, endoscopic and histopathological examinations. He was treated by mesalazine, azathioprine and glycocorticosteroids. The patients was qualified to biological treatment in due to lack therapeutic effects - steroid- resistance, subileus state. However Quantiferon test to mycobacterium tuberculosis was positive. In X-ray picture of chest we have found changes, which could be connected with mycobacterium tuberculosis infection : calcification and fibrosis in upper lobe of right lung. Immediately patient was consulted in Pulmonary Outpatient Clinic- rifampicin and izoniazid was introduced to treatment. The patient must be operated due to symptoms of ileus – resection of constricted ileocecal part of intestine. Changes characteristic for Lesniowski-Crohn`s disease were found in histopathological examinations. After 2 years from antituberculosis treatment patient was qualified and started biological treatment – infliximab due to exacerbation of Lesniowski-Crohn disease. Now he is under control in Outpatient Clinic.

Learning Points/Discussion

We would like to pay attention in presented case to coexistence of mycobacterium tuberculosis infection and Lesniowski-Crohn disease. It can be connect with primary infection and /or results of immunosuppressive treatment.

08C. EDUCATION: HIV/AIDS

ESP17-0663

FACTORS RELATED TO LATE HIV-DIAGNOSIS IN CHILDREN

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Background

A prompt diagnosis of HIV infection has favorable implications in terms of immune reconstitution. Identifying factors associated to late diagnosis among children is key in order to design strategies to increase early test and treatment.

Methods

Retrospective study within the Spanish Cohort of HIV-infected children (CoRISpe) including patients born after 2000 and diagnosed in Spain. Late diagnosis (LD) was defined as CD4 <500cell/uL or <15% at diagnosis. LD patients were compared to early diagnosed patients (ED).

Results

During the study period 61 out of 257 children diagnosed with HIV were LD (23.7%, with 39.3% below 200 cel/uL.). The proportion of females was comparable between groups (LD 62.3% vs ED 51%, p=0.14). LD patients were older [3y(0-6) vs 0 (0-1),p<0.001], more frequently born abroad (49.2% vs 22.4%, p<0.0001) and 5.4% vs 2.1% were non-vertically infected (p=0.02). Over half of parents from LD children were born abroad: mothers 62.3% vs 48.7% (p=0.08) and fathers 65.6% vs 49.7% (p=0.04). Overall, parents born abroad were mainly from Equatorial Guinea. At diagnosis, 31.1% LD vs 11.2% ED presented an opportunistic infection (p<0.001), mainly *Pneumocystis jirovecii* pneumonia (36.8% vs 22.3%, p=0.01). Globally, the incidence of opportunistic infections was 50.8% vs 22.4%, p<0.001. CDC stage C was more frequent among LD children (39.3% vs 9.7%, p<0.001). At their last clinical visit, 69.1% LD vs 73.3% ED were virologically suppressed (p=0.33), but LD patients had a worse immunological condition [633 (443-964) CD4 cells/ul vs 937 (676-1224), p<0.001).

Conclusions

Late HIV-diagnosis was more common among children born abroad and/or from foreign parents. Immune reconstitution is impaired in LD patients despite ART. In order to improve earlier HIV diagnosis, awareness-raising campaigns are not to be disregarded.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0664

SUPERIOR MESENTERIC VEIN THROMBOSIS- A RARE COMPLICATION OF A FREQUENT DISEASE

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Title of Case(s)

SUPERIOR MESENTERIC VEIN THROMBOSIS- A RARE COMPLICATION OF A FREQUENT DISEASE

Background

Superior mesenteric vein thrombosis may precede pylephlebitis, a very rare life-threatening complication of diverse abdominal infections.

Case Presentation Summary

An 11-year-old, previously, healthy boy developed vomiting and diffuse abdominal pain. Two days afterwards, he manifested high fever (39.5°C, every 4 hours). On the seventh day of illness, the abdominal pain localized in the peri-umbilical area and he started having diarrhea.

The patient was brought to our emergency and was admitted to the pediatric ward. Apart from mild dehydration, DRC's physical examination was irrelevant. The blood tests showed an elevated C-Reactive Protein (284.7 mg/L).

Two days after admission, he presented jaundice and hepatosplenomegaly. The laboratory analysis revealed an elevated conjugated bilirubin (4.84 mg/dL) and C-reactive Protein (242.6 mg/L) and prolonged Prothrombin time (17.1 sec). The abdominal US scan documented superior mesenteric vein thrombosis.

The patient was then referred to a pediatric surgical center. The abdominal CT scan confirmed the findings and revealed a perforated appendix with a 6cm pelvic abscess. The boy underwent urgent appendectomy and started Metronidazol, Imipenem and Heparin. He experienced a favorable outcome.

Learning Points/Discussion

Even very rarely, acute appendicitis may be complicated by superior mesenteric vein thrombosis, a precursor of pylephlebitis. The abdominal CT scan is considered the gold-standard for the diagnosis but it may be suggested by US, as our case illustrates.

The present case highlights the importance of clinical suspicion, since the signs and symptoms can be very mild or even absent and the prognosis depends largely on the timeliness of diagnosis and therapy.

22A. EDUCATION: OTHER

ESP17-0666

STREPTOCOCCUS GROUP B NEUROINFECTION IN INFANTS: IS IT HARD TO DIAGNOSE?

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Background

Streptococcus group B neuroinfection in infants: is it hard to diagnose?

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It is known that Streptococcus group B (GBS) is the most popular causative agent of neuroinfection in infants.

Methods

We analyzed 49 cases of GBS neuroinfection in infants from January 2000 to April 2016. There were 4 children with an early onset GBS (8,2%), 43 with late onset GBS (87,8%) and in 2 cases infection started at the age of 4 and 8 month, respectively. The etiology was confirmed by cerebrospinal fluid and/or blood cultures. 33 children (67,4%) were hospitalized on the first day of illness and at the initial examination meningeal signs were present in 79,6% of them. Cytosis (median and interquartile range) was 2748 (423-8830)*10⁹/L with neutrophils predominance.

Results

The most popular complains were fever (87,8%), irritability (51%), fatigue and drowsiness (42,9%), loss of appetite (55,1%), vomiting (22,4%), neurological symptoms (8,2%).

The diagnosis of neuroinfection was supposed in 2 persons by an ambulance, in 15 – at the Admission Department, in 2 – at the Neonatal Unit, in 29 – at the ICU and 1 case was diagnosed postmortally.

Other common initial diagnoses were respiratory infections (59,2%) and pneumonia (16,3%).

All patients were prescribed an adequate antibacterial treatment.

Catamnesis is given in Fig.1.



Conclusions

Thus, it is hard to diagnose GBS neuroinfection in infants.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0667

SEPTIC PULMONARY FOCI DETECTED BY 18F-FDG PET/CT AFTER *S. AUREUS* CATHETER-RELATED BACTEREMIA

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Background

The role of ¹⁸F-fluorodeoxyglucose positron emission tomography-computed tomography (¹⁸F-FDG PET/CT) in the diagnosis of metastatic infectious foci in children with catheter related blood stream infection (CRBSI) has been hardly studied, although some authors have reported it benefit in the screening of metastatic foci in adult population.

Septic pulmonary embolisms are among the most difficult to identify. However, diagnosis of these foci has important therapeutic consequences.

Methods

Three hemophilic children with implantable venous access ports were admitted to our Department with fever and suspected CRBSI. In all cases, a dual modality PET/CT scanner was performed, Images were acquired 60 minutes after the radioactive tracer was injected. A chest X-ray was performed at admission and after PET/CT

Results

All patients had hemophilia and implantable venous access ports and presented with fever and normal lung auscultation. Only one reported non-specific symptoms (undifferentiated left chest pain). All patients had normal chest X-ray on admission. Catheters were removed within 48 hours after admission in two cases, and 5 days after admission in the last case, subsiding fever. In two children, paired blood cultures were not able to identify bacteremia. However, in all cases catheter tip and subcutaneous port cultures yielded *S. aureus* and PET/CT detected unsuspected pulmonary metastatic embolisms.

Conclusions

- ¹⁸F-FDG PET/CT should be considered as a useful tool to diagnose septic pulmonary embolism in *S. aureus* catheter-related bacteremia, especially if conventional diagnostic imaging techniques have failed to reveal possible metastatic foci.

Further studies are needed to clarify the usefulness of PET/TC performance in children with CRBSI.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0669

AWARENESS OF THE HEALTHCARE PROVIDERS AND FAMILIES ON PNEUMOCOCCAL VACCINATION OF PEDIATRIC PATIENTS IN HIGH RISK GROUPS: A PRELIMINARY PILOT STUDY

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Background

Pneumococcal conjugate vaccine (PCV) -7 valent was added to the National Immunisation Program (NIP) of Turkey in 2007 with a 4-dose schedule at 2, 4, 6 and 12 months, and replaced with PCV-13 valent in 2011. Additional vaccination with pneumococcal polysaccharide vaccine-23 valent (PPV-23) is recommended for children ≥ 2 years of age in high risk groups. We aimed to evaluate the rate of pneumococcal vaccination of children in high risk groups in this preliminary pilot study.

Methods

We checked the vaccination records of patients hospitalized because of any reason in order to determine the pneumococcal vaccination rates during the 2-month study period. Risk groups and vaccination status were evaluated according to the Centers for Disease Control and Prevention (CDC) recommendations. Children <24 months of age were not included to study.

Results

Total 17 patients with underlying chronic conditions (11 with chronic lung disease, 3 with immune-deficiency, 3 with chronic renal failure) were hospitalized during study period. Eleven patients were 24 through 72 months, and 6 patients were 72 months through 18 years old. All patients were vaccinated according to NIP. However, none of them were vaccinated with pneumococcal vaccines according to age specific recommendations for risk groups. Healthcare providers and families had been unaware of the additional vaccination recommendations for these patients.

Conclusions

Vaccination rates with pneumococcal vaccines according to universal recommendations are unacceptably low among our patients in high risk groups. Lack of awareness on additional vaccination recommendations for children at high risk seems an important reason. A multidisciplinary approach should be applied to raise the awareness of healthcare providers, families and public on vaccination recommendations for pediatric patients in high risk groups.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0670

COMMUNITY VERSUS HOSPITAL ACQUIRED PEDIATRIC STAPHYLOCOCCUS AUREUS BACTEREMIA: COMPARISON OF CLINICAL FINDINGS AND OUTCOMES

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Background

Staphylococcus aureus (*S. aureus*) is a major cause of bloodstream infections. Data regarding the morbidity of *S. aureus* in children is limited. Study aims were to describe incidence, clinical and laboratory features and outcomes of children younger than 18 years with community acquired (CA), hospital acquired (HA) and health-care related (HCR) *S. aureus* bacteremia (SAB).

Methods

A retrospective study of SAB cases at a tertiary referral center, over 14 years (2002-2015). We compared the incidence, clinical and laboratory findings and outcomes of patients with CA, HA and HCR SAB.

Results

Over the fourteen-year study, 185 episodes of SAB were included. Annual incidence was 1.48 cases per 1000 hospital admissions. HA, CA and HCR SAB were 53% [CI 95%:45.8%-60.2%], 25% and 22% respectively. Only three cases of community acquired Methicillin resistant *S. aureus* bacteremia were found. All presented as bone or joint infections. Bacteremia without focus was the most common presentation in HA (85%) and HCR (78%) compared to (34%) in CA bacteremia. Central venous catheter within 48 hours before bacteremia, recent surgery during the prior month, immunodeficiency and age younger than 6 years were the main risk factors for HA or HCR infection (adjusted OR of multivariate analysis were: 68.90, 7.45, 5.75, 5.51 respectively). Surgical intervention was needed in 17% of CA compared to 4% in HA and 4% in HCR bacteremia. Thirty days mortality occurred in 3 cases. One was directly attributed to SAB.

Conclusions

Incidence of SAB remained stable over study period. There was a significant rise on the incidence of HA-SAB, and parallel decrease in incidence of HCR-SAB. CA-SAB incidence remained stable. Although *S. aureus* is considered significant pathogen of BSI, mortality remains rare.

20A. EDUCATION: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0672

INCREASING IMMUNIZATION COVERAGE: HOW TEACHING THE SUBJECT AT MEDICAL SCHOOL CAN HELP?

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Background

The implementation of strategies that ensure a high vaccination coverage might require medical students to be trained how to prescribe vaccines and to deal with adverse events. We compared theory acquisition and practical skills from 4th grade medical students after a 16-20 hours' course on immunization.

Methods

Classes were given in a proportion of one third of theoretical background and two thirds of practical skills. Practical classes consisted in advising patients or their parents on vaccines to be administered, the most common adverse events and how to proceed in case they occurred. Students were then submitted to a written exam where they had to write down vaccines to be prescribed to a certain child/adolescent, mentioning doses, route of administration and adverse events. An oral exam was also performed where students had to act as a medical doctor, this time facing a "mock parent" and advising him/her on the vaccines the child would take. This study compared the students' performance in both tests.

Results

Two hundred and twenty-two medical students were evaluated in 2015 and 2016 (95% of 4th grade medical students). Students performed better at written (average performance, 86%) than at oral exams (average performance, 73%) when describing vaccines to be administered and adverse events one needs to be aware of (paired t test, $p < 0.001$); 57/222 students (25.7%) did not attain the necessary mark to pass the oral examination but only 5 out of the 57 (8.8%) had also a low mark in the written examination.

Conclusions

Medical students usually performed better on written examination than on practical tests. As immunization coverage depends on patients'/ parents' reliance on the vaccines that will be administered, medical schools should emphasize practical skills during medical course.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0674

IS XPERT MTB/RIF UNCOVERING THE MANY FACES OF TUBERCULOSIS?

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Title of Case(s)

Is Xpert MTB/RIF Uncovering The Many Faces Of Tuberculosis?

Background

In a country endemic for tuberculosis, the disease commonly features in the differential diagnosis of various symptom complexes. However the classical presentations are seldom seen and the disease may masquerade as a more innocuous condition. Coexisting illnesses, non-specific symptoms and poor microbiological yield compound the problems leading even the astute clinician astray. Our five cases highlight this fact.

Case Presentation Summary

Two cases presented with acute abdomen and had findings suggestive of tuberculosis on imaging. In one case sputum Xpert MTB/RIF was positive, while in the second a diagnosis of TB was made on a positive mantoux and high ESR. Our third case presented as a pyogenic liver abscess that failed to respond to antibiotics. Sputum Xpert MTB/RIF tested positive. Our fourth case presented with polyarthralgia and inability to walk. Chest X-ray showed a cavity and sputum Xpert MTB/RIF was positive. The fifth case presented with just one-week history of high-grade fever and cough. Though bacterial pneumonia was the working diagnosis, a work-up done for hemoptysis revealed a cavitory lesion on X-ray and a positive sputum Xpert MTB/RIF. All patients responded to anti-tuberculous therapy.

Learning Points/Discussion

A high index of suspicion is needed when the presentation is either acute or atypical. Even in cases without respiratory symptoms, sputum or gastric lavage sample may be priceless for microbiological confirmation and guiding drug choice since it is easier to obtain and far less invasive. Four out of our five cases had a confirmed diagnosis within hours of suspecting the illness highlighting the ease and rapidity of Xpert MTB/RIF in diagnosis. All nations, particularly the low and middle-income countries, should endeavor to make this test more accessible and affordable.

16A. EDUCATION: PUBLIC HEALTH: MOLECULAR EPIDEMIOLOGY AND OTHER ASPECTS

ESP17-0675

MOLECULAR CHARACTERISATION OF INFLUENZA VIRUSES DURING THE 2012-2016 SEASONS AT A TERTIARY PAEDIATRIC UNIVERSITY HOSPITAL IN CATALONIA (SPAIN)

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Background

Influenza viruses are continuously evolving leading to seasonal epidemics and the need to update the vaccine strain composition annually. The aim of this study was to describe the genetic diversity of influenza viruses detected at our hospital during the 2012-2016 seasons

Methods

Respiratory tract specimens were collected from respiratory viruses laboratory-confirmation (October 2012-May 2016). Viral detection was carried out by either immunofluorescence or PCR-based assays. A specific real-time one-step multiplex RT-PCR was performed for influenza A subtyping (H1pdm09 or H3). The complete coding HA1-domain sequence was sequenced for molecular characterisation and phylogenetic analyses. Coding neuraminidase protein sequence was sequenced from randomly selected 2015-2016 influenza viruses to detect amino acid substitutions related to reduced antiviral susceptibility

Results

Overall, 11,594 specimens were studied, 1030 (9%) were influenza laboratory-confirmed: 605 (59%) influenza A; 425 (41%) influenza B. **Table 1** shows detailed data. They were genetically similar to the seasonal vaccine strains in three seasons, except for most of influenza A(H3) viruses in the 2014-2015 season. D222G or D222N in HA1 were found in 2 A(H1)pdm09 strains (2012-2013 season). B/Yamagata lineage was predominant during the first three seasons, B/Victoria viruses (not included in the 3v-vaccine) were the only detected during the last season. Mutations related to a reduce susceptibility to antiviral therapy were not found

Table 1	2012-2013		2013-2014		2014-2015			2015-2016		
	FLUAV	FLUBV	FLUAV	FLUBV	FLUAV	FLUBV	FLUAV	FLUBV	FLUAV	FLUBV
% type/subtype circulation	25 (23%) 21 (84%)	84 (77%) 2 (8%)	167 (100%) 47 (28%)	- 106 (62%)	197 (81%) 56 (28%)	45 (19%) 120 (61%)	207 (40%) 188 (91%)	301 (60%) 2 (1%)		
Hospitalisation	55 (50%)		75 (45%)		104 (43%)			98 (20%)		
	14 (25%)		75 (45%)		83 (80%)			46 (47%)		
	H1pdm09	H3	H1pdm09	H3	H1pdm09	H3	H1pdm09	H3	H1pdm09	H3
ICU	2 (14%)	-	1 (8%)	1 (4%)	2 (6%)	1 (2,5%)	1 (5%)	1 (2,5%)	-	5 (10%)

Conclusions

Mutations D222G/N in A(H1)pdm09 were only detected in 2012-2013 ICU-admitted patients, but not in the following seasons. The circulation of drifted A(H3) strains during the 2014-2015 season was related with high hospitalisation rate, but not with an increase of ICU-admissions. The predominance of a FLUBV lineage not

included in the trivalent influenza vaccine highlights the need to use the tetravalent influenza vaccine in high-risk patients.

05D. SCIENCE: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0676

EFFECT OF TOXOPLASMA GONDII INFECTION ON ARGINASE 1 EXPRESSION AT THE FETOMATERNAL INTERFACE USING A MOUSE MODEL OF CONGENITAL INFECTION

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Background

Primary *Toxoplasma gondii* infection occurring during human pregnancy, can lead to serious implications for the fetus, as chorioretinitis, mental retardation, microcephaly, hydrocephalus, seizures and ocular disease. Experimental animal models and clinical studies, have contributed largely to *T. gondii* systemic immune response knowledge. However, still lack of knowledge how *T. gondii* infection affects maternal immune response during pregnancy. It is suggested, that disruption of homeostatic immunological mechanisms, including macrophage function, is associated to adverse pregnancy outcomes. Since macrophage alternative activation can control parasite replication through induction of Arginase 1, our study focused on the evaluation of Arg-1 expression at the fetomaternal interface during *T. gondii* infection.

Methods

Infection of pregnant BALB/c mice with a type II strain of *T. gondii* stably expressing yellow fluorescence protein (YFP) allowed the follow-up of pregnancy. Morphometric analysis of decidua and placenta was performed using hematoxylin-eosin stained sections of the fetoplacental units. The detection of *T. gondii* in the tissues was done by fluorescence microscopy. The quantification of parasite loads in the organs was evaluated by Q-PCR. Arg-1 expression was studied by immunohistochemistry, immunofluorescence and Western Blotting.

Results

Systemic and congenital *T. gondii* infection was confirmed by detection and quantification of *T. gondii* in the liver, spleen cells, decidua, placenta and embryo. Morphometric analysis indicated a delay in the placenta development during infection. It was found an increased expression of Arg-1 in the decidua from infected compared to control animals.

Conclusions

The results obtained indicate that during congenital infection, an increased expression of Arg-1 occurs, that may induce increasing production of polyamines, promoting cell division and proliferation of the parasites, contributing therefore to the pathology. This data should provide valuable information regarding the role of macrophages in congenital toxoplasmosis.

Clinical Trial Registration (Please input N/A if not registered)

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0678

EVALUATION OF PREVENTION OF VERTICAL TRANSMISSION IN BABIES BORN TO HEPATITIS B VIRUS (HBV)-INFECTED MOTHERS

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Background

Vertical transmission of HBV is associated with a very high risk of chronic infection. Even with immunoprophylaxis at birth, women with very high viral loads might still transmit HBV to their children if they are not treated with antivirals. A study was done to assess the adherence to recommended interventions to prevent and monitor vertical transmission of HBV.

Methods

A retrospective study was conducted on babies born to HBV-infected mothers at Hospital del Mar in Barcelona from 2009 to 2015. Data collected included mother HBV serological markers and DNA, antivirals received during pregnancy, administration of immunoprophylaxis to infants at birth, and test for HBsAg and anti-HBs after completion of hepatitis B vaccine series.

Results

A total of 110 babies were born to 102 HBV-infected mothers. 11 (10.8%) mothers had very high viral loads but only 8 (73%) received antiviral treatment during pregnancy. All babies received immunoprophylaxis at birth. 55 babies (50%) were not followed by the specialist. 25 (45%) of these babies attended the well-child visits but HBV serological tests were not done after completion of hepatitis B vaccine series. One of those babies was born to a mother with HBeAg positive who had not been referred to the specialist. The general paediatrician was contacted and serological HBV markers revealed the baby got infected.

Conclusions

Screening of pregnant women for HBV and appropriate management of infected mothers and their infants are essential strategies to reduce the global burden of HBV infection. It is particularly important to establish protocols with primary health care doctors for adequate screening and referral of these patients to the specialist. Improved information given to the mothers is also needed to reduce the risk of being lost to follow up.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0679

PRIMARY ILIOPSOAS ABSCESS IN A SIXTEEN-YEAR OLD BOY: MAGNETIC RESONANCE IMAGING IS THE DEFINITIVE DIAGNOSTIC TOOL BUT MAY NOT BE HELPFUL AT EARLY STAGE

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Title of Case(s)

Iliopsoas abscess

Background

Pyomyositis is an uncommon but serious condition with the pelvic predilection. Distinguishing pyomyositis from osteomyelitis and septic arthritis clinically may be difficult.

Magnetic resonance imaging (MRI) is definitive to identify and localize pyomyositis, but may not be helpful at early stage. We present a case with iliopsoas abscess that initial imaging modalities revealed no pathological changes.**Case Presentation Summary**

A 16-year old otherwise healthy boy presented with a 1-day history of fever, severe left hip pain, limping and refusal to walk. There was no history of trauma. Physical examination revealed normal findings except fever and pain increasing with extension of left leg. Laboratory tests showed increased acute phase reactants. Aspiration of the left hip joint fluid for Gram stain and culture, ultrasonography (US) and sacroiliac MRI showed no pathological findings. Meticilline sensitive *Staphylococcus aureus* was isolated from blood cultures. Ampicillin-sulbactam treatment was started but no clinical improvement was seen. On the 8th hospital day, a second MRI showed a 3x5x5 cm abscess formation within the left iliopsoas muscle. Abscess was drained under US imaging, culture of the pus was also positive for *S. aureus*. Clindamycin was added to treatment. On the 21st hospital day, a repeated MRI revealed the resolution of abscess and inflammation, and the patient was discharged.

Learning Points/Discussion

As shown in our case, early imaging studies can be unremarkable, unhelpful, and high clinical suspicion is important for the diagnosis of pelvic pyomyositis. When the clinical complaints and physical findings are persistent, the patient should be evaluated with repeated imaging studies.

13B. SCIENCE: INVASIVE VIRAL INFECTIONS

ESP17-0681

INCREASED ETIOLOGIC DIAGNOSIS WITH MOLECULAR DETECTION OF ENTEROVIRUS AND RESPIRATORY VIRUSES IN YOUNG INFANTS WITH FEVER WITHOUT SOURCE

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Background

Bacterial infections are responsible for 7-20% of fever without source (FWS) in young infants, usually diagnosed with conventional microbiology techniques. However, most of FWS are secondary to viral infections, which are hard to identify with conventional techniques, giving out molecular techniques a role.

Objectives: Increase etiological diagnosis by adding molecular detection in blood and CSF for enterovirus (EV) and in nasal swabs for respiratory virus, in infants younger than 3 months admitted for FWS.

Methods

We performed a prospective descriptive study in two Chilean children's hospitals. Every young infant admitted for FWS was enrolled, treated according to local protocols. Demographic and outcome variables were recorded. Within 24 hours from their admission, blood, CSF and nasal swab samples were taken and were conserved at -20°C until rt-PCR were performed.

Results

101 young infants were enrolled, median age 33 days (RIC 18-46 days), 69% male sex. Clinical discharge diagnose was 33% bacterial infections, 25% viral infections and 42% fever syndrome without source. Respiratory viruses were detected by rt-PCR in 33 and EV in 14 patients. As for the confirmed etiological diagnosis, when incorporating molecular detection, viral identification increased from 2 to 32% (p 0.001). Also increased virus-bacterial coinfection from 1 to 11% (p 0.002) and decreased cases with unknown etiology from 66 to 37% (p 0.001). Globally, an increase in etiological diagnosis was achieved by incorporating molecular biology to conventional microbiological methods from 34 to 63% (p 0.0001).

Conclusions

Molecular biology methods, combined with conventional microbiological techniques, increased the etiological diagnosis of SFSF from 34% to 63%. This may allow physicians to rationalize the management of these patients.

Clinical Trial Registration (Please input N/A if not registered)

N/A

22A. EDUCATION: OTHER

ESP17-0682

INFANTILE BOTULISM UNMASKING CONGENITAL MYASTHENIA

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Title of Case(s)

Infantile Botulism Unmasking Congenital Myasthenia

Background

Generalized weakness and cranial nerve palsy in infants can be attributed to infectious and non-infectious etiologies. Because of similarity in clinical presentation, finding one diagnosis should not exclude investigating others.

Case Presentation Summary

An 8-months-old male, previously healthy and well developed except gastrointestinal disturbance, frequent milk formulas changes and intermittent constipation during the last month. Seven days earlier he started suffering from upper respiratory tract symptoms and generalized weakness, three days later he developed fever, decreased facial expressions and hoarseness. On admission, he was febrile but not ill appearing, fully alert with mild generalized weakness, bilateral facial palsy and ptosis. CSF was normal, culture was sterile and Enterovirus was identified by PCR. Brain MRI and Electroencephalography were normal. His performance improved slightly, fever resolved, and he discharged after 10 days, with the presumptive diagnosis of Enterovirus rhomboencephalitis. A week later, stool sample sent for evaluation of infantile botulism, became positive for toxin B Clostridium botulinum (CB). Mouse bioassay confirmed the result. At follow up the infant had continuous improvement and fully recovered after two months.

At the age of 11-months a similar episode reemerged. Stool and serum for CB and CB toxin were negative. An Electromyogram showed a decremental pattern in repetitive stimulation of single fiber, pathognomonic for Congenital Myasthenia. Treatment with Bromide Pyridostigmine was associated with prompt improvement. Autoantibodies were negative and whole exome for genetic channelopathies is pending.

Learning Points/Discussion

This case presents the problem of multiple but rare diagnoses all together in the same patient. It is warranted to be open minded to more than one compatible diagnosis, and to elicit interactions between them specifically Botulism and Congenital Myasthenia and the role of one to unmask the other.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0684

CHILDHOOD TUBERCULOSIS IN A RURAL HOSPITAL IN SOUTHEAST ETHIOPIA: A SEVENTEEN YEAR RETROSPECTIVE STUDY

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Background

Information about childhood tuberculosis (TB) in rural hospitals in low-income countries is limited. We described the epidemiology and treatment outcome of childhood tuberculosis cases in a rural Ethiopian hospital (Gambo Rural General Hospital) over a 17-year period (1998 to 2015).

Methods

Retrospective data collection using childhood TB registers (0-14 years old) and treatment cards in a rural Ethiopian hospital. Information was collected on number of cases, type of TB and treatment outcomes using standardised definitions.

Results

1204 patients under 14 years old were registered, 582 (48,3%) of them were under five. Only 9 (0.7%) patients were HIV +, but in many patients [826 (68,6%)] HIV test was not done or was not available.

A total of 74 (6,1%) patients had smear-positive pulmonary TB, [2 (2,7%) were under five]; 739 (61,4%) had smear-negative pulmonary TB [478 (64,7%) under five], and 391 (32,5%) extrapulmonary TB (EPTB) [102 (26,1%) under five]. Smear samples were mainly from spontaneous sputum and scarcely from gastric aspirates. Among the EPTB the most frequent location was the lymph nodes in both groups of age (51,1% of all EPTB)

40,1% of the patients were admitted to the hospital (58% of them were under five) and the rest were managed as outpatients.

The percentage of treatment defaulters was 13,5%. The mortality rate was 4,2% and was the same for under or over five.

Conclusions

(1) The registration of TB cases can be useful to understand the epidemiology of childhood TB in rural health facilities. (2) Spontaneous sputum smear has a very low diagnostic yield in childhood in low-income countries specially in under five. Alternative methods should be implemented in rural areas. (3) Under five patients are admitted more often than the rest.

17A. EDUCATION: REFUGEE CHILDREN

ESP17-0685

EVALUATION OF CURRENT PRACTICE OF MANAGING REFUGEE CHILDREN IN PEDIATRIC EMERGENCY CARE IN EUROPE: A POINT OF PREVALENCE SURVEY AND INITIATIVE FOR RESEARCH NETWORK

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Background

The stream of refugees entering the European Union continues to be a considerable medical and humanitarian challenge. Many refugees are minors requiring medical assistance and often present to emergency care facilities, confronting public health services with unpredictable obstacles. A long-term easing of the political and socio-economic tensions, being major causes of flight is not within sight. Therefore better understanding of current hospital bound emergency care for young refugees is needed to develop forward thinking concepts for the future.

Methods

A point of prevalence survey on common practice of medical services for routine care of refugee children in emergency care was established. Children aged <18 years fulfilling criteria of refugee status were eligible. Data on demographics, epidemiology, prevalent healthcare needs, perceived barriers in health care provision, and healthcare-associated costs were collected. Available clinical guidelines and resources were collated. The survey was distributed through paediatric research networks amongst health care professionals across Europe.

Results

The study is currently in the process of data collection, with results being available within the next 3 months. Since there are currently no data available on this specific and important topic in Europe, we foresee presenting novel insights into common practice of managing refugee children presenting to paediatric emergency care.

Conclusions

So far, comprehensive data about medical needs of refugee children in Europe are scarce, especially for hospital bound care. Our study will be seminal to identifying challenges and barriers when caring for refugee children in different European settings and to improve clinical care for this vulnerable group of patients. The survey will support optimising health care delivery systems for refugee children and developing educational tools for health care professionals in order to improve our preparedness for years to come.

02B. EDUCATION: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-0686

AMOXICILLIN DOSING REGIMENS IN NEONATES ACROSS SWISS NEONATAL INTENSIVE CARE UNITS AND INTERNATIONAL GUIDELINES

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Background

Our objective was to assess the achievement of adequate amoxicillin exposure for dosing regimens across Swiss NICUs and international guidelines.

Methods

Amoxicillin dosing regimens were collected from the 9 Swiss level III NICUs and 4 international guidelines (Swissmedic®, BNF for children®, Neonatal Formulary®, Frank Shann's®). Variables used for selection of individualized doses, single dose, total daily dose, and dosing interval in each guideline were assessed. Model-based simulations were performed to compare the various dosing regimens with respect to their ability to maintain drug concentrations above predefined minimum inhibitory concentrations (MICs) for 100% of the dosing interval at the start of treatment. Simulations used demographic data from the ARPEC survey in Europe

Results

Amoxicillin dosing regimens used in guidelines showed considerable variability with 12 of the 13 dosing regimens being different with respect to dose, dosing interval, and variables (weight, gestational age, postnatal age, postmenstrual age) used to select individual doses. Dosing regimens ranged from 20 mg/kg q8h to 100 mg/kg q12h, and also varied within neonatal subgroups. Simulations suggested that all guidelines maintain drug concentrations above an MIC of 2 mg/l for 100 % of the dosing interval in the neonatal population tested at the start of treatment. However, simulations with 4 of the 13 dosing recommendations resulted in drug concentrations not being maintained above an MIC of 8 mg/l for 100% of the dosing interval in 90% of the neonates. Single doses below 30 mg/kg failed to achieve an effective exposure for a MIC of 8 mg/l.

Conclusions

The different amoxicillin neonatal dosing regimens result in variable drug exposures. There is a clear requirement for amoxicillin dosing regimen harmonization and simplification for neonates, based on a quantitative rationale to achieve effective exposure.

14B. EDUCATION: NON-INVASIVE GASTROINTESTINAL AND MUCOSAL INFECTIONS

ESP17-0687

LIPSCHÜTZ ULCER AND GROUP A STREPTOCOCCAL ACUTE TONSILLITIS – A CASE REPORT

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Title of Case(s)

Lipschütz ulcer and group A streptococcal acute tonsillitis – a case report

Background

Lipschütz ulcer (LU) is a non-sexually related genital ulcer. It's rarely reported, probably misdiagnosed by clinicians. LU is more common in adolescents and characterized by the abrupt onset of well-delimited vulvar ulceration(s) with intense local pain and dysuria. Prodromal mononucleosis-like symptoms are usually present. The majority of cases are idiopathic. However, LU has been associated with viral and bacterial infections, including EBV, CMV and Mycoplasma. Ulcerations are self-limited and treatment is supportive.

Case Presentation Summary

We describe a healthy 11-year-old girl, not sexually active, with no previous genital ulcers. Recent medication and vulvar trauma were denied. She presented with an acute onset of intense vulvar pain and dysuria, and 3 days of fever and odynophagia. A large ulcer on the inner surface of left labia minora was observed. The oropharynx showed tonsillitis and throat swab test for Group A Streptococcus (GAS) was positive. She was treated with a 10-day course of Amoxicilin, and symptomatically. Genital ulcer swab culture (bacterial, fungal and parasitic) and Herpes simplex virus (HSV) PCR were negative. Serologic tests for EBV, CMV, HSV and Mycoplasma were negative for acute infections. Antistreptolysin O titer was 964.5 IU/mL (normal <200). HLA-B51 antigen was negative and ophthalmological examination revealed normal findings. The ulcer healed in 2 weeks, with no scar and no recurrence in a 3-month follow-up period.

Learning Points/Discussion

There's lack of awareness of this condition, whose etiopathogenesis is poorly understood. Recent evidence suggests that local ulceration results from a systemic immunopathological response to an acute infection. The association of LU with GAS acute tonsillitis, as described in this patient, is very rare. The recurrence rate isn't negligible, therefore follow-up is advised.

22A. EDUCATION: OTHER

ESP17-0689

DEEP NECK SPACE ABSCESS. CASE SERIE.

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Title of Case(s)

Deep neck space abscess. Case serie.

Background

Retro and parapharyngeal abscess are not common infections in children but are potentially severe. We present 4 cases of deep neck space abscess diagnosed in our hospital during the last year.

Case Presentation Summary

CASE 1

Sixteen months old boy with right submandibular mass and drooling, context of respiratory infection. Pharyngeal examination with swelling of the right tonsil. The blood count was normal and PCR 2,72mg/dl. A right parapharyngeal abscess was demonstrated with TAC, and intravenous treatment was initiated with Amoxicillin-clavulanate and Metronidazole, without surgical drainage.

CASE 2

Eight years old boy with dysphagia, odynophagia and trismus, the previous days he received dental care. The blood test shows leukocytosis with neutrophilia and PCR 38,15mg/dl. In the TAC it was seen a right retropharyngeal abscess in which was performed surgical drainage associated to Amoxicillin-clavulanate and Metronidazole intravenous.

CASE 3

Sixteen months old girl with fever and submandibular mass, context of upper respiratory infection. Physical exam with retropharyngeal protrusion. In the blood count there was neutrophilic leukocytosis and PCR 24,75mg/dl. The TAC showed a retropharyngeal abscess which was treated intravenously with Amoxicillin-clavulanate and Metronidazol, and with surgical drainage.

CASE 4

Three years old boy with torticollis appeared in context of fever and respiratory symptoms. Normal oropharyngeal examination. Blood count with leukocytosis and PCR 16mg/dl. In the TAC it was seen a right parapharyngeal abscess, in the level of C1-C2. Surgical drainage was made and also intravenous treatment with Amoxicillin-clavulanate and Metronidazol.

Learning Points/Discussion

Deep neck space abscess in pediatrics usually are complications of upper respiratory infections. The TAC is the best tool to identify abscesses in this location. They are often polymicrobial infections. The treatment must be antimicrobial therapy, with or without surgical drainage.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0690

FEATURES OF PAEDIATRIC PARAPNEUMONIC PLEURAL EFFUSIONS AND EMPYEMA (PPE/PE) DUE TO STREPTOCOCCUS PNEUMONIAE VERSUS PPE/PE DUE TO STREPTOCOCCUS PYOGENES - NATIONWIDE GERMAN PPE/PE-SURVEILLANCE, 2010-2016

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Background

We analyzed incidence and clinical characteristics of parapneumonic effusions/empyema (PPE/PE) due to *Streptococcus pneumoniae* (*Spneu*) or *S. pyogenes* (*Spyo*) in children in Germany.

Methods

Between October 2010 and June 2016, nationwide hospital-based PPE/PE-surveillance has been conducted using the German Surveillance System for Rare Paediatric Diseases (ESPED). Patients <18 years of age with pneumonia complicated by pleural effusion persisting for ≥ 7 days or necessitating pleural drainage were included. *Spneu*, *Spyo* and other bacteria were detected from blood and/or pleural fluid by culture and/or PCR; eubacterial 16S-rDNA PCR from pleural fluid was offered to all hospitals. PPE/PE cases with *Spneu* or *Spyo* as the only detected pathogen (mono-infections) were compared.

Results

A total of 1222 children with PPE/PE (median age 4 years, IQR 3-9) were reported. In 407 (33%) children, a total of 448 bacteria were detected, including 180 *Spneu* (40% of 448) and 87 *Spyo* (19% of 448). The proportion of *Spneu*-PPE/PE decreased continuously, from 62% (45 of 73 detected bacteria in 2010) to 25% (23 of 91 in 2016; $p < 0.001$), whereas *Spyo*-PPE/PE increased from 8% (6 of 73) to 32% (29 of 91; $p < 0.001$). Comparing 83 *Spyo*-PPE/PE vs. 163 *Spneu*-PPE/PE mono-infections, children with *Spyo*-PPE/PE were younger (median 3 years, IQR 1-5 vs. 4 years, IQR 3-7; $p = 0.001$), showed a shorter persistence of PPE/PE (median 11 days, IQR 6-18 vs. 16 days, IQR 10-24; $p = 0.002$), and required less often surgical interventions (27% vs. 40%; $p = 0.049$). Complications, durations of stay, other treatments, and outcomes were similar in both groups.

Conclusions

Between 2010 and 2016 we observed a decrease of *Spneu*-PPE/PE in children, while cases with *Spyo*-PPE/PE increased. *Spyo*-PPE/PE affected younger children, and were associated with a milder clinical course.

Clinical Trial Registration (Please input N/A if not registered)

N/A

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0692

REPLACEMENT OF SEROTYPES IN INVASIVE INFECTIONS IN EL SALVADOR AFTER THE INTRODUCTION OF 13 VALENT VACCINE 13 DURING THE PERIOD 2014-2016

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Background

7TH valent pneumococcal vaccine was introduced in El Salvador in 2009 in a 3 + 1 scheme, changing in 2011 to PCV13 with a 2 + 1 scheme, with vaccine coverage above 95% in the primary regimen. Invasive pneumococcal disease (IPD) decrease more than 90% in 2011, 2012, and 2013, but for the period 2014-2016 there was an increase in IPD caused by serotypes not included in PCV13, evidencing the replacement phenomenon and that they currently constitute a public health problem given its high mortality.

Methods

Retrospective descriptive study including 17 patients admitted to Hospital de Niños Benjamin Bloom during the period from January 2014 to March 2016 with IPD produced by serotypes identified in cultures that were not included in PCV13 and had not been found in Years prior to vaccination.

Results

17 records with diagnosis of IPD. 16 were serotypes not included in the vaccine, with a mean age of 51 months, with clinical symptoms of meningitis (23.5%), pneumonia (35%), sepsis (17.6%), and septic shock (23.5%). The serotypes responsible were 4 (1), 11 (2), S20 (1), 10 A (5), 10 B (1), 12 A (2), 15 A (2), 15 B (1), 18 A (2). 98% with complete vaccination schedules for their age with a mortality of 70%.

Conclusions

PCV13 is highly effective in El Salvador, with an IPD reduction of more than 90%, but new serotypes have appeared that produce 90% of IPD after the introduction of PCV13, with a high mortality rate. Therefore, epidemiological surveillance should be strengthened to report the phenomenon of replacement in the region.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-0694

AN AUDIT OF ANTIMICROBIAL PRESCRIBING IN PAEDIATRIC INTENSIVE CARE

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Background

Evelina London's Children Hospital is part of Guys and St. Thomas' Foundation Trust and provides secondary and tertiary care to children. The aim of this audit was to assess the appropriateness of antimicrobial prescribing within the Paediatric Intensive Care Unit at Evelina London Children's Hospital and determine if prescribing practice complies with the Trust's empiric antimicrobial guidelines.

Methods

Prospective data collection over a 4-week period (October – November 2016). Data including demographics, antimicrobial and microbiology details were collected from paper/electronic drug charts, medical notes, and electronic patient records. Patients from birth to 18 years of age initiated on antimicrobials for treatment purposes during the data collection period were included and followed up until cessation of antimicrobials.

Results

In total, 83 patients were admitted during the data collection period; 43 (n=83, 52%) met the inclusion criteria. In total 98 individual antimicrobial prescriptions were identified comprising of 20 different antimicrobials, 6 of which were restricted agents. Co-amoxiclav and gentamicin were the most commonly prescribed antimicrobials. Eighty four (n=98, 86%) prescriptions were empiric and of these 52 (n=84, 62%) complied with local Trust guidelines. Various legitimate reasons for non-compliance were identified and overall 81 (n=84, 96%) prescriptions were considered to be appropriate. Indication and duration of antimicrobial therapy was documented in 51% (n=98) and 57% (n=98) of prescriptions respectively.

Conclusions

Overall, antimicrobial prescribing within the Paediatric Intensive Care Unit at Evelina London Children's Hospital showed good antimicrobial stewardship. The results highlight the need for standardisation of antimicrobial prescribing across the unit. Implementation of electronic prescribing and development of Paediatric Intensive Care Unit specific antimicrobial guidelines may help.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0695

NATIONAL PAEDIATRIC FEVER GUIDELINES ACROSS THE EUROPEAN UNION

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Background and Objective

Management of acute febrile illness in children can be challenging and diagnostic and treatment practices varies across Europe. This study therefore aimed to collate and assess national paediatric guidelines on the management of fever syndromes from countries in the European Union (EU) and to compare care recommendations between the countries.

Methods

A literature review of Medline, Embase, the Cochrane Library, SIGN, G-I-N, and TRIP was performed, looking for guidelines on fever syndromes including acute otitis media, undifferentiated fever, pharyngitis/tonsillitis, pneumonia, bronchiolitis, osteomyelitis/septic arthritis, cellulitis, and meningitis. Additionally, the websites of national paediatric associations were searched to identify missing protocols. Paediatric colleagues from the included countries were then directly contacted in order to confirm use of nationally endorsed guidelines and to obtain any outstanding guidelines. As a measure of quality comparison, individual guidelines were graded based upon AGREE II Criteria. Care recommendations were compared and ranked in view of level of evidence supporting the recommendations.

Learning Points Discussion

- Of the 101 nationally endorsed guidelines found, 77 were selected for review.
- Of these, 36 were found via national societies, and 23 via systematic review of databases.
- There appeared to be a wide variety in AGREE quality criteria scores between the guidelines.
- Care recommendations varied between countries, despite use of similar levels of evidence.

Our findings confirm significant variability in care recommendations within the EU. Underlying aetiology of differences, whilst based on similar available scientific evidence, is likely multifactorial and should be explored.

22A. EDUCATION: OTHER

ESP17-0696

MENINGITIS CAUSED BY ENTEROVIRUS IN OUR ENVIRONMENT. DESCRIPTIVE STUDY.

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Title of Case(s)

Meningitis caused by Enterovirus in our environment. Descriptive study.

Background

The objective of this retrospective descriptive study is to analyze the main characteristics of patients with meningitis caused by Enterovirus in an epidemic outbreak in our area that affected up to 14 patients aged between 28 days and 14 years.

Case Presentation Summary

The mean age was 4.19 years (range 1.40-8.60). The average hours of evolution were 27.93. 42.9% of patients reported gastrointestinal and/or catarrhal symptoms on the previous days. The symptoms presented were headache (100%), vomiting (92.9%), fever (78.6%), respiratory infection (35.7%) and diarrhoea (21.4%).

The mean leukocyte count was 13464/mcl (range 9000-19700/mcl), mean 10154/mcl neutrophils and 1872/mcl lymphocytes. PCR range 0.22-9.85mg/dl, with PCT negative in all cases. In the CSF, we found a mean glycemia of 0.63 g/l and a mean proteinorrachia of 0.48 g/l. The maximum number of nucleated cells was 733/mcl (mean of 257.43/mcl). Mean of the percentage of segmented was 62.62% and the mean of the percentage of lymphocytes was 37.38%. Boyer scale indicated low risk in 13 patients; only 1 patient presented 5 on Boyer scale. All CSF samples were sent for genotyping.

Learning Points/Discussion

Enteroviruses are a frequent cause of aseptic meningitis. Some serotypes are endemic, while others occur in outbreaks, as evidenced in our area, where all cases appeared between May and August.

The clinical features associated with meningeal symptoms varies, being reported with gastrointestinal symptoms associated in up to 90% of cases. CSF usually presents pleistocytosis, with polymorphonuclear predominance in the first hours and lymphocytes later. Meningitis caused by Enterovirus is usually self-limiting, with favourable prognosis. Enterovirus PCR in the continuous care services portfolio of the microbiology service allows an early diagnosis, avoiding empirical treatment and unnecessary costs.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0697

FEMORAL PANDIAPHYSITE DUE TO FUSOBACTERIUM NECROPHORUM IN A 7-MONTH-OLD BOY

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Title of Case(s)

Femoral pandiaphysite due to *Fusobacterium necrophorum* in a 7-month-old boy

Background

Lemierre's syndrome is characterized by a history of recent oropharyngeal infection followed by a typical thrombophlebitis of the internal jugular vein leading to metastatic septic emboli. The causative agent is *Fusobacterium necrophorum*.

Case Presentation Summary

We report the case of a previously healthy 7-month-old boy presenting a septic arthritis of the hip complicated by an unusual femoral pandiaphysite caused by *F. necrophorum*, consecutive to an oropharynx infection. Prolonged adapted antibiotic therapy and joint drainage allows a healthy outcome.

Learning Points/Discussion

Review of the literature shows that osteoarticular infection caused by *F. necrophorum* is uncommon and complication by pandiaphysite is exceptional, so far never described. Second, Lemierre's syndrome affects young adults and children but our patient is significantly younger than cases reported.

Lemierre's syndrome is rare but needs to be identified early in the course to decrease serious complication due to delayed or inappropriate treatment. It should be evoked in bone and joints infections with initial oropharyngeal infection.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0698

BCG- ASSOCIATED OSTEOMYELITIS IN A 12-MONTH-OLD GIRL

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Title of Case(s)

BCG- ASSOCIATED OSTEOMYELITIS IN A 12-MONTH-OLD GIRL

Background

Universal BCG vaccination is still used in Lithuania as the prevalence of TB is high. BCG vaccine is given as a single dose at the 2-3 day of life. The coverage of vaccination is very high, annually reaching around 98%. BCG vaccine is known as causing post-vaccinal lymphadenitis. We present the second case of BCG osteomyelitis in Children's Hospital¹ during the last 20 years.

Case Presentation Summary

A 12-month-old girl was diagnosed with a right hip dysplasia. The surgery was delayed due to unexplained leucocytosis and increased ESR of unknown origin. One month later the closed reduction was performed followed by control CT-scan which showed a destruction of the right femoral neck. The prescribed 14-day antimicrobial treatment as for suspected chronic osteomyelitis was unsuccessful leading to the biopsy which revealed AFB. The Xpert-MTB/RIF identified MT complex susceptible to Rifampicin and *M. bovis* BCG strain was confirmed from the biopsy. Treatment with 4 anti-TB drugs (Rifampicin, Isoniazid, Ethambutol, Amikacin) was started. There was no evidence of primary or secondary immunodeficiency. According to NIP the girl was immunized with Bulgarian BCG vaccine at the second day of life. There were no side effects observed after vaccination. Currently patient is still receiving anti-TB treatment which will be continued for 12 months and followed after treatment by surgical correction of a right hip dysplasia.

Learning Points/Discussion

1. Although the BCG- associated osteomyelitis is very rare condition worldwide this diagnosis must be considered in BCG vaccinated infants with the osteomyelitis of unknown aetiology. 2. The certain reason why this patient developed BCG osteomyelitis remains unrevealed. 3. The pathogenesis of BCG post-vaccinal osteomyelitis brings novel research challenges.

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0699

UTILITY OF XPERT MTB/RIF ASSAY IN DIAGNOSIS OF PAEDIATRIC TUBERCULOSIS: A STUDY FROM INDIA

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Background

World Health Organization has recommended the use of Xpert MTB/RIF assay as an initial diagnostic tool suspected of Tuberculosis (TB) and detection of resistance to rifampicin. Diagnosis of TB in children can be challenging because of non-specific symptoms, signs and difficulty of obtaining adequate sample. We assessed the diagnostic accuracy of this test in children in our tertiary care hospital in southern India.

Methods

The laboratory based retrospective study of suspected tuberculosis children data sets from May 2015 to December 2016. Xpert MTB/RIF assay was taken as a primary tool for investigation. All samples (pulmonary and extra-pulmonary) that were tested by Xpert MTB/RIF, further more diagnostic test were evaluated based on clinical findings. A total number of 173 children (age 3 months-18 years) were tested by Xpert.

Results

Xpert was positive in 24 (13.87%; $p=0.123$) patients. Culture revealed *M. tuberculosis* complex in 8 (22.2%; $p=0.11$) out of 36 patients. AFB smear positivity was seen in 4 (5.3%; $p=0.022$) out of 76 patients. Sensitivity and specificity of Xpert for culture positive confirmed cases is 89% ($p=0.002$) and 100% ($p=0.0001$) respectively, odd ratio (3.45- 7.66) ($p=0.0012$). Out of 149 children tested negative by Xpert, 17 (11.40%) were empirically treated with first-line antitubercular drugs based on other findings ($p=0.0032$), odd ratio (5.64-11.44) with clinical improvements ($p=0.009$).

Conclusions

Although Xpert MTB/RIF assay could be useful for rapid identification of TB, the diagnosis of childhood TB often relies upon clinical criteria and other laboratory investigations like histopathology examination, radiological findings, history of exposure to known positive patients and adenosine deaminase test. In many situations, treatment is often initiated empirically without the knowledge of Xpert or TB culture results as per the revised national tuberculosis programme 2015 in India.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0700

THE SPUTUM SAMPLE ALONE IS NOT ENOUGH FOR CHRONIC PSEUDOMONAS INFECTION DETECTION IN CYSTIC FIBROSIS PATIENTS

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Background

Background: Bulgarian patients with cystic fibrosis (CF) have the highest percentage of chronic *Pseudomonas aeruginosa* infection in comparison with other European CF patients. It is known that these patients in nearly 30-35% have difficulties in expectorating sputum (even after induction), which may be the reason for the late detection of colonization with *P. aeruginosa* and thus delayed implementing the eradication regimens, when relying solely on sputum investigation.

Methods

Material and methods: From 140 CF patients (76 males, 64 females; aged from 0.1 to 65 years) we examined secretions from the airways for a precise microbiology identification and additionally we used ELISA – ready kit for IgG antibodies to *P. aeruginosa* detection in peripheral venous blood.

Results

Results: Chronic infection with *P. aeruginosa* from respiratory samples is found in 91 patients (65.40%). From the rest 49 patients we found 6 (20%) who had elevated IgG levels towards *P.aeruginosa*, despite negative microbiology results.

Conclusions

Conclusion: The percentage of chronic infection with *P.aeruginosa* is one of the highest reported in EU countries. Perhaps the differences are due to the fact that the test for antibodies is not routinely done in our practice and we rely mostly on sputum/throat swabs and sometimes we can't have really early detection of colonization with *P. aeruginosa* and our eradication regimens are delayed.

Acknowledgements: This work was supported by a grant from the Medical University of Sofia (Council of Medical Science, project no. 512/2016, grant no. 64/2016)

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0702

EFFICACY OF 13-VALENT CONJUGATE VACCINE IN INVASIVE PNEUMOCOCCAL DISEASE IN EL SALVADOR: 5 YEARS OF EXPERIENCE

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Background

Invasive pneumococcal disease (IPD) was one of the top 5 causes of death in children under 5 years of age, so in 2009 PCV7 was introduced and then in 2011 it is changed to PCV13 (2 + 1) with a budget of 6 million dollars (40% of the budget of the vaccination program), with vaccination coverage above 90%. Given the economic cost of vaccination, it was necessary to demonstrate the impact on reducing the disease burden

Methods

Retrospective descriptive study including 5 years of surveillance of IPD behavior, the databases of the National Health System (SIMOWW) were reviewed, which records the surveillance of Pneumonia, Meningitis and Bacteremia in children under 5 years of age

Results

Community acquired pneumonia (CAN) demonstrated a reduction from 768 cases to 691 (10%), pneumococcal pneumonia 27.9 / 10,000, discharges to 2.8 / 10,000, pneumococcus empyema 15.4 / 10,000 to 2.4 / 10,000, meningitis 16.4 in 2009 to 0 in 2013, presenting in 2014-2015 five cases (3 for serotypes not included in the vaccine and 2 in non-vaccinated children), bacteremia decreased the rate from 32.8 (2007) to 3.1 (2013). Resistance to penicillin in 44 isolates decreased from 40% to 22% and for macrolides from 46% to 18%. Mortality of pneumonia decreased in 30%

Conclusions

After the introduction of PCV7 and PCV13 in the national vaccination schedule and the maintenance of high coverage, it has been possible to observe a rapid and significant reduction of IPD, which has had an impact on the costs of care, reduction of mortality and bacterial resistance

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0703

CLINICAL UTILITY OF SEROLOGICAL TESTS IN CHAGAS DISEASE NEWBORN SCREENING PROGRAM

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Background

The number of patients with Chagas is increasing in Europe due to migrations. Vertical transmission is around 5% and screening programs for newborns with seropositive mothers have demonstrated to be effective. PCR is performed at birth and at one month of age. In addition, serology is recommended at nine months. Our aim is to analyse the need of the serology test in children with two negative PCRs for Chagas Disease.

Methods

We present a retrospective descriptive study. We search the clinical histories of the newborns with Chagas seropositive mothers that completed the screening program (2 PCR and at least one serology) from May-2010 to April-2016 in our hospital. We collected data of the PCR results, the number and results of the serologies done, and the presence or absence of Chagas diagnosis.

Results

49 patients were included in our study. Only 2 were infected (4% prevalence), both patients had 2 positive PCR. Among the children with two negative PCR, none of them was diagnosed of Chagas disease as they were all finally seronegative. The average number of serologies done to each child was 1.55(\pm 0.91) and the medium age of loss of antibodies was 10.5 months, being 15.5 months the maximum age.

Conclusions

Prevalence of Chagas disease in Spain in children born from Chagas infected mothers is below 5%. All PCR negative children were not infected, and less than 50% loss their maternal antibodies before 10 months. Therefore protocol serology should be delayed or not performed in those children. This would reduce the number of punctures and medical visits for the child and its parents, and give the parents the calm to know their children are Chagas free since the first month of life.

20B. EDUCATION: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-0704

THROMBOCYTOPENIA AFTER PNEUMOCOCCAL 13-VALENT CONJUGATE VACCINE

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Title of Case(s)

Thrombocytopenia after Pneumococcal 13-valent conjugate vaccine

Background

Immune thrombocytopenic purpura (ITP) is an autoimmune condition characterized by low platelet count with mucocutaneous or other bleedings, occasionally life-threatening. Clinical manifestations may range from spontaneous formation of purpura and petechiae, to epistaxis, bleeding at the gums or menorrhagia, any of which occur usually if the platelet count is below 20,000 per μl . A very low count may result in the spontaneous formation of hematomas in the mouth or on other mucous membranes. Vaccines may induce ITP by several mechanisms. The most likely is through virally induced molecular mimicry. Pneumococcal 13-valent conjugate vaccine (PCV13) is used for immunization to prevent invasive disease caused by *Streptococcus pneumoniae*. Rare cases of ITP after vaccination with PCV13 have been reported.

Case Presentation Summary

A four-month old male infant presented to our hospital with normal vital signs and petechial rash in face, extremities and body of 9 days duration. His medical history was negative with the exception that he has been vaccinated with PCV13, 18 days ago. The platelet count upon arrival was 3,000/ μL . The clinical examination was unremarkable as was the physical examination. The mother reported hyperthyroidism; otherwise the family history was unremarkable. Antibodies against Parvovirus, EBV, CMV, HIV, HCV, Hbs Ag, anti HBcore, anti HBS were all negative. IgE, IgA, IgM, C3, C4 were within normal range. The US showed slightly enlarged spleen size. The Whiskott Aldrich protein expression, genetic testing for Fanconi anemia, bone marrow examination, funduscopy, and cardiology evaluation were normal. The platelet count began to rise without interference, and in two weeks period was 110-120.000/ μL .

Learning Points/Discussion

Although thrombocytopenia after pneumococcal 13-valent conjugate vaccine is not officially reported, individual cases indicate that such a connection might be possible.

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0705

CURE RATE AND TREATMENT SUCCESS RATE OF CHILDHOOD TUBERCULOSIS IN NORTH SUDAN

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Background

Tuberculosis causes a significant morbidity and mortality among children worldwide. Children with tuberculosis if diagnosed early in the course of the disease respond well to treatment. The aim of this study was to report the cure rate and treatment success rate of childhood tuberculosis in North Sudan.

Methods

A cross sectional, health facility based study done in River Nile State – North Sudan. The records of all children below 15 years whom were diagnosed as tuberculosis in the period 2011-2013 were studied. Data included age, sex clinical presentation, investigations, management and follow-up.

Results

Childhood tuberculosis was 15.3% of the reported cases of tuberculosis in North Sudan. Males were 56.7%. Pulmonary tuberculosis constituted 61.5% among studied children. The cure rate was (76.5%), and the treatment success rate was (88.2%).

Conclusions

Treatment outcomes were unsatisfactory when compared with regional and international rates. These call for urgent interventions in treatment strategies used.

22A. EDUCATION: OTHER

ESP17-0706

CLINICAL CHARACTERISTICS AND EVOLUTION OF CHILDREN ADMITTED TO A TERTIARY HOSPITAL WITH ENTEROVIRUS 71 MENINGOENCEPHALITIS

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Title of Case(s)

CLINICAL CHARACTERISTICS AND EVOLUTION OF CHILDREN ADMITTED TO A TERTIARY HOSPITAL WITH ENTEROVIRUS 71 MENINGOENCEPHALITIS

Background

Since 1974 Enterovirus 71 (EV71) had emerged as a significant cause of aseptic meningitis, encephalitis, acute flaccid paralysis and acute cardiopulmonary dysfunction. Spain in 2016, as previously described in other countries, has suffered an EV71 outbreak.

Case Presentation Summary

Prospective and observational study of children admitted because of enterovirus meningoencephalitis in a tertiary hospital sited in Madrid, Spain, from January 2016 to December 2016. Thirty patients were included. Enterovirus EV71 was isolated in 15/30 children, throat swab samples positives in 10/15, fecal samples in 2/15 and both in 3/15. No EV71 was detected by polymerase chain reaction in cerebrospinal fluid. Eight were females and seven males with a median age 2 years (range: 4 months to 7 years). At admission all presented fever, vomiting and altered levels of consciousness. Three patients manifested acute cardiac failure and pulmonary edema. 10/15 in EV71 group required intensive care treatment versus 1/15 in not EV71 group. The magnetic resonance image (MRI) showed rhombencephalomyelitis in 9/15 children, 4/15 encephalomyelitis and 1/15 acute myelitis. Fourteen patients received intravenous immunoglobulin. Methylprednisolone megabolo was used in 11/15 and fluoxetine in 7/15. There were no deceased and 7/15 showed neurological impairment or other sequels at hospital discharge.

Learning Points/Discussion

Half of children admitted because of enterovirus meningoencephalitis were EV71 positive. All of them presented fever, vomiting and altered levels of consciousness at admission. Critical care approach was needed in almost all patients. The rhombencephalomyelitis was the main finding in MRI. Intravenous immunoglobulin and methylprednisolone were used in almost all of them. There were no deaths but the presence of sequels was higher than in children without EV71 disease.

22A. EDUCATION: OTHER

ESP17-0708

TEMPORAL ASSOCIATION BETWEEN HUMAN RHINOVIRUS ACTIVITY AND KINGELLA KINGAE OSTEOARTICULAR INFECTIONS IN CHILDREN

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Background

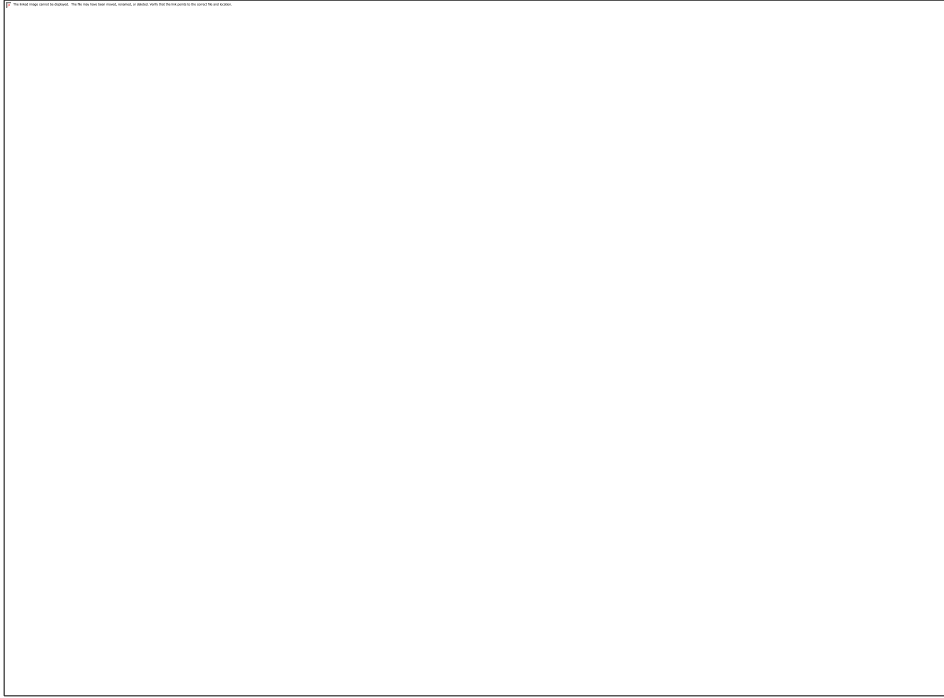
Kingella kingae is the first pathogen of osteoarticular infections (OAI) in children and are frequently preceded by or concomitant with viral infections. A high prevalence of oropharyngeal respiratory virus carriage in children with *K. kingae* OAI was previously reported. We aimed to determine whether the seasonal distribution of *K. kingae* OAI is similar to those of frequent respiratory viruses.

Methods

From October 2009 to September 2016, we extracted data on the weekly cases of *K. kingae* OAI occurred in 2 paediatric tertiary care centres in Paris; and we collected data of respiratory virus activity in the same region using the surveillance of the Influenza National Reference Centre. Results are showed pooled by week. Spearman's rank correlation was used to assess a correlation between seasonal distributions, a $p < 0.05$ was used to denote a significant correlation.

Results

During the 7-year period, 322 children were diagnosed with *K. kingae* OAI using specific real-time PCR in bone or joint samples, while 317 were negative. We observed two peaks of *K. kingae* OAIs (98 [30.4%] cases during Spring and 105 [32.6%] cases during Autumn). This distribution was correlated to that of human rhinovirus (HRV) ($\rho = 0.30$, $p = 0.028$) (Figure 1). In contrast, no significant correlation was found between the seasonal distribution of *K. kingae* OAI and other respiratory viruses (Influenza virus, Respiratory Syncytial Virus and Metapneumovirus).



Conclusions

A correlated seasonal distribution was observed between HRV circulation and *K. kingae* OAI, strengthening the hypothesis of a role of viral infections in the pathophysiology of *K. kingae* OAI. Although our results do not prove a causal relationship and have to be confirmed, HRV, more than influenza or respiratory syncytial viruses, appears as a plausible and interesting clue.

22A. EDUCATION: OTHER

ESP17-0709

FIBULA OSTEOMYELITIS IN A CHILD ASSOCIATED WITH *GRANULICATELLA ALBICANS*: A CASE REPORT

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Title of Case(s)

FIBULA OSTEOMYELITIS IN A CHILD ASSOCIATED WITH *GRANULICATELLA ALBICANS*: A CASE REPORT

Background

Osteomyelitis is an infection localized to bone, usually caused by bacteria that enter hematogenously. Most cases occur in children younger than five years, and tubular bones are more frequently affected, involving firstly metaphyseal region. Initial manifestations may be insidious and nonspecific, progressing to focal findings of bone inflammation and limitation of function.

Case Presentation Summary

A 14 months toddler, male, who presented with pain in distal extremity of left leg and refusal to walk or weight bearing. One week before, he had three days of low fever, without fever since then. There was no history of trauma. A radiograph showed a lesion in distal extremity of the fibula, interpreted as a fracture, treated with plaster cast. Three days later, on local examination there was a hard swelling. A new radiograph of the ankle showed a lytic lesion with periosteal reaction and cortical interruption. Blood tests showed a raised erythrocyte sedimentation rate, with normal CRP and leucocytes. A MRI scan of the ankle was subsequently performed which confirmed the diagnosis of osteomyelitis of the fibula. The patient required prolonged antibiotic therapy and underwent percutaneous drainage of the lesion, with isolation of *Granulicatella elegans* in the aspirate and inflammatory cells in the histopathologic test. Blood culture was negative. The evolution was favourable and the patient made a full recovery.

Learning Points/Discussion

With this case report, the authors highlight that the diagnosis of osteomyelitis requires a high level of suspicion. The location in fibula is uncommon even in children. *Granulicatella* species are a normal component of the oral flora, but have been associated with a variety of invasive infections, like endocarditis, vertebral osteomyelitis and septic arthritis.

12B. EDUCATION: INVASIVE FUNGAL INFECTIONS

ESP17-0712

DERMATOLOGIC MANIFESTATIONS OF DISSEMINATED COCCIDIOMYCOSIS IN PEDIATRIC PATIENTS

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Title of Case(s)

Dermatologic manifestations of disseminated Coccidiomycosis in Pediatric patients

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Background

Coccidiomycosis is seen in the Western Hemisphere and recognition of disseminated disease is important because of effective therapy. Higher incidence rates are reported in adults.

Case Presentation Summary

We encountered three pediatric patients within three months with dermatologic findings whose evaluations demonstrated disseminated disease. Patients ranged from 5 months to 17 years. Dermatologic presentations included single nodule on finger of a 5 month old girl, nodule on the orbit of the 15 year old girl and left hand swelling in the 17 year old boy. The patients were all African-American (AA) and not immunocompromised. All were residents of West Texas, an area not considered highly endemic ; and had not traveled outside West Texas. All patients had biopsy or PCR proven Coccidiomycosis immitis/posadasii and serologic evidence of disseminated disease (Complement fixation (CF)=/≥ 1:32). Two patients (15 y/o and 17 y/o/ear old) had skeletal dissemination and responded to oral itraconazole for 9-12 months. The 5 month old had associated osteomyelitis of a digit and responded to 6 months of oral fluconazole.

Table

Age	Dermatologic site	Bone(s)	Treatment
5 months	finger nodule	phalanx	fluconazole
15 years	orbit nodule	vertebrae, ribs, sacrum, ilium	itraconazole
17 years	left hand swelling	metacarpal, radius, calcaneus, cuboid, cuneiform	itraconazole

Learning Points/Discussion

International travel and immigration presents challenges for pediatric infectious disease clinicians. Suspicion of Coccidiomycosis based on exposure and unusual dermatologic findings should prompt evaluation by serology or biopsy with early appropriate therapy and better outcomes.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-0714

IMPACT OF PNEUMOCOCCAL CONJUGATE VACCINE ON THE INCIDENCE OF PLEURAL EFFUSION IN CHILDREN : 2000-2014

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Background

Pneumococcal community-acquired pneumonia (CAP) is frequently complicated by parapneumonic pleural effusion (PPE). From 2011, the heptavalent pneumococcal conjugate vaccine (PCV7) was replaced by 13-valent pneumococcal conjugate vaccine (PCV13) in Belgium.

We compared the temporal evolution of pneumococcal PPE in children before and during each of the PCVs era in a Brussels pediatric tertiary hospital (HUDERF).

Methods

All children aged 0 to 16 years presenting with a CAP complicated by a PPE and hospitalized at HUDERF between January 2000 and December 2014 were included. They were classified according to three pre-defined periods («pre-PCV», «PCV7», «PCV13»). Pneumococcal serotyping was performed since January 2005. Incidence rates were calculated using the total number of pneumonia admissions as the denominator.

Results

Among 370 children hospitalized with PPE complicating CAP, *Streptococcus pneumoniae* was detected in 120 samples. Overall PPE incidence significantly increased during the study period, from 56.3‰ to 78.3‰ during the « pre-PVC » and « PCV13 » period, respectively ($p=0.01$). The incidence of PPE related to *S. pneumoniae* increased up to 60% from 11.4‰ during the « pre-PCV » period to reach 28.5‰ during the « PCV13 » ($p<0.0001$). This observation particularly affected children < 2 years- ($p=0.03$) and 2 to 5 years-old ($p=0.001$). However, pneumococcal PPE incidence decreased by 16.7% when comparing the « PCV13 » to the « PCV7 » periods. The incidence of serotype 1 increased by 63.4% between the « pre-PCV » and « PCV13 » periods.

Conclusions

Our study suggests an increased incidence of total and pneumococcus related PPE in children with CAP in Brussels since the vaccine era. A moderate decrease was however observed during the «PCV13» period. Serotype 1 was the most predominant serotype.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0716

ENTERIC MYOCARDITIS: ATYPICAL MANIFESTATION OF TYPHOID ILLNESS IN CHILDREN IN BIKANER, NORTHWESTERN INDIA

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Title of Case(s)

ENTERIC MYOCARDITIS

Background

Majority of enteric illness follow a benign self limiting course but recently rare atypical manifestations like cardiac involvement are increasingly seen due to rising burden of disease and increased awareness. We present 11 children found to have clinical evidence of myocarditis with bacteriologically proven typhoid fever in tertiary care hospital.

Case Presentation Summary

Diagnosis of enteric illness was made on isolation of the organism in blood culture [87.5%(119/136)], stool culture [7.35%(10/136)] and urine culture [5.14%(7/136)]. Bone marrow cultures were performed only in 3.68% children, due to its invasive nature. ECG and echocardiographic findings are similar to those encountered in myocarditis due to other causes. Exclusion of other causes was done with strict scientific manner. Median age was 9 years (range 3-11 years). Median duration of fever was 6 days (range 3-13 days). Common cardio-respiratory symptoms at time of admission were shock (54.55%), heart failure (27.27%) and chest pain (18.18%). Cardiac biomarkers creatinine kinase MB isoenzyme (mean±SD=141±55.91 U/l) and Troponin I (mean±SD=7±2.92 µg/l) were elevated in all these children. The commonest ECG abnormality encountered was prolongation of the QT interval (63.64%) and widespread ST segment elevation and/ or T wave inversion (27.27%). The Transthoracic echocardiographic findings were ranged from depressed left ventricular ejection fraction (100%) to abnormal left ventricular wall motion (54.55%). Cardiac MRI was done in 7 children revealing identifying areas of cardiac edema, hyperemia, and necrosis. All these children were treated according to standard protocols and all recovered well.

Learning Points/Discussion

- Although myocarditis in typhoid fever is rare, but more common than suspected.
- Possibility of enteric myocarditis should always be considered if a dengue fever patient has refractory shock and congestive heart failure.
- Most patients have an excellent long-term prognosis.

08C. EDUCATION: HIV/AIDS

ESP17-0717

DRUG-RESISTANT TUBERCULOSIS (DR-TB) IN HIV-POSITIVE CHILDREN

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Background

In 2014, Ukraine was defined as one of the 5 countries with the highest burden of drug-resistant tuberculosis (DR-TB), and since then the situation has not much changed. HIV-positive patients are known to have a higher risk of TB infection. Moreover, DR-TB diagnostic and management in HIV-positive children is more challenging than in adults as the paucibacillary disease, extrapulmonary TB localization complicate sputum collection for bacteriologic conformation and drug susceptibility testing (DST).

Methods

The medical records of 39 children with HIV/TB co-infection who received treatment in Center "Clinic for treatment children with HIV/AIDS" in 2016 were revised. All DR-TB cases (clinically, radiologically and/or lab-confirmed) were estimated.

Results

Among 39 children with HIV/TB co-infection, DR-TB is presented in 23%(n= 9), lab-confirmed in 33%(n=3). Among them 55% -female and 44%- male, with the average age -7 (ranging 4-12) years old. Among this cohort 78% have a TB relapse. Close contacts (with parents or sibling) with DR-TB were submitted in 55,5% cases, at the same time in 2 cases, in which resistance of both (as of child and of parents) were known – resistance profile was almost similar. 44% of the children were on antiretroviral therapy (ART) before TB with average time on ART being 15 months (ranging 5-26 month). The initial average CD4 cells: absolute number and percentage were 220 cells/ml with 11% respectively.

Conclusions

The main source of TB infection for HIV-positive children are their relatives (parents, sibling). Considering the fact that children are rarely MTB exposed, close contact resistance should be strongly estimated in order to prescribe the adequate treatment. ART treatment in HIV –positive children should be initiated as soon as HIV status are known.

We gratefully acknowledge Marina Serduyk, Center's phthisiotherapist.

22A. EDUCATION: OTHER

ESP17-0718

THE CLINICAL COURSE OF SALMONELLA BACTERIA INFECTION IN CHILDREN - A RETROSPECTIVE ANALYSIS OF A SINGLE CENTER EXPERIENCE.

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Background

Gram-negative Salmonella bacterial infection is one of the most common causes of bacterial acute gastroenteritis.

Methods

Based on a retrospective analysis of medical records, symptoms and clinical course of salmonellosis among patients hospitalized in the Gastroenterology Unit, Department of Pediatrics, Medical University of Silesia in 2015-2016, were evaluated. Among the 1,113 patients studied group was selected, which included 52 children (4.7%) aged from 6 months to 17 years, including 27 boys (51.9%). The presence of clinical symptoms (diarrhea with blood, abdominal pain, vomiting, fever), results of laboratory tests (CRP, transaminase levels, leukocytosis), and abnormalities abdominal ultrasound were evaluated.

Results

In the examined group of patients the average hospital stay was 6 days. The most common symptoms were fever (40 patients, 76.9%) and watery diarrhea (47 patients, 90%), but the presence of blood in stool was only observed in 10 patients (19.2%). Vomiting occurred in 22 children (41.5%), and abdominal pain in 9 children (17.3%). Analysis of the results of laboratory tests showed elevated levels of CRP in 43 patients (82.6%) and elevated transaminases in 5 patients (9.6%). Abdominal ultrasound examination was performed in 45 children (86.5%). Bowel wall thickening was observed in 5 children (9.6%), mesenteric lymphadenopathy in 7 children (13.4%) and free fluid in the peritoneal cavity were observed in 4 children (7.6%).

Conclusions

In the examined group, the most common symptoms of Salmonella bacteria infection were watery diarrhea without blood and fever. In laboratory tests elevated levels of CRP dominated. In most cases, abdominal ultrasound showed the normal image and the enlarged mesenteric lymph nodes was the most prevalent pathology observed.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0720

COMPLIANCE TO INFECTIOUS CONTROL PRECAUTIONS IN TAWAM HOSPITAL

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Background

Universal precautions for infectious disease prevention play a major role in preventing disease spread and protecting health care workers as well as protecting patients and their families. Studies were conducted previously in different parts of the world to analyze the gaps in health workers knowledge of infection prevention and control methods. In Tawam hospital we have a clinical practice guidelines regarding infection prevention and control consistent with those of the CDC*. We lack studies that look into this in our hospital. In this study, we attempt to analyze health workers awareness of those guidelines, as well as finding out if there are gaps in this understanding.

Methods

A randomly selected sample of 150 healthcare workers at Tawam hospital's emergency department and pediatrics department, including nurses, residents at different levels of training, specialists and consultants were asked to fill a 20 questions questionnaire.

Results

- Sample contained 65% females, 35% males, sample contained 60% health workers in pediatrics department and 40% from the pediatrics ER staff
- 75% had daily exposure to biological hazards
- 26% had experienced a sharp injury during work at our facility, while 22% were not aware of the process they need to take once they experience a sharp injury.
- 84% are not aware of the proper way to take off their protective measures "the proper sequence of taking off the mask, gloves and gown"

Conclusions

We identified many gaps in health care workers knowledge and practices when it comes to infection control precautions, this places our patients as well as our health workers at risk of nosocomial infections. We plan to start giving awareness talks in the pediatrics conference room as well as in the ER during academic days.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0721

NEONATAL SEPSIS - RISK FACTOR FOR ADVERSE NEURODEVELOPMENTAL OUTCOME IN NICU GRADUATES

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Background

Generalized bacterial infections represent a problem in the neonatal intensive care units (NICU) and are present as risk factors in the history of many NICU graduates. Our group aimed to study the impact of these infections on the medium term neurologic follow up of these patients, part of a follow up programme, both preterm and term neonates.

Methods

20 term and 20 preterm neonates born in different units and referred to our follow up programme with one of the discharge diagnosis being neonatal sepsis were followed until 2 years corrected age. Their development was compared to neonates with the same gestational age followed in the follow up programme but without a diagnosis of sepsis, using the neurologic examination and Bayley Scales of Infant Development third edition. The groups were compared regarding the occurrence of motor disfunction, cognitive delay and language abnormalities.

Results

The sepsis and control groups did not differ from the point of view of gestational age, birth weight, respiratory distress, cerebral hemorrhage or periventricular leucomalacia confirmed by ultrasound. In the case of the term neonates, sepsis represented an independent risk factor for occurrence of cerebral palsy ($p < 0.01$), cognitive disfunction ($p < 0.005$) and language disfunction ($p < 0.001$). In the case of premature neonates, the presence of sepsis was associated with a greater risk for cerebral palsy at 2 years corrected age ($p < 0.001$) and cognitive disfunction ($p < 0.05$), but not language disfunction.

Conclusions

Neonatal sepsis represents an important independent risk factor for the adverse development of both premature neonates and infants born at term. This category of patients should be included in the follow up program and followed closely in order to detect early signs of disfunction and act quickly for correction.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0724

PAEDIATRIC PATIENT WITH CANCER WITH FEBRILE NEUTROPENIA AT EMERGENCY DEPARTMENT

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Background

Febrile neutropenia (FN) is the first reason for consultation for paediatric haematological patients at the Emergency Department (pED). Our protocol includes the systematic performance of blood and urine culture - other microbiological exams depending on patient's clinical features - and early empirical administration of broad spectrum antibiotics. Periodic assessment allows protocol updating and the optimization of antimicrobial therapy.

Our aim was to define the clinical, epidemiological and microbiological features of all consecutive paediatric haematological patients presenting with FN at the pED; and to evaluate the protocol compliance.

Methods

Epidemiological, clinical and microbiological data of all consecutive episodes of febrile neutropenia (> 38°C by axillary temperature and <500 neutrophils/mm³) in paediatric (<18 years) haematological patients admitted at the pED were retrospectively collected from January 2010 to December 2013.

Results

Overall, 123 episodes (31/year) in 85 patients were included. Median age: 5.7 years (IQR 2.8-9.5); 58% male. Underlying diseases were: solid tumours (56%), acute leukaemia (25%) and lymphoma (19%). Blood culture was performed in 99% cases with 22 isolates (18%): 10 CoNS (5/10 with recent CVC manipulation), 8 gram-negative rods (4 *Pseudomonas aeruginosa*; 1/4 ESBL) and 4 other cocci. Urine culture was performed in 80% cases; 11 isolates (11%): 10 gram-negative rods (8 *Escherichia coli* and 1 *P. aeruginosa*; 4 multiresistant strains) and 1 CoNS. There was no infection-related mortality.

Conclusions

Microbiological yield in paediatric FN is low as previously reported. CoNS catheter-related bacteraemia is the main cause of FN at pED in our hospital. Multi-drug resistant microorganisms are rarely isolated. Systematic performance of urine culture should be consolidated as recommended in the local protocol, but should never delay antibiotic initiation.

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-0725

CLINICAL COURSE AND LABORATORY FINDINGS AMONG CHILDREN WITH TICK-BORNE ENCEPHALITIS

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Background

Tick-borne encephalitis (TBE) is highly endemic in Lithuania and the number of cases registered in 2016 was the highest since 1995. Although the disease is relatively mild in children, it may leave chronic sequelae.

Methods

We performed a retrospective analysis of 35 cases of children with confirmed TBE who were hospitalized in Kaunas Clinical Hospital from 2014 to 2016.

Results

Tick bites were reported in 34.3% of children. The incubation period in cases of noticed bite lasted 24.6 days on average. In 65.7% of patients the disease had a biphasic clinical course. The duration between the beginning of the first and the second phase was on average 12.27 days. TBE manifested as meningitis in 68.57% of patients, as meningoencephalitis in 28.57% and as meningoencephalomyelitis in 2.86%. The disease presented with headache (100%), febrile fever (85.71%), vomiting (82.9%), general weakness (60%), sleepiness (57.1%). At least one meningeal sign was positive in 94.3% of children: nuchal rigidity was seen in 74.3% of patients, tripod sign in 77.14%, Kernig's sign in 34.9%, lower and upper Brudzinkis signs in 17.14%. Focal neurological symptoms were reported in 94.29% of children. The most common were eyelid, hand or tongue tremors (82.6%), positive Romberg's test (77.14%) and horizontal nystagmus (34.29%). Impaired consciousness was reported in 2 patients. 33.3% of children had papilledema. All 35 cases of TBE were confirmed by detecting specific IgM antibodies in serum. Pleocytosis in CSF was found in 97% of patients. 74.28% of children had tremors, coordination impairment, nystagmus or headaches upon discharge after 7.6 days of hospitalization on average.

Conclusions

Most of the cases of children TBE manifested as meningitis. Two thirds of patients had mild neurological symptoms upon discharge.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0727

CHILDREN BELOW 2 YEARS OF AGE: HIGH RISK-TRAVELLERS. EVALUATION AT A PEDIATRIC INTERNATIONAL VACCINATION UNIT

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Background

Children travelling below 2 years of age are at high-risk of infectious diseases due to their incomplete vaccination status and the impossibility to use certain prophylactic treatments because of their age.

Objective: To determine the characteristics of children below 2 years under care at a Pediatric International Vaccination Unit.

Methods

Retrospective study describing the epidemiological and clinical characteristics, as well as the recommended prophylactic measures for travelers below 2 years of age, evaluated in our Unit from January to December 2015.

Results

A total of 219 children below 2 years of age were included in this study, 47% boys, mean age 13.6 months. Visiting relatives was the reason for travelling in 75%, with an average time of stay of 30 days.

America was the most frequent destination (68%), followed by Africa (21%), Asia (11%) and Europe (1%). The most frequently visited countries were Bolivia (15%), Ecuador (12%), Peru (9.5%), Colombia (8%) and Equatorial Guinea (8%). General recommendations, specific vaccinations and prophylaxis were as follows: 121 (55%) children received specific vaccination, 11 (5%) antimalarial prophylaxis, 31 (14%) specific vaccination + antimalarial prophylaxis and 56 (26%) only advice on personal protective measures, since other treatments were not indicated due to their short age.

Hepatitis A was the immunization most commonly prescribed (57%), followed by yellow fever (43%), tetravalent meningococcal vaccine (5%), Japanese encephalitis (3%), MMR (5%) and tick-born encephalitis (1%).

Antimalarial prophylaxis was recommended in 42 cases (19%); 39 of them received Atovaquone/Proguanil and 3 received Mefloquine (7%).

Conclusions

Travellers below 2 years of age constitute a high-risk group for infectious diseases because they travel under suboptimal immunization/prophylactic conditions. Measures to avoid mosquito bites and food and drink-related infections are of great importance in this age group.

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-0728

VISCERAL TOXOCARIASIS: A RARE DIAGNOSIS WITH AN UNCOMMON FORM OF PRESENTATION

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Title of Case(s)

Visceral Toxocariasis: a rare diagnosis with an uncommon form of presentation

Background

Toxocariasis is a rare human parasite infection caused by *Toxocara canis*, or, less frequently, *Toxocara gatis*. Infections are reported worldwide, being most common in young children, by playing in playgrounds and sandboxes contaminated by dog or cat feces. There are two major forms of disease: visceral larva migrans (VLM) and ocular larva migrans (OLM). Typically, VLM presents with fever, hepatomegaly and eosinophilia, although in the cases of mild infection the symptoms may be subtler, being eosinophilia the only finding.

Case Presentation Summary

Two-year-old female child, sent to our general pediatric consultation because of failure to thrive. She had no fever, anorexia, weight loss or history of recent infections, and lived in a rural and disadvantaged environment, with frequent contact with unvaccinated and non-dewormed dogs and cats. Laboratory tests showed peripheral moderate eosinophilia (3430/mL) and elevated IgE (789 kU/L). In this context, an abdominal ultra-sound (US) was made, showing hepatomegaly and unspecific infra-centimeter hepatic nodules, confirmed by abdominal MRI. Given the hypothesis of parasitic infection, serology for *Toxocara* were requested, with positivity of *Toxocara* by ELISA (confirmed by Immunoblot), allowing us to establish the diagnosis of visceral toxocariasis. Our patient started albendazol, repeating CBC 3 weeks after the onset of treatment with decrease of eosinophilia. Six months after treatment, she repeated abdominal US, with disappearance of hepatic nodules.

Learning Points/Discussion

With this clinical report, we pretend to highlight a rare disease, but that in this case had a very common and subtle form of presentation. This diagnosis must be considered in children presenting with hepatomegaly and hepatic nodules, particularly in the presence of other signs of parasitic infection, such as fever or peripheral eosinophilia.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0729

LATE SEROREVERSION IN AN HIV EXPOSED BUT UNINFECTED CHILD

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Title of Case(s)

LATE SEROREVERSION IN AN HIV EXPOSED BUT UNINFECTED CHILD

Background

Infants born to HIV-infected women have passive transfer of HIV antibodies that persist after birth. The diagnosis of HIV infection in the infant is based on the detection of HIV DNA or RNA with virologic tests or by the persistence of HIV antibodies beyond 18 months of age in the child.

Case Presentation Summary

A girl was born at term by vaginal delivery to an HIV-infected woman. Her mother had been diagnosed in the first trimester of this pregnancy and was started on highly active antiretroviral therapy (HAART) including a protease inhibitor, achieving undetectable viral loads by the time of delivery. The baby was treated with zidovudine during 4 weeks. Virologic tests were repeatedly negative. HIV antibodies were positive at 12 months of age and they remained positive at 18 and 20 months, although with declining titers. HIV antibodies were finally negative at 24 months of age.

Learning Points/Discussion

Though guidelines consider persistence of HIV antibodies at 18 months as a case definition criterion for HIV infection, recent studies have shown that seroreversion may occur at a later age in infants born to mothers undergoing HAART. The knowledge of this fact, together with the finding of progressively declining antibody titers, may help relieve the concerns of both, parents and clinicians.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0733

BIOLOGICAL THERAPY AND INFECTIONS: A CASE REPORT

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Title of Case(s)

BIOLOGICAL THERAPY AND INFECTIONS: A CASE REPORT

Background

TRAPS syndrome (Tumor Necrosis Factor (TNF) Receptor Associated Periodic Syndrome) is a rare auto-inflammatory disorder caused by TNF receptor mutations causing permanent activation. Biological treatments are used to improve the patient's clinical course by impairing the ability of cytokines to its receptors and inhibiting production of inflammation, having a great success in the last decade. However, cytokines inhibition can potentially make the patient more vulnerable to infections.

Case Presentation Summary

We present an eight-year-old boy affected by TRAPS syndrome with a chronic biological therapy (etanercept), who was attended at the emergency service of our hospital in May 2016. He had fever, vomits, diarrhoea, cough and he was in bad general condition.

We initially suspected a clinical sepsis. In the blood analysis there was an elevation of acute phase reactants (PCR 42.81 mg/dL, Procalcitonin >100 ng/mL) and leukocytes 4400/uL. He presented a right thorax hypoventilation and needed external oxygen, thorax radiographies were normal. Biological treatment was temporarily discontinued and we started intravenous treatment with cefotaxima and vancomicina. Cultures of blood, urine and feces were negative and opportunistic infections were dismissed. Sputum culture was positive for *Staphylococcus aureus* methicillin-sensitive and we detected by using the PCR technique an *influenza B virus*. We changed intravenous treatment vancomicina by cloxacilina and the child improved progressively until being asymptomatic after 10 days in hospital.

Learning Points/Discussion

Using of biological therapy has been increased in the last years. It is an effective therapy but we must know about its adverse effects to control it. Infections are an important adverse effect and usually they are caused by common germs. The use of hospital guidelines is important to correctly manage those situations.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0734

CUTANEOUS LESIONS OF THE YELLOW FEVER VACCINE- HAVE YOU EVER SEEN?

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Title of Case(s)

CUTANEOUS LESIONS OF THE YELLOW FEVER VACCINE- HAVE YOU EVER SEEN?

Background

YF virus was isolated in 1927 and the disease is considered endemic and epidemic in tropical regions of South America and Africa, with thousands of new cases reported annually. Several side effects of the vaccine have already been reported, ranging from mild to severe occurring in about 20% of cases.

Although reports of skin rash secondary to the vaccine ranges from 0 to 15%, no image or detailed description of the lesions were found in the literature. We here describe in detail the rash of a infant vaccinated to travel to a country that required it.

Case Presentation Summary

A 18-month-old child, previously healthy, breastfed, with complete immunization cart, who never used any antibiotics and had no history of allergies, received a 17DD yellow fever vaccine to travel with no concomitant vaccines. After 4 days he started with isolated erythematous papules in the palms, plants, trunk and limbs, including the lesions in the left conjunctiva. No changes in general condition or fever were present. There were no evidence of associated pruritus. Outpatient clinic follow-up was performed and the lesions disappeared completely in 3 days.

Learning Points/Discussion

We here describe in detail the rash of YF vaccine, which had not yet been done in the literature. Side effects of YF vaccination must be weighed against the risk of development of YF disease in travellers.

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0735

NOVEL TB IMMUNE-DIAGNOSTIC TEST (TAM-TB) ALLOWS FOR TREATMENT MONITORING IN A RARE CASE OF TUBERCULOUS COXITIS

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Title of Case(s)

Novel TB immune-diagnostic test (TAM-TB) allows for treatment monitoring in a rare case of tuberculous coxitis

Background

Childhood TB, particularly in its extra-pulmonary form, is very challenging to diagnose, let alone to monitor treatment response. Predictive markers to differentiate between active disease and cure are lacking. Thus, there is an urgent need for improved diagnostic tests. Here we report a case of extra-pulmonary TB with a novel immune-diagnostic test allowing for both accurate diagnosis and treatment Monitoring.

Case Presentation Summary

A 16 year-old male refugee from Afghanistan presented to our tertiary care hospital with a 3-months history of worsening left-sided hip pain, being well otherwise. Previous conventional diagnostics, including culture of joint fluid aspirate had been negative. On presentation he showed mildly raised CRP (26 mg/l), normal FBC and chemistry. Conventional radiography and subsequent MRI scan revealed narrowing of joint space and destructive erosions of the left hip. IGRA testing was positive and *M. tuberculosis* detected from joint effusion using PCR and culture. He was started on anti-TB treatment, gradually showing clinical improvement.

The novel TAM-TB assay previously showed accurate differentiation between active TB and latent TB infection (LTBI) in different age groups. We collected whole blood for TAM-TB assay at time of diagnosis (T0), 4 weeks (T4w) and 6 months (T6m) into treatment. As expected, test result at T0 accurately classified the patient as *active TB*. Of note, samples collected at T4w and T6m showed a clear trend towards previously established LTBI signature, thus mirroring clinical response to treatment.

Learning Points/Discussion

The TAM-TB assay is a very promising new tool with great potential to improve TB diagnostics. It may even be the only quantitative test allowing for treatment monitoring. Large-scale validation studies are already underway.

22A. EDUCATION: OTHER

ESP17-0737

KAWASAKI DISEASE MAY BE DISDIAGNOSED AS ASEPTIC MENINGITIS

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Title of Case(s)

KAWASAKI DISEASE MAY BE MISDIAGNOSED AS ASEPTIC MENINGITIS

Background

Kawasaki disease (KD) is a multisystem vasculitis condition with a relatively unknown etiology. It has a high prevalence in children aged 6 months to 5 years, and patients often present with high fever, rash, cervical lymphadenopathy and mucocutaneous abnormalities. There is no diagnostic test for KD, its presentation can be complete or incomplete and, in some cases, it can be atypical. We report a case of a 5-month-old infant with two-weeks of fever and aseptic meningitis.

Case Presentation Summary

A five month-old girl had fever for 5 days. She was treated empirically with the diagnosis of “occult bacteremia” at another hospital. On admission she had fever, drowsiness, cutis marmoratus and nonexudative bilateral conjunctivitis. Her ESR was 103 mm/h and CRP was 283,2 mg/L, CSF examination showed 90 leucocyte/mm³ (100% lymphocytes) and, CSF glucose and protein levels were 59 mg/dl and 53,66 mg/dl, respectively. The other laboratory findings were normal. Her blood, CSF and urine cultures remained sterile. Cerebral tomography and serial echocardiographic examinations were normal. High-dose IVIG and aspirin were administered with a diagnosis of KD on the 8th day of admission. Fever subsided only after a second dose of IVIG. On the third week she was in a well appearance she was afebrile and her CRP increased to 35 mg/L and ESR increase to 60 mm/h.

Learning Points/Discussion

In the present series approximately one-third of KD patients who underwent a Lumbar Puncture had CSF pleocytosis with a mononuclear cell predominance. Patients with atypical KD may be misdiagnosed as “partially treated bacterial meningitis” or “aseptic meningitis”. If fever persists despite to adequate antibiotic therapy in the infants with meningitis, KD should be kept in mind.

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-0738

MULTI-DRUG RESISTANT SHIGELLA FLEXNERI SEROTYPE 4: A CASE REPORT IN AN INFANT FROM INDIA AND LITERATURE REVIEW

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Background and Objective

Shigella enteritis remains an important cause of mortality and morbidity in all age groups and a public health problem. The emergence of multi-drug resistant (MDR) in *Shigella* spp. has become a global concern. *S. flexneri* is the most common among all shigellae; with serotypes 2a and 3a being predominant among children. We report a case of MDR *S. flexneri* serotype 4 and review of literature.

Methods

A 9-month-old infant developed signs and symptoms of gastrointestinal infection since 10 days. The child was earlier admitted in other hospital where it was treated with ceftriaxone, amikacin and metronidazole. The child did not respond to treatment and later was shifted to our hospital. On admission, child had fever without any signs of dehydration. A multi-drug resistant *S. flexneri* was isolated from stool culture; resistant to ampicillin, trimethoprim/sulphamethoxazole, ciprofloxacin and ceftriaxone; sensitive only to azithromycin and furazolidone. The isolate was serotyped as *S. flexneri* serotype 4 at National Institute of Cholera and Enteric Diseases, Kolkata. The patient responded to treatment with azithromycin and furazolidone. There was no recurrence of the symptoms on further follow up. Review of English literature was performed for various clinical presentations of *Shigella* spp. and optimal management of MDR cases.

Learning Points Discussion

In India with misuse of antibiotics for the treatment of many infectious diseases, shigellosis is likely to be an incurable disease if this pattern of multi-drug resistance continues. Public health measures like safe drinking water and adequate sanitation play an important in reducing the burden of shigellosis. However in a resource poor country like India, this will take time to be enforced. Therefore, emphasis should be given on judicious use of antibiotics and development of a safe and affordable multivalent vaccine.

03A. EDUCATION: GROUP A STREPTOCOCCUS

ESP17-0740

EPIDEMIOLOGY, CLINICAL CHARACTERISTICS AND OUTCOME OF CHILDREN WITH GROUP A STREPTOCOCCUS INVASIVE DISEASE IN A TERTIARY CARE HOSPITAL IN SEVILLE DURING A 14-YEAR PERIOD

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Background

Group A *Streptococcus* (GAS) is a leading human pathogen associated to a wide variety of infections from superficial to life-threatening invasive diseases, which appear to be on the increase. We conducted an audit of the epidemiology, clinical characteristics and outcome of paediatric patients with GAS invasive disease over a fourteen-year period.

Methods

Patients were identified via administrative and microbiologic databases search of all children aged 1 month to 14 years admitted from 2002-2015 to a single tertiary referral centre with GAS invasive disease.

Results

Seventy-three children with GAS invasive disease were identified (range 0 (2010) - 14 (2012 and 2014) annual cases). Clinical syndromes were classified as follows: pulmonary disease (PD) (30%), skin and soft tissue infection (SSTI) (27%), osteoarticular infection (16%), primary bacteraemia (14%) and ENT infection (12%). Eleven patients (15%) developed streptococcal toxic shock syndrome (STSS). The median age was 26 months (range 1-120 months). Predisposing risk factors included varicella (30%), trauma (13%) and underlying disease (7%). Most of the patients with varicella presented with PD (15%) or SSTI (14%) and were distributed over the whole period of study. Erythromycin and clindamycin non-susceptibility rates were 14% and 3%, respectively. All patients received a β -lactam antibiotic and most received this in combination with clindamycin (60%). Overall, 16 children (22%) required ICU admission. Of them, 3 patients (4%) with STSS associated to necrotizing fasciitis (2) and PD (1) died.

Conclusions

GAS invasive disease continues to cause a significant burden of disease in our geographical location. There were marked temporal variations in disease frequency and varicella was a prominent risk factor. Early diagnosis and prompt antibiotic therapy are critical for improving the prognosis of this potentially devastating disease.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0742

WE PRESENTS THE RESULTS OF OBSERVATION AND TREATMENT WITH GANCICLOVIR AND ORAL VALGANCICLOVIR FORM OF A PREMATURE INFANT WITH CONGENITAL GENERALIZED SYMPTOMATIC CYTOMEGALOVIRUS INFECTION

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Title of Case(s)

Treatment of generalized congenital cytomegalovirus infection

Background

Under our supervision there was a premature baby, born at 32 weeks' gestation by operative delivery diagnosed with generalized CMVI (encephalitis, cholangitis, hepatosplenomegaly, thrombocytopenia), the consequences of ischemic and hemorrhagic lesions of the CNS II degree (PVL, IVH II left asymmetrical ventriculomegaly, striatal vasculopathy), convulsive disorders, respiratory distress syndrome, anemia of prematurity, intrauterine growth retardation II degree, transient hypothyroidism. CCMVI diagnosis was made on the identification in the first days of life CMV DNA.

Case Presentation Summary

Given the severity of the condition, a confirmed diagnosis CCMVI on vital indications after obtaining the child was treated ganciclovir infusion at the rate of 6-9 mg / kg every 12 hours for 74 days, under the control of hematological, biochemical parameters, as well as DNA CMV titer in cells and blood plasma. Against the background of antiviral therapy has been slow, but positive clinical dynamics, steady weight gain, decrease in viral load of CMV in blood cells (from 2.4 to 1.6 lg DNA), the child was discharged home to continue receiving valganciclovir as an oral solution, 16-20 mg / kg every 12 hours for 5 months, was under constant supervision of outpatient specialists. During follow-up (11 months) psycho-motor functions are developed virtually in line with post-conceptual age with a slight delay, to adequately respond to the others, there are communication skills, syllabic elements of speech, makes no attempt to get up on their own, well-crawls. Dynamic observation surdologic marked hearing loss on one side - NST 3 degrees. compensated, does not require correction. Significantly decreased the viral load- less than 1 lg.

Learning Points/Discussion

Ganciclovir and valganciclovir are shown to be effective in the treatment CCMVI.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0743

ASSOCIATION OF A PETECHIAL RASH WITH VIRAL INFECTIONS IN CHILDREN

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Background

Petechiae rash mostly denote the presence of a grave or critical condition in children that should warrant immediate evaluation in an emergency setting. Although viruses have also been associated with petechial rash, but there are very scarcity of such reports. The purpose of this study was to do a systematic analysis of viral infections with quantitative real time polymerase chain reaction (q-PCR) and analyze the correlation with the clinical characteristics and course.

Methods

This prospective study included children (0 to 15 years) presenting with petechiae and suspected infection at the pediatric emergency t between January 2014 and November 2016. A thorough history was taken including onset, duration and type of fever, temporal association between fever and rash, sequence of distribution of rash, associated symptoms, presence of similar lesions in close contacts, recent intake of medicines, and hygiene status of the household. Careful physical examination entails close examination of the rash and salient features of systemic involvement. Dengue virus was excluded due to having known clinical manifestations in region.

Results

A viral pathogen was identified in 72 % of the analysed 118 cases with petechial rash. In nasopharyngeal aspirates the following viruses were analysed by q-PCR: Epstein-Barr virus (25.4%), Cytomegalovirus (18.6%), Influenza A (9.3%) and B (6.8%), human respiratory syncytial virus (6.8%) and adenovirus (5.1%). Children infected with these viruses showed a significant higher incidence of lower respiratory tract infections; had a higher leukocyte count and were longer hospitalized. All children were treated accordingly and recovered well.

Conclusions

A petechial rash is frequently caused by viral infections and can rapidly be identified via q-PCR. The specific role of viral pathogens in children with a petechial rash has further to be clarified in future studies.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0744

FULMINANT NECROTISING WOUND INFECTION IN A FIVE-YEAR OLD BOY

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Title of Case(s)

FULMINANT NECROTISING WOUND INFECTION IN A FIVE-YEAR OLD BOY

Background

Trauma-related localized soft tissue infections with *Clostridium perfringens* and *Bacillus cereus* in children are rare. We report a case of a five-year old boy with a fulminant necrotising localized facial soft tissue infection after a sledging accident. *Clostridium perfringens* and three different *Bacillus* spp. were recovered.

Case Presentation Summary

A five-year old healthy boy was admitted to the emergency room after a sledging accident. He presented with a 3cm wide laceration of the cheek. The wound was rinsed and primary closed with simple interrupted stitches. Less than 12hours later he complained severe pain in the wound site. On admission further local signs of inflammation such as suppuration, erythema, edema and hyperthermia and fever were present. Immediate wound revision revealed necrotic subcutaneous tissue with an abscess cavity. After surgical debridement the wound cavity was initially left open. Antibiotic treatment with amoxicillin/clavulanate was initiated. A bone fracture was excluded by computed tomography. *Clostridium perfringens*, *Bacillus cereus*, *Bacillus licheniformis* and *Bacillus pumilus* were recovered from the infected site. A combination therapy of amoxicillin/clavulanate, clindamycin and gentamycin was initiated. In a second-look surgery, the wound was secondary closed with placement of a local drainage. With this management, the local wound situation and the general condition improved markedly without further surgical intervention.

Learning Points/Discussion

Primary cutaneous/soft tissue wound infections with *Clostridium perfringens* and *Bacillus cereus* are rare. Both pathogens can cause fulminant necrotising infections with an incubation period of less than 24hours. Severe pain at the site of injury as leading symptom should rise a high index of suspicion that a necrotising infection could be present. Immediate aggressive surgical intervention with debridement and drainage in combination with antibiotic treatment are crucial.

12B. EDUCATION: INVASIVE FUNGAL INFECTIONS

ESP17-0745

INVASIVE CANDIDIASIS IN PAEDIATRIC PATIENTS

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Title of Case(s)

INVASIVE CANDIDIASIS IN PAEDIATRIC PATIENTS

Background

Invasive candidiasis (IC) is still a health-care problem affecting mostly children with risk factors (RF).

This is a descriptive retrospective case series report of IC diagnosed in <14 -year-old in a terciary-care hospital during 2013-2016.

Case Presentation Summary

Over this period, 24 episodes of IC were diagnosed in 23 children. Ratio male/female: 18/5. Broad-spectrum antibiotics use and central venous line (CVL) were RF in 21 cases (87.5%). 47.6% of CVL were long-term catheters. Median days of CVL before *Candida* isolation in blood culture was 13 (3-1,110). Other RF detected: parenteral nutrition (50%), abdominal surgery (33.3%), oncologic disease (29.2%) and prematurity (25%). *C. albicans* was the most common isolated specie (11, 45.8%), following by *C. parapsilosis* (7, 29.2%), *C. tropicalis* (4, 16.7%), *C. krusei* (1, 4.2%) and *C. rugosa* (1, 4.2%). There was no statistical association among the different RF and *Candida species* isolation. *C. parapsilosis* was resistant to echinocandins in 42.9% and showed intermediate-susceptibility (IS) in 14.3%. *C. krusei* and *rugosa* were resistant to azole antifungals and *C. rugosa* showed IS to echinocandins. Fluconazole was used in 9 cases (37.5%), following by liposomal amphotericin b (AmpB) (7, 29.2%), micafungin (2, 8.3%), caspofungin (1, 4.2%) and 5 cases (20.8%) received combined therapy (mostly echinocandins and AmpB) due to persistent fungal isolation, with good outcome. Median antifungal treatment duration was 16 days (3-52). Three patients had disseminated lesions in spleen, brain and ocular. One developed a knee arthritis after antifungal treatment. There were 4 exitus, due to their basal diseases.

Learning Points/Discussion

C. albicans and *C. parapsilosis* were the most frequent species isolated. Combined antifungal treatment was used in persistent IC with favourable outcomes.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0746

BACTERIAL AETIOLOGY OF SPONTANEOUSLY DRAINING EAR INFECTIONS IN CHILDREN IN LUANDA, ANGOLA

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Background

Otorrhoea causes significant morbidity in children in resource-poor settings. In Africa, acutely draining middle ear infections tend to persist to chronic otorrhoea occurring in up to 11% of children. Vaccinations may affect the bacterial aetiology of these infections. We sought to identify the causative agents and their change over time in spontaneously draining ears from the Paediatric Hospital, Luanda, Angola (HPDB). Of special interest were *Haemophilus influenzae* (Hib vaccination started in 2006) and *Streptococcus pneumoniae* (vaccination since 2013).

Methods

Otorrhoea pus samples were obtained from spontaneously draining ears in 2004-2005 and 2008-2015, from 1147 children under 15 years of age in HPDB. The samples were cultivated using standard techniques for aerobic pathogens in the laboratory of microbiology of the hospital.

Results

Of all samples, 783 (68%) yielded bacteria. Most common isolates were: *Pseudomonas* spp 151 (13%), *Proteus* spp 135 (12%), *S.pneumoniae* 121 (11%), *Staphylococcus aureus* 107 (9%), and *H.influenzae* or spp 81 (7%). *Haemophilus* was detected in 77/256 (30%) of otorrhoea samples during 2004-2005 prior to Hib vaccination launch and only in 4/529 (1%) in 2008-2015 ($p < 0.0001$). A reduction of *S. pneumoniae* was also detected from 5% to 2% (21/444 vs 2/83, $p = \text{NS}$) before and after vaccinations. However, pneumococcal isolations seemed to diminish already before start of immunizations.

Conclusions

In Angola, Gram-negative rods are common in chronic suppurative ear infections. The microbiology of draining ear infections seems to have changed over time due to Hib and possibly also pneumococcal vaccinations.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0748

CLINICAL FEATURES OF CONGENITAL ZIKA SYNDROME – CASE REPORT

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Title of Case(s)

CLINICAL FEATURES OF CONGENITAL ZIKA SYNDROME – CASE REPORT

Background

Zika Virus (ZIKV) is a flavivirus transmitted mostly by mosquitoes (*Aedes aegypti*) and by vertical transmission. Based on research to date, there is scientific consensus that ZIKV is a cause of microcephaly and other CNS disorders associated with infection during pregnancy. Cape Verde is amongst the countries with active ZIKV transmission.

Case Presentation Summary

We report a case of a 2-months-old male, born in Santiago (Cape Verde). The mother was healthy and denied substance abuse or radiation exposure. While 3 months pregnant, she presented pruritic, papular exanthema, without fever. ZIKV serology tested positive.

Delivery was at 39 weeks, Apgar 7/9, birth weight 2695g, length 41,4cm and head circumference 26,1cm. He had adequate suction reflex. It was not possible to collect neither amniotic fluid samples nor PCR testing for ZIKVRNA.

At 26-days-old, the newborn was admitted due to focal seizures with ocular revulsion and inferior limbs myoclonias. He had severe microcephaly (29,1cm), a practically closed anterior fontanel, spasticity and irritability, with no other apparent malformations. Phenobarbital was initiated. ZIKV IgG was positive with negative ZIKV IgM and other TORCHS group serologies.

Ancillary exams showed a lateral ventricles ectasia (cranial ultrasound) and significant cerebral mass hypoplasia (CE-CT). Fundoscopy had bilaterally small pale papillae. ENT evaluation revealed bilateral sensorineural hypoacusis.

Follow-up is conducted in Pediatrics, Neurology, Ophthalmology, ENT and Early Intervention outpatient clinics.

Learning Points/Discussion

This case illustrates several abnormalities described as associated with ZIKV congenital infection. Cases of vertical ZIKV transmission require a close follow-up by a multidisciplinary team, particularly those with microcephaly and CNS changes. These constitute a Public Health emergency and therefore notification is crucial. Medical advice on travelling to endemic areas is critical, especially to pregnant women.

01A. EDUCATION: ANTIMICROBIAL STEWARDSHIP

ESP17-0749

ANTIFUNGAL STEWARDSHIP: ECONOMIC IMPACT OF ANTIFUNGAL THERAPY IN A PEDIATRIC HOSPITAL IN CHILE

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Background

The delay in initiation of antifungal treatment affects patient's prognosis. This have promoted the start of an empiric antifungal therapy, even in the absence of an accurate diagnosis, increasing the costs associated with patient care. We evaluated and categorized antifungal therapy use and determined the economic impact associated.

Methods

Retrospective and descriptive study between January 2015 and April 2016. The medical records were reviewed and each episode of antifungals use was classified in possible, probable, proven and discarded invasive fungal disease (IFD). There were included the category prophylaxis and non-invasive fungal disease. Treatment was considered not justified when it was a possible and discarded IFD, and justified in non-invasive fungal infections, probable and proven IFD. The economic impact of each of these groups was calculated.

Results

79 patients with antifungal treatment were selected. The total cost associated with these treatments was US\$ 714.413. 152 episodes of fungal infection were identified; 8 were classified as non-invasive fungal infections (5.3%), 46 possible IFD (30,3%), 22 probable IFD (14.5%), 37 proven IFD (24.3%), 24 prophylaxis (15,8%), 15 discarded (10%). The antifungal treatment was justified in 67 episodes (44.1%) and not justified in 61 episodes (40%). The costs associated with justified antifungal therapies was US\$ 454.325, while not justified generated a spend of US\$ 98.352. Moreover, the cost of prophylaxis was US\$ 161.720.

Conclusions

The initiation of antifungal therapy is often undisputed, but prolonged and unjustified duration is related to an increased costs associated with patient care.

02B. EDUCATION: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-0750

EXTENDED-SPECTRUM-B-LACTAMASE PRODUCING ENTEROBACTERIACEAE IN GESTATIONAL URINE CULTURES: PREVALENCE AND RISK FACTORS

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Background

Extended-spectrum- β -lactamase producing Enterobacteriaceae (ESBL-PE), once prevalent only in the hospital setting, are becoming major pathogens of obstetric and neonatal infections. A better understanding of ESBL-PE epidemiology in pregnant women may help guide better screening policies and appropriate treatment. The study was aimed to analyze the prevalence and risk factors associated with ESBL-PE in gestational urine cultures.

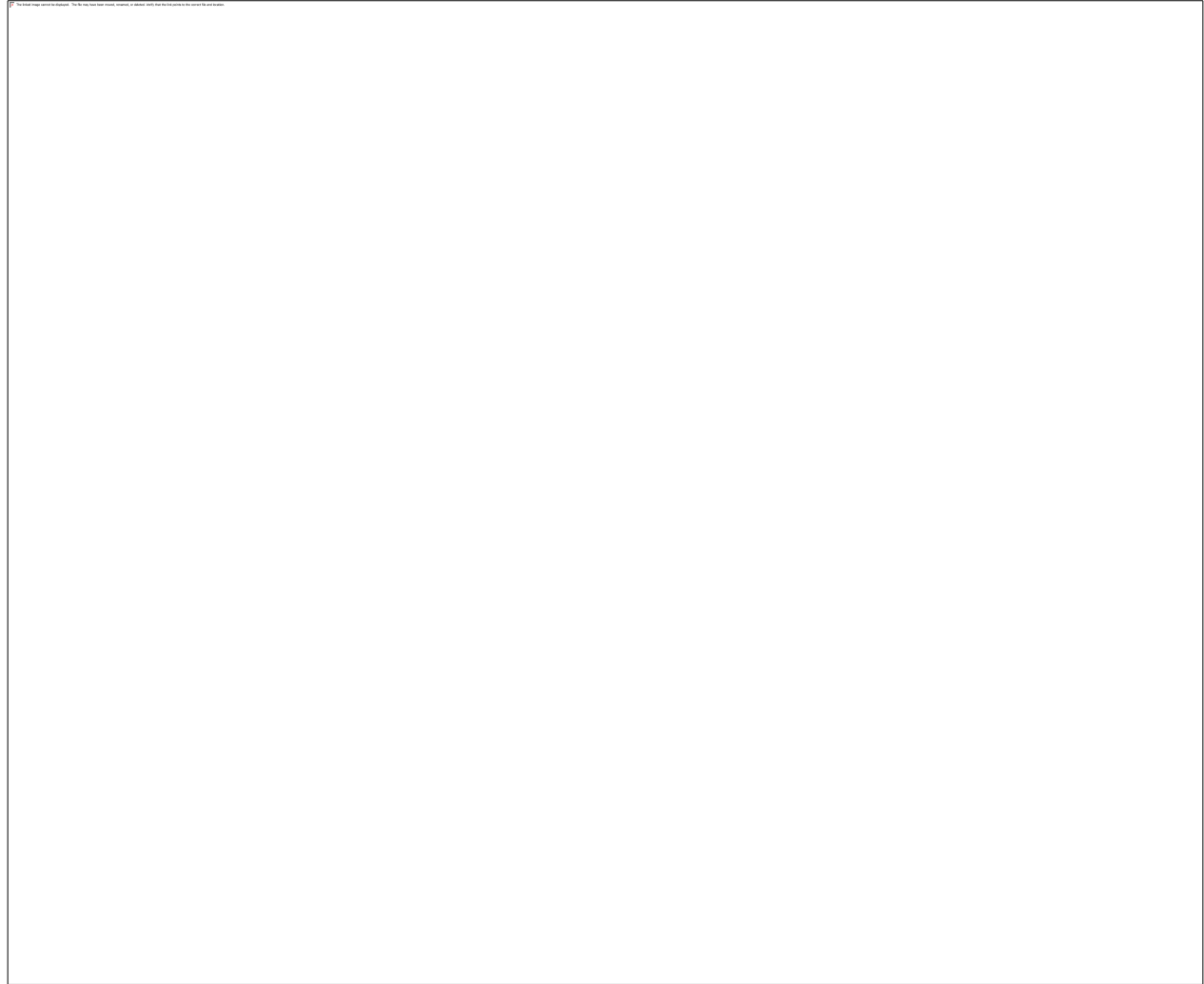
Methods

A retrospective cohort study was conducted using electronic health records (EHR) from the centralized Clalit Health Services (CHS) database. The study population included pregnant members who delivered in one of the CHS hospitals between 2009-2013 and provided at least one urine culture. A multivariate analysis using the generalized estimating equations (GEE) model was used to assess whether the variables were significantly associated with ESBL-PE growth in gestational urine cultures.

Results

The study population included 134,152 women (95% of total CHS deliveries). 15,282 (11.4%) of the cultures yielded Enterobacteriaceae growth, with 603 (3.9%) ESBL-PE positive results. The proportion of ESBL-PE in gestational urinary cultures increased from 2.8% in 2009 to 6.4% in 2013 ($P < 0.001$). In the multivariate logistic regression model, Arab ethnicity (OR=1.35; CI95%1.14-1.61), using assisted reproductive technology (OR=1.41; CI95%1.02-1.94), and antibiotic treatment (especially penicillins OR=1.68; CI95%1.43-1.98 and

quinolones OR= 2.01;CI95%1.56-2.59) were found to be associated with ESBL-PE.



Conclusions

This large epidemiological study found that the prevalence of ESBL-PE in gestational urine cultures is increasing at an alarming rate. In pregnant women the most important risk factors are related to multiple encounters with health-providers and antibiotic treatment, and therefore the policy to prevent ESBL-PE outbreaks in neonatal units should include maternal and neonatal screening, cohorting and notifying the medical staff when ESBL-PE positive women and their neonates are admitted.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0752

NEW OPPORTUNITIES OF TREATMENT OF CHILDREN WITH VIRUS-INDUCED ASTHMA.

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Background

One of the most frequent phenotypes of asthma at children is virus-induced asthma(VIA). The aim was to study some indicators of immunity in children with VIA and estimate of the effectiveness of recombinant interferon(IFN) α 2b in combination with antioxidants in complex treatment.

Methods

34 children with VIA aged from 3 to 7 years were included in this study (1group–children with acute respiratory viral infection (ARVI) and 2group– without ARVI). 1Agroup received complex therapy with recombinant α -2b-IFN and 1B and 2group – only complex therapy of asthma. Examination included: clinical data, detecting of CD3+, CD3+CD4+, CD3+CD8+, CD3-CD19+, CD3-CD16+56+, immunoregulation index, levels of IL1 β , TNF, IL-8, IL-6, IFN alpha, IFN gamma, IgE, the expression level of TLR-2 and TLR-4, antioxidant markers.

Results

We has found decrease of level IFN-alpha and IFN-gamma at all groups. Serum concentrations of CD3+, CD3+CD8 were significantly lower in 1group compared with 2group ($p<0.05$). The reliable difference in the level of IL1 β , TNF, IL-8, IL-6, antioxidant markers in groups has not been received. We revealed significantly increase of level of CD3+, CD3+CD4+, IFN alpha, immunoregulation index, expression of TLR4, and decrease of level CD3-CD19+ and IgE ($p<0.05$) in children of 1Agroup. After 6 months after complex treatment with using recombinant IFN α 2b we revealed reduction VIA exacerbations from 3.6 ± 0.5 cases to 2.0 ± 0.7 cases and duration of asthma exacerbations in 78% children, achievement of control over a disease at 66.6%.

Conclusions

Revealed changes showed signs of dysfunction of the immune system in the group of children with virus-induced asthma. Using of IFN alfa2b in the complex therapy of children with VIA has a positive therapeutic and protective effect, increases resistance to acute respiratory infections and reduces the frequency and duration VIA exacerbations.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0753

MORBIDITY AND MORTALITY PREDICTORS IN SEPSIS, IN A PEDIATRIC INTENSIVE CARE UNIT (PICU) FROM BIKANER NORTHWESTERN INDIA

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Background

Sepsis and septic shock account high morbidity and mortality. This prospective study aimed to determine the incidence, the bacteriological profile of septicemia and the factors related to morbidity and sequelae of sepsis in a PICU in the tertiary care center.

Methods

Children admitted from January 2016 to December 2016 with clinical features of sepsis were thoroughly investigated for any evidence of bacterial sepsis. Blood culture specimens were collected; identification of organisms and their antibiotic susceptibility pattern detection was done. Data were analysed by student *t*-test and ANOVA test.

Results

Incidence of septicemia was 10.6%. The main etiologies in community sepsis were *S. pneumoniae* (54.2%) and *Klebsiella pneumoniae* (35.8%). *S. aureus* and *P. aeruginosa* were common nosocomial infections. Blood culture was positive in 49.2% of septicemic neonates. In cephalosporins, cefoperazone and cefotaxim both have activity against *Klebsiella* and CONS, while ceftazidime showed better results against *Klebsiella*, *E. coli*, *Pseudomonas* and unidentified gram negative bacilli. Vancomycin had good activity against gram positive organisms (Enterococcus, CONS and MRSA). Statistically significant factors associated with mortality were the PRISM score, the lactate and lower platelet count at admission. The presence of underlying disease, a nosocomial infection and septic shock were also statistically significant predictors of mortality. Multivariate analysis showed that nosocomial infection and multiple organ failure were variables that were independently associated. The PRISM score, C-reactive protein (CRP) on admission, need of mechanical ventilation and lactate on admission were associated with poor outcome with more length stay and more sequelae.

Conclusions

Patients with sepsis and multiorgan failure, especially nosocomial and higher values of PRISM, CRP and lactate, are at greater risk of poor outcome and should therefore be carefully monitored and treated.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0754

MENINGOCOCCAL INFECTIONS IN CHILDREN AND ADULTS. WHAT CAN WE LEARN?

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Background

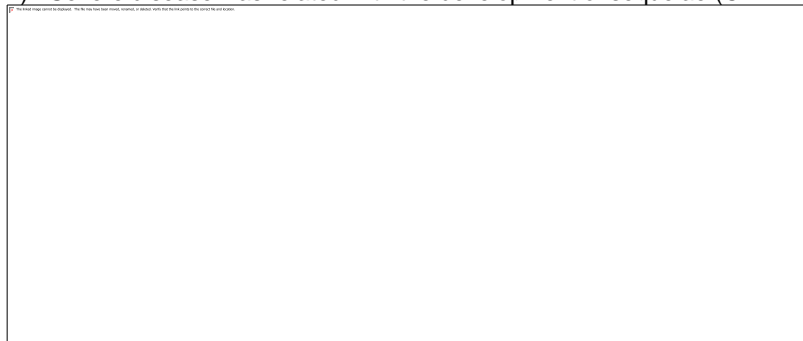
Meningococcal infections remains a substantial cause of morbidity and mortality both in children and adults. We aim to describe the characteristics of patients admitted with invasive meningococcal disease (IMD), to compare differences between adults and children and to determine risk factors associated with disease severity.

Methods

Retrospective, unicentric review of patients admitted with IMD between 01/2006 and 12/2015. Differences between children (≤ 16 years) and adults were compared. Risk factors associated with disease severity (defined by inotropic support and/or mechanical ventilation) were determined.

Results

Fifty-two episodes of IMD (65.4% children) were reviewed. Median age was 7.22 years (IQR 1.08-24.84) 53.8% were males. None of the patients were immunized against *N. meningitidis* serogroup B. Immunization against serogroup C was complete in 14.7% children and 5.6% adults ($p=0.006$). All patients presented fever, 36.5% meningism, 55.8% altered state of consciousness and 50% hypotension. Petechial/purpuric rash was present in 59.6% (73.5% children vs. 33.3% adults; $p=0.005$). Blood culture was positive in 60.8% (77.8% adults vs. 51.5% children; $p=0.042$) and CSF culture in 42.1%. The predominant serogroups were B (57.1%) and C (19%). Two thirds of patients (67.3%) required ICU admission (82.4% children vs. 38.9% adults; $p=0.001$); 7.7% patients died and 17.4% developed sequelae. The presence of purpuric rash, leukopenia, thrombocytopenia and APTT/INR prolongation were risk factors of severe disease, whereas positive CSF culture was a protective factor (Table 1). Severe disease was related with the development of sequelae (OR 22.1, 95%CI 2.5-195.8; $p=0.005$).



Conclusions

In this study *N. meningitidis* B was the most frequently isolated serogroup and none of the patients were immunized. A high proportion of severe infections and sequelae were observed. The presence of purpuric rash, leukopenia and coagulopathy were associated with severe disease.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0758

HOSPITAL ADMISSIONS WITH VARICELLA BEFORE THE ROUTINE VACCINATION PROGRAM: A TEN-YEAR SURVEY

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Background

Varicella is a common infectious disease in children. Although it is generally considered a benign and self-limited infection, complications resulting in hospitalization are not infrequent and may affect both immunocompetent and immunosuppressed children. Most common complications are bacterial infections (otitis, pneumonia, skin and soft tissue infections) and a variety of neurological complications (febrile convulsion, ataxia, meningitis, encephalitis...). Our aim was to describe the epidemiology and clinical characteristics of patients admitted to the Infectious Diseases Division (IDD) with varicella-associated complications.

Methods

We have retrospectively reviewed the clinical charts of patients ≤ 11 years of age that were admitted to our Unit, from January 2007 to December 2016, with a diagnosis of varicella infection. Incidence rates (IRs) were calculated as admissions/100,000 children < 11 years old. Universal varicella vaccination for children aged 15-months has been introduced in March 2016 in our region.

Results

235 patients (3-9% of the total admissions IDD/year), annual IR 13-35 cases/100000/year. Mean age was 2.7 years (42% ≤ 1 year). The most frequent reasons for admission were: 46% Bacterial infections (skin and soft tissue 78%, pneumonia 16%, osteoarticular 4%), 39% risk of a severe infection (immunosuppressed children 18%, newborns 26%, age < 3 months 32%), and 13% neurologic complications (mean age 4,5 years). *S. aureus* (19) and Group A Streptococcus (13) were the predominant isolates. Mean hospital stay 8.5 days (2-28). Eight (3.4%) patients were admitted at the Intensive Care Unit. All recovered, but 3/5 patients with encephalitis have sequelae.

Conclusions

Bacterial superinfection was the most frequent varicella-associated complication especially in young children, skin was the most common infection site. Neurologic complications were less frequent and affected older children.

Our data highlight the need for a universal program of varicella vaccination.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0762

SURVEILLANCE OF CHILDREN BORN TO MOTHERS WITH ZIKA VIRUS INFECTION: OBSERVATIONAL STUDY IN A SPANISH NATIONAL REFERRAL CENTRE FOR TROPICAL DISEASES

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Title of Case(s)

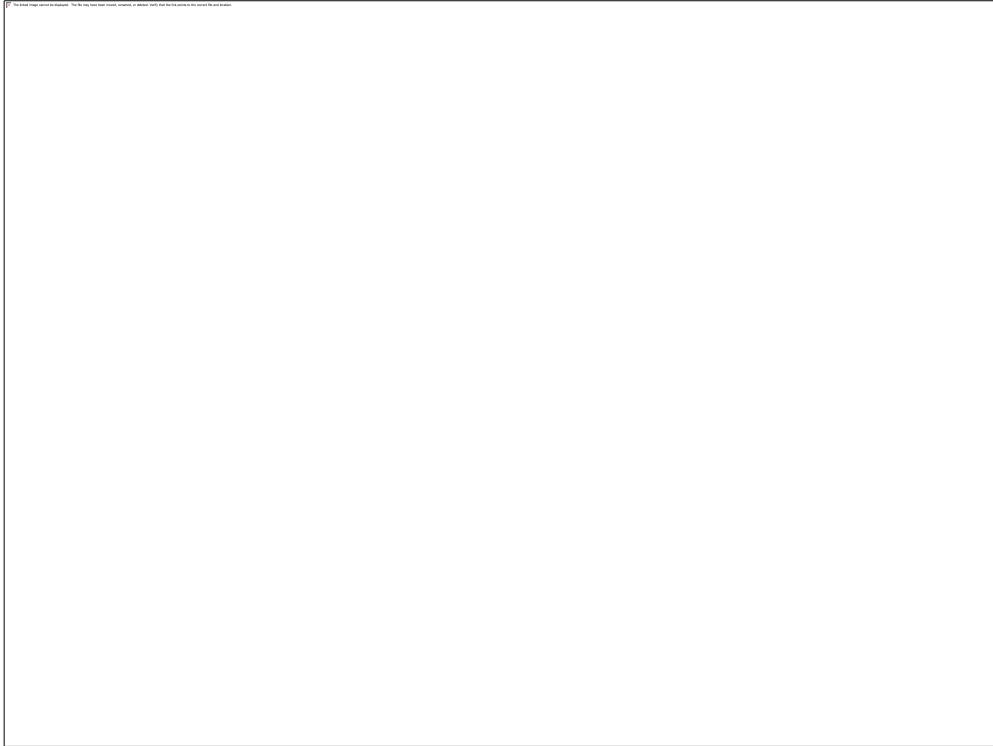
SURVEILLANCE OF CHILDREN BORN TO MOTHERS WITH ZIKA VIRUS INFECTION: OBSERVATIONAL STUDY IN A SPANISH NATIONAL REFERRAL CENTRE FOR TROPICAL DISEASES

Background

Zika virus infection (ZVI) has become a public health problem. Spectrum of neonatal adverse outcomes of children born to Zika-infected mothers is not yet well-defined, especially in non-endemic areas. We reviewed the medical records of newborns whose mothers had positive ZVI laboratory test during pregnancy (positive anti-Zika antibodies by plaque-reduction neutralization test) from January 2016 to January 2017.

Case Presentation Summary

Seven term newborns born to mothers from endemic areas were included. Two mothers reported mosquito bites during pregnancy and 5 presented ZVI symptoms in the first trimester. ZVI in pregnant women was serologically-confirmed at a mean gestational age of 19 weeks (16-24). All presented Zika-IgG-Ab positive, but only one IgM-Ab. Zika-PCR was positive in: 1/3 in blood and 1/7 in urine. Fetal ultrasound was pathological in 1 (reduced corpus callosum area) with normalization in next ultrasound, with a normal fetal MRI. Anatomopathological study from 1 placenta showed calcifications. Children were evaluated at birth, and at one, three and six months. All physical examinations, head circumference, weight, height, psychomotor development, eye fundus and hearing screening test were normal. Cerebral ultrasound at birth showed lenticulostriate vasculopathy in one and mild periventricular echogenicity in two. Zika serology performed at birth were IgM- IgG+ in all cases. Two cases had IgG- at first month of life, the rest are still positive in serological follow up. Zika-PCR performed at birth was negative in all samples.



Learning Points/Discussion

In our cohort, no child born to mother with ZVI during pregnancy developed congenital infection nor significant adverse outcomes during follow-up. All the women were latins but none had Brasil origin.

06B. SCIENCE: DIAGNOSTIC TOOLS

ESP17-0763

MOLECULAR DETECTION OF ANTIBIOTIC RESISTANCE IN HELICOBACTER PYLORI ISOLATES

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Background

Helicobacter pylori commonly infect the human gastrointestinal tract causing a broad range of host symptoms from discomfort to significant gastrointestinal tract disorders. Eradication of the organism from the stomach results in significant remission from diseases. Treatment involves the use of antibiotics however; resistance to current antibiotics used for treatment presents a challenge.

Methods

Seventy-eight biopsy specimens were cultured and DNA extracted from cultures using the Qiagen DNA extracted kit. Hot StarTaq® DNA Polymerase was used for DNA amplification. The GenoType® Helico DR which employs reverse hybridisation was used to confirm the presence of *Helicobacter pylori*, determination of its susceptibility to antimicrobials and detection of mutations conferring resistance to clarithromycin and fluoroquinolones

Results

All the 78 specimens were positive for *H. pylori* by culture and confirmed using the reverse hybridisation assay. Of the strains studied, 12/78(15.38%) were resistant to clarithromycin while 66/78(84.61%) were susceptible. Seventy (89.74%) of the 78 strain were susceptible to fluoroquinolone while 8 (10.26%) were resistant. Mutations were observed in 17 strains with A2147G being the most prevalent occurring in 12/17 (70.58 %) strains while A2146C and D91N were the least

Conclusions

Continuous surveillance of resistance to these antibiotics is relevant to guide empiric treatment. This study also confirms the reverse hybridisation assay as an efficient, easy and cost effective technique in confirming the presence of *H. pylori*, its antimicrobial profile and associated mutations

Clinical Trial Registration (Please input N/A if not registered)

N/A

20B. SCIENCE: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-0764

SIDE EFFECTS AFTER VACCINATION AGAINST MENINGOCOCCUS B

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Background

Since October 2015, primary care pediatricians in Spain have the vaccine against Meningococcus B to vaccinate children from two months of age. It is an effective and safe vaccine, but in which a higher frequency of side effects is described: higher incidence of fever in infants and young children, about 50% when the vaccine is given alone, and local reaction with pain and swelling, More often in adolescents.

Methods

We report side effects following the administration of 1503 doses of vaccine against Meningococcus B between October 2015-2016. The data collection was through a questionnaire that was given to the parents on the day of vaccination.

Results

Results: 381 (25.3%) were infants under 12 months of age, 954 (63.4%) children aged 1 to 10 years and 168 (11.2%) over 10 years. The vaccine was administered in isolation and recommended the use of oral acetaminophen in case of appearance of a symptom of a list that was given to the families. In 67.7% of the doses administered we found side effects. The six most commonly reported side effects were local reaction in 95.1% of cases, fever in 29.2%, crying or irritability in the subsequent 24 hours in 10.4%, malaise 10.6%, loss of appetite 10.6% and subsequent sleepiness in 6.9%. The local reaction improved with the application of cold and analgesia. The pattern of fever was, for the most part, less than 24 hours and with a favorable response following administration of oral acetaminophen.

Conclusions

The administration of the vaccine against Meningococcus B is safe and most side effects are resolved before 48 hours with physical measures and the use of oral paracetamol.

Clinical Trial Registration (Please input N/A if not registered)

N/A

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-0765

INFLUENZA VACCINE AND TETANUS, DIPHTHERIA, AND ACELLULAR PERTUSSIS VACCINE AMONG PREGNANT WOMEN: A COMPREHENSIVE SURVEY ABOUT THE ATTITUDES AND PRACTICES OF OBSTETRICIAN AND GYNECOLOGIST

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Background

Influenza vaccine and tetanus, diphtheria, and acellular pertussis vaccine among pregnant women may induce the production of serum antibodies which may protect the infants in the first months of life. We assessed to compare the attitudes and knowledges of the residents and specialists in obstetrics and gynecology (O&G) about influenza vaccine and tetanus, diphtheria, and acellular pertussis vaccine among pregnant women.

Methods

A total of 103 participants; 64 residents in O&G and 39 specialists in O&G were invited to complete a self-administered survey about their attitudes and practices of influenza vaccine and tetanus, diphtheria vaccine and tetanus, diphtheria, and acellular pertussis vaccine (Tdap) among pregnant women in a women's health education and research hospital. The variables which may affect the vaccination of those vaccines were analyzed.

Results

A favorable attitude towards vaccination of Influenza was expressed by 60 residents (93.8%) and 36 specialists (92.3%) ($p=1$), however only 30 residents (46.9%) and 24 specialists (61.5%); ($p=0.148$) reported routinely recommending influenza vaccine to pregnant women in their current practice. A favorable attitude towards vaccination of Tdap was expressed by 36 residents (56.3%) and 19 specialists (48.7%) ($p=0.457$), however only 27 residents (42.2%) and 17 specialists (43.6%); ($p=0.889$) reported routinely recommending Tdap vaccine to pregnant women in their current practice.

Conclusions

Both residents and specialists in O&G were found in similar awareness to recommend influenza vaccine and tetanus, diphtheria, and acellular pertussis vaccine among pregnant women. However; in their current practices, recommending those vaccines were found in a lower manner. Adding Influenza and Tdap vaccines to the national vaccine program may lead an increment in the recommendation of those vaccines in routine practice.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0766

CHARACTERISTICS AND RISK FACTORS OF OTITIS MEDIA CAUSED BY NONTYPEABLE HAEMOPHILUS INFLUENZAE IN TAIWANESE CHILDREN

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Background

Decreased pneumococcal otitis media (OM) has led to a growing concern for nontypeable *Haemophilus influenzae* (NTHi) in OM after the introduction of pneumococcal conjugate vaccine (PCV). We aim to better understand the clinical role of NTHi in OM among Taiwanese children.

Methods

From 2010 to 2015, during which a gradually expanded 13-valent PCV immunization program has been implemented in Taiwan, middle ear fluid samples, obtained from otorrhea fluid or through tympanocentesis, from children <18 years with OM were collected. For each culture-positive episode (*S. pneumoniae*, *H. influenzae*, *M. catarrhalis*, and *S. pyogenes*), patients' demographic and clinical information were reviewed retrospectively and analyses were made between NTHi and *S. pneumoniae* single infection.

Results

A total of 783 isolates were included with 32.8% positive rate. *S. pneumoniae* was recovered in 172 (69.1%), NTHi in 61 (24.5%), *M. catarrhalis* in 14 (5.6%) and *S. pyogenes* in 10 (4.0%) episodes. Pneumococcal OM has declined ($P<0.001$) since 2011 while a slight rise of NTHi OM ($P=0.009$) was observed. NTHi OM was associated with concurrent sinusitis ($P=0.001$), and less severe clinical presentation, i.e. spontaneous otorrhea ($P=0.002$), otalgia ($P=0.019$) and presence of fever ($P<0.001$). In the multivariate analysis, patients with NTHi OM had significantly higher rate of previous ventilation tube insertion (OR 4.40, $P=0.015$) and recurrent OM (OR 4.49, $P=0.022$). Age, gender and chronic OM were not associated with either pathogen.

Conclusions

NTHi OM was characterized by concurrent sinusitis but less clinical severity compared to pneumococcal OM, and saw an upward trend in the post-PCV era. Previous ventilation tube insertion and recurrent OM were risk factors for patients with OM caused by NTHi, which implied the correlation between NTHi and complex OM in children.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0769

THE INCREASING CASES OF PERTUSSIS - WHERE ARE WE GOING?

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Background

The incidence of pertussis has increased in recent years with significant morbidity and mortality, particularly in young infants.

Objective: We intend to describe the epidemiological, clinical and biochemical aspects of hospitalizations due to pertussis in a Level II Hospital.

Methods

Longitudinal, retrospective, descriptive and analytical study of confirmed cases of pertussis between February 2012 and December 2016. We used Fisher's Exact Test and considered it significant if $p < 0.05$.

Results

A total of 27 children were included, 59% of whom in 2016. All infants were younger than 3 months (median 48 days (d), min: 16d, max: 112d), 56% were male and 70% weren't vaccinated. Prematurity was present in 3.7% and low birth weight in 11.1% of cases.

74% had cough, 85% had paroxysms, 52% had whooping cough, 41% had feeding difficulties, 37% had bradycardia and 19% had fever. 56% had leukocytosis, 52% lymphocytosis and 59% thrombocytosis. Viral co-infection occurred in 11%, two-thirds of which were due to RSV.

The mean duration of hospitalization was 11 days, and 93% of the infants were medicated with macrolides. 19% required ventilatory support and a statistically significant association with the presence of leukocytosis and lymphocytosis was found in these patients. 22% presented apnea, 7% convulsions and there was one SIADH case. Three children were admitted in the Intensive Care Unit, with 0% mortality.

The source was known in 41% of cases (direct relatives), and 93% underwent chemoprophylaxis.

Conclusions

Pertussis has a subtle and sometimes atypical clinical course in infants, with a high rate of complications. A high index of clinical suspicion for its diagnosis is required. Preventive strategies aimed at protecting high-risk groups are essential.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0770

IGG SUBCLASS CONCENTRATIONS AND THE ANTIBODY RESPONSES TO VACCINATION ARE INDEPENDENT MARKERS OF HUMORAL IMMUNITY

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Background

Previous reports have suggested a correlation between the concentration of serum polyclonal IgG subclass (IgGSc) immunoglobulins and vaccine-specific antibodies (VR). The aim of the present study was to show that the two measurements provide clinicians with independent information about B cell function.

Methods

Data was obtained from 277 adults (140:185 M:F, median 57 years, range 18–91, serum IgG >6g/L) referred to Queen Elizabeth Hospital, Birmingham, UK. Human IgGSc liquid reagent kits (The Binding Site Group Limited, UK) were run on the Roche Cobas C501 Chemistry Analyser. VR against tetanus (TET), diphtheria, *Haemophilus influenzae* type b and 12 pneumococcal (PN) serotypes (PN1, PN3, PN4, PN5, PN6B, PN7F, PN9V, PN14, PN18C, PN19A, PN19F and PN23F) were determined using a multiplex assay. Cut-off values were the lower limits of published normal ranges, or medical decision points.

Results

Correlations between IgGSc and VRs were: IgG1, very weak (-0.05-0.17); IgG2, very weak-moderate (0.04-0.50); IgG3, very weak-weak (0.04-0.30), $p < 0.0001$ -0.52. Agreement was 19-88% with 2/45 comparisons (4.4%) reaching statistical significance: IgG1 vs. PN19F $p = 0.0005$ and IgG2 vs. TET $p = 0.02$, 68% and 72% agreement, respectively.

Conclusions

There is a lack of correlation between serum IgGSc and VR measurements, poor ability of the two measurements to classify the same patient with abnormal B cell function and inability of IgGSc measurements to accurately predict VRs. By quantifying both biomarkers clinicians will obtain independent information about the immune status of the individual that may influence diagnosis, treatment and monitoring decisions.

22A. SCIENCE: OTHER

ESP17-0772

FREQUENCY OF FEBRILE SHIVERING IN CHILDREN AND ITS ROLE IN PREDICTING SERIOUS BACTERIAL INFECTION – A PROSPECTIVE, CASE-CONTROL STUDY.

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Background

Febrile shivering in the pediatric population has been proposed as a marker for Severe Bacterial Infection (SBI). Research supporting this assumption is scant. We aimed to describe the frequency of febrile shivering in the pediatric population presenting to the emergency department (ED) and to define its role in predicting an SBI.

Methods

A prospective study of febrile children 3 months to 18 years of age was conducted in a pediatric ED. Patients with febrile shivering were worked up for bacterial infections, including a complete blood count, inflammatory markers, urinalysis and blood and urine cultures. Additional workup (CSF sampling, joint fluid aspiration, stool culture, chest x ray) were ordered as needed. A subsequent matched patient presenting with fever but no shivering was enrolled and underwent identical workup. Our primary outcome measures were the proportion of febrile children who experienced shivering and the proportion of patients with severe bacterial infection in the study group compared to controls.

Results

Of 645 children with fever, shivering was reported in 186 (28.8%). Sepsis workup was conducted in 86 children with shivering and 86 children without shivering, matched by age group, maximal temperature and duration of fever. Mean WBC and CRP in children with and without shivering was $13.3 + 5.7$ k/ μ L and $13.3 + 6.6$ k/ μ L and $44.4 + 46.8$ mg/l and $45.2 + 55.1$ mg/l respectively. 18 (20.9%) children with shivering and 16 (18.6%) children without shivering suffered from SBI ($P = 0.848$).

Conclusions

Shivering is common in febrile children presenting to the ED and is not associated with an increased risk for SBI.

Clinical Trial Registration (Please input N/A if not registered)

N/A

22A. EDUCATION: OTHER

ESP17-0773

INFANTILE KAWASAKI PRESENTED WITH ASEPTIC MENINGITIS

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Title of Case(s)

Infantile Kawasaki presented with aseptic meningitis

Background

Kawasaki syndrome is an acute, self-limited and the most common vasculitis that occurs in children of all ages. Despite intravenous immunoglobulin (IVIG) therapy, coronary arterial lesions occur in 5%-20% of patients with KD during the acute stage.

Case Presentation Summary

Herein, we report a 3 month-old boy who was referred to our ED with unexplained fever for 7 days. In her history, his family told that he was hospitalized at a medical center for three days and sulbactam-ampicillin was administered intravenously. On admission, he was irritable and febrile. His physical examination did not show any abnormalities. Due to possible diagnosis of acute bacterial meningitis, cerebrospinal fluid was obtained and showed pleocytosis (20 leucocyte/mm³) with normal biochemical parameters. Appropriate antibiotics (vancomycin 15mg/kg per dose every 6 hours and Cefotaxime 75 mg/kg per dose every 6 hours) were initiated. On the 4th day of admission, he developed skin rash and fever persisted. The unexplained fever ≥ 7 days, rash, leucocytosis, elevated CRP and sedimentation made the possible diagnosis of incomplete Kawasaki disease. ECHO was normal but IVIG 2 gram per kg was administered immediately. On follow up, he developed 7mm coronary aneurysm.

Learning Points/Discussion

Male patients and intravenous γ -immunoglobulin (IVIG) therapy were independent risk factors of initial coronary severity. IVIG or any other agents should be aggressively delivered as early as possible to improve the coronary severity within 1 month after disease onset. The infant <6 months of age with fever, rash and CSF pleocytosis presents a diagnostic dilemma for the clinician and incomplete KD should be suspected in patients less than six months of age with unexplained fever ≥ 7 days, even if they have no clinical findings of KD.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0774

COMMUNITY ACQUIRED PNEUMONIA ASSESSMENT AND MANAGEMENT IN CHILDREN'S' CLINICAL UNIVERSITY HOSPITAL, RIGA, LATVIA

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Background

Pneumonia still constitutes one of the leading causes of worldwide mortality in children, so, precise diagnostics and appropriate treatment is crucial.

Methods

The study took place in Children's clinical university hospital (CCUH) from January till December, 2015. 402 admitted patients with IDC10 diagnose J18.x were enrolled retrospectively. Case reports were analyzed by evaluating pneumonia severity and respective antibacterial treatment according to the British Thoracic Society guidelines, and presence of SIRS.

Results

402 patients were included in the study, 47,51% girls and 52,49% boys. The average age of girls (M=44,20; SD=38,67 months) and boys (M=48,06; SD=45,95 months) did not have statistically significant difference ($p=0,36$). There was statistically significant association found between age groups and severity of pneumonia ($p<0,001$), but effect size is small ($V=0,28$). In cases of mild to moderate pneumonia the antibiotic of choice was amoxicillin, in cases of severe pneumonia – combinations of amoxicillin or II/ III generation cephalosporin with clarithromycin were administered. Hospital stay in case of mild pneumonia (min=1, max=16 days, median=4 days), moderate (min=1, max=23, median=5 days), severe (min=2, max=22, median=6,50 days).

249 (63%) hospitalized patients were not evaluated for SIRS criteria on admission, but retrospective analyze of SIRS criteria showed, that 128 (32,4%) of these patients were SIRS positive. Inspecting SIRS determination results, there was found statistically significant association between retrospective analyze and assessment during admission to emergency department ($p<0,001$), but effect size is low ($V=0,24$).

Conclusions

The chosen treatment for admitted patients in CCUH corresponds with British Thoracic society guidelines for community acquired pneumonia. Determination of SIRS criteria was of little use for the patients on admission, because despite this they received antibacterial treatment according with guidelines.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0775

IS CONGENITAL TOXOPLASM SCREENING NECESSARY? A STRABISMUS CASE PRESENTATION

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Title of Case(s)

IS CONGENITAL TOXOPLASM SCREENING NECESSARY? A STRABISMUS CASE PRESENTATION

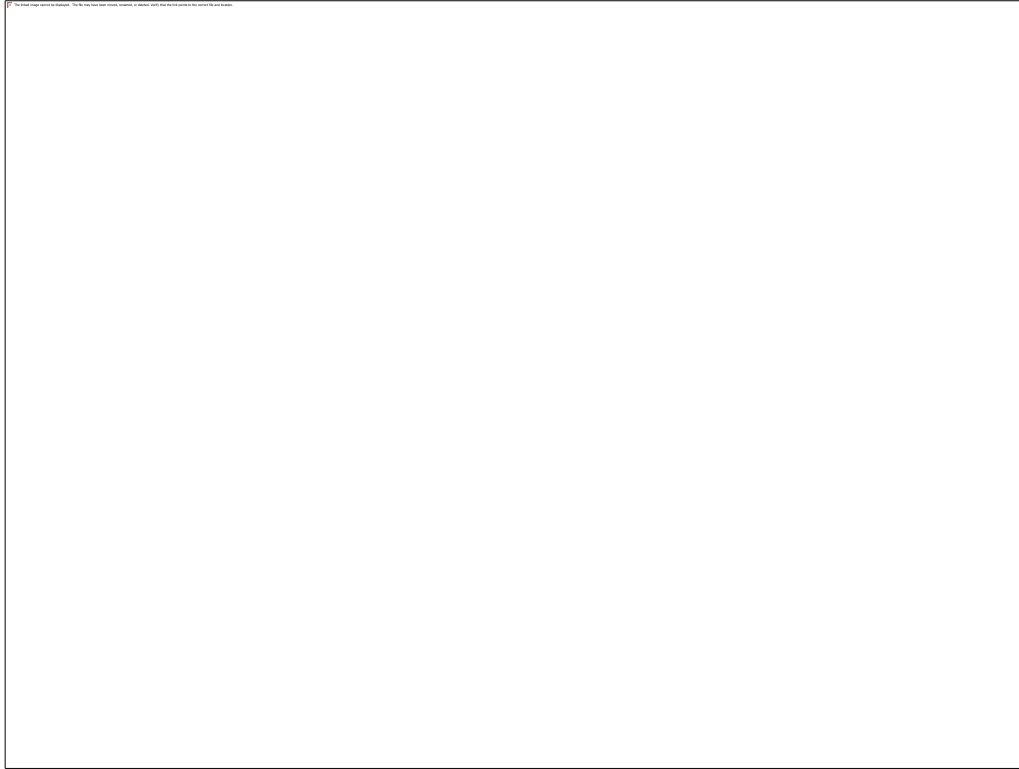
Background

Congenital Toxoplasmosis (CTx) is the result of transplacental fetal infection by *Toxoplasma gondii*. First trimester infections are infrequent but severe. Most of third trimester infected infants are asymptomatic at birth, but up to 80% developed learning and visual disabilities later in life. We report a CTx case which debuted as strabismus in the ophthalmology consult.

Case Presentation Summary

A healthy 2,4 year-old boy presented strabismus and decreased right eye visual acuity. Fundoscopy showed chorioretinal macular scar suggestive of CTx. Clinical interview revealed absence of maternal screening during pregnancy, and also a domestic cat. Physical examination was normal. Laboratory test detected positive titers of IgG (116,4 IU/mL) and negative IgM antibodies for *T.gondii*. Mother's serology showed positive titers of IgG and IgM, and high avidity IgG, meaning long-time infection. Cranial tomography revealed three intracranial frontal calcifications.

CTx was diagnosed, and treatment with pyrimethamine, sulfadiazine and folinic acid was started. Ten days later, the patient manifested fever and non specific rash, so treatment was suspended as possible side effects. It was decided not to resume treatment, keeping a strict ophthalmological and neurological follow-up. No recurrence is reported to date.



Learning Points/Discussion

Although CTx incidence in Spain is low, long term sequelae, such as chorioretinitis, blindness or neurological symptoms in asymptomatic newborns are potentially severe. Currently, universal pregnancy screening is not recommended, but CTx is a preventable disease. To avoid fetal infection pre-pregnancy screening, appropriate counselling regarding preventative measures, and pregnancy tracing of seronegative women is necessary. Treatment for kids up to a year old in non active chorioretinitis continues to be controversial.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0776

INFECTIOUS ETIOLOGY OF HYDROCEPHALUS IN CHILDREN: A PROSPECTIVE OBSERVATIONAL STUDY FROM BIKANER NORTHWESTERN INDIA

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Background

Hydrocephalus is a medical condition in which there is an abnormal accumulation of cerebrospinal fluid (CSF) in the brain. This prospective hospital based observational study aimed to evaluate the infectious etiology of hydrocephalus in paediatric patients in Bikaner.

Methods

The prospective study was conducted with 100 children admitted with hydrocephalus in paediatric hospital and neurosurgery department of hospital. The diagnosis of hydrocephalus was made by non-contrast CT scan or MRI of head after having clinical suspicion. The etiological diagnosis was evaluated as per protocol specific investigations

Results

The majority of children were below 2 years with male to female ratio was 1.4:1. Congenital causes were found in 48% children while 52% had acquired causes of hydrocephalus. Out of 52% cases in acquired hydrocephalus, tubercular meningitis was the commonest infectious etiology (63.4%), followed by pyogenic meningitis (15.3%), post HIE (9.6%), post tumoural (7.6%) and post ICH (3.8%). Head circumference of 70 % of children was >90th percentile. Malnutrition was associated with 60% of children who had weight and height (length) for age ≤3 SD.

Conclusions

Most common cause of hydrocephalus was TBM, more than 70% were not vaccinated and diagnosed late. It can be minimized by strengthening vaccination, early diagnosis and treatment. In 70% of children head circumference was more than >90th percentile and in 60% of them weight and height for age was <- 3 SD.

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-0779

ATYPICAL CLINICAL PROFILE OF DENGUE ILLNESS IN CHILDREN

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Background

Majority of dengue illness follow a benign self limiting course but recently atypical manifestations are increasingly seen due to rising burden of disease and increased awareness. Disease is more severe in children than adults. The present study describes the atypical clinical profile of children hospitalized with dengue illness at Children Hospital since January 2015 to December 2016.

Methods

Diagnosis of dengue illness was made on WHO criteria and ELISA based analysis of IgM and IgG (titre \geq 1:400) and confirmation of dengue infection was done by RT-PCR. Other possible evident causes of fever were analysed thoroughly and stringently. Malaria PCR, leptospira IgM, typhoid serology and blood culture were negative.

Results

The mean age was 9.28 \pm 2.13 years. Male to female ratio was 1.17:1. Children of 5–10 years were most commonly affected (54.65%). Dengue fever was diagnosed in 65.18% children while 34.82% had dengue hemorrhagic fever (DHF) [DHF1 8.75%, DHF2 17.10%, DHF3 7.12% and DHF4 1.84%]. Common symptoms were fever (100%), abdominal pain (60.45%), vomiting (51.14%), myalgias (42.36%) and itchy rash (21.31%). Bleeding manifestations were seen in 33.67% children with petechiae (75.19%) being the most common, followed by epistaxis (31.59%), gum bleeds (8.09%), hematemesis (4.96%), melena (2.35%) and haematuria (1.82%). Thrombocytopenia was documented in 87.43% children and bleeding occurred more often with severe thrombocytopenia. Most common atypical manifestation was hepatitis found in 41.28% children followed by febrile diarrhea (16.24%), coagulopathy (7.17%), encephalopathy (3.85%), ARDS (1.14%), acalculous cholecystitis (1.05%) and myocarditis (0.97%). Eleven children expired due to refractory shock and coagulopathy.

Conclusions

This study focused on atypical manifestation of dengue illness in children. Clinicians should have a high index of suspicion for varied and multi-systemic manifestations which can go unrecognized and fatal.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0783

MEASLES OUTBREAK IN A ROMANIAN REGION – TRENDS AND MOTIVATIONS

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Background

Although the European Vaccine Action Plan 2015-2020 has focused on eliminate measles, based on the availability of a safe and efficient vaccine, we have still witnessed many European outbreaks during the last years. The aim of our research was to evaluate the factors contributing to the measles epidemic in Oltenia County, Romania.

Methods

We performed a prospective study regarding the cases admitted to the Pediatric Infectious Disease Department Craiova during 2016. We addressed to the parents or caregivers a structured questionnaire regarding the motivations and the opinion about vaccination.

Results

107 parents answered our questionnaire. 3 cases reported MMR vaccination at least 1 month prior to the disease. 61 cases reported neglect as the main cause for the lack of vaccination, followed by the media influence and the religious convictions. 68 of the parents would reconsider the decision to vaccinate - 33 of them considered the potential complications as the most frightening aspect vs. only 11 in the "anti vaxxer" group: $p = 0.01$, $OR = 2.57$ (1.11 - 5.94). 98 caregivers had other non-vaccinated children in their proximity.

Conclusions

The negligence was reported as the main cause of non-vaccination but more than half of the parents interviewed would maintain that decision. The complications were the most important aspect in reconsidering the decision. Almost all cases knew other non-vaccinated children. The structured patient-oriented medical education seems to be the solution for regaining the high vaccination rates.

09B. EDUCATION: HOST-PATHOGEN INTERACTION

ESP17-0784

AN UNUSUAL PRESENTATION OF CAT SCRATCH DISEASE

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Title of Case(s)

AN UNUSUAL PRESENTATION OF CAT SCRATCH DISEASE

Background

Typical cat scratch disease (CSD) presents as lesions at inoculation site with regional lymphadenitis. Atypical presentations include hepatosplenic involvement, neuroretinitis, endocarditis, and fever of unknown origin (FUO).

Case Presentation Summary

A five-year-old previously healthy boy was admitted to our ward because of FUO. Three weeks earlier he was admitted to another hospital due to fever (40°C) lasting for one week. Blood tests revealed high C-reactive protein (CRP) (209mg/L) and positive Epstein-Barr Virus (EBV) IgM antibodies. He completed 7 days of ceftriaxone.

Two weeks later, as the fever persisted, he was referred to our department. He lived with his parents, a dog and 13 cats. He denied exposure to other animals, sick cohabitants, unpasteurised milk or recent travels.

On physical exam he was febrile (39,5°C) but well. There was no palpable hepatosplenomegaly, lymphadenopathy or cutaneous lesions. Labs were normal, except CRP (153mg/L). Abdominal ultrasound revealed multiple hepatic and splenic masses with central necrosis. He began treatment for presumed CSD with rifampin and azithromycin. Further testing was pending.

Liver biopsy showed abscess with neutrophils, histiocytes, and lymphocytes. Liver sample was positive for Bartonella DNA. Bartonella henselae antibody testing subsequently confirmed recent infection - elevated IgG (titer 1:1024) and IgM (titer 1:32).

After 21 days of treatment he was discharged asymptomatic. Follow up ultrasound demonstrated resolution of imaging findings.

Learning Points/Discussion

Hepatosplenic involvement without regional lymphadenopathy is rare in CSD and may cause delay in diagnosis. The authors highlight the importance of anamnesis, as cat exposure raised the index of suspicion for CSD. Disseminated atypical CSD with hepatic involvement is more common in immunosuppressed patients. In this case, authors discuss the potential role of concomitant EBV infection on the dissemination of CSD.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0785

OUTBRAKE OF DENGUE IN BUENOS AIRES: REVIEW OF 80 PEDIATRIC CASES

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Background

Northern Argentina presents endemic areas of Dengue, with sporadic cases outside the region. Since 1998 outbreaks have been reported in our country, none affected the City of Buenos Aires and the Provincia Buenos Aires as the current one

Methods

Retrospective, observational study. Medical records of patients hospitalized or assisted in the department of infectious diseases with confirmed or probable dengue were reviewed, in the period 1 January- 29 April 2016. Patients (pts) demographic, clinical, laboratory and evolution were recorded

Results

80 pts were included. 74 pts acquired the disease locally, only 6 has been abroad in the last 2 weeks. Age: 11.35 (0.96- 17.62).

Features: fever (100%), headache (62,5%), myalgia- arthralgia (56,25%), abdominal pain (55%), rash (43,75%), bleeding (33,75%), vomiting (47,5%) and less frequent pruritus, petechiae and diarrhea. Median duration of fever and onset of rash: 4 days.

86% had leucopenia: medium 2,300/mm³ (range 800- 4,500), median duration 7 days. 66% had thrombocytopenia: Medium 31,000/mm³ (0- 149,000), median duration of 6 days. Liver enzymes increased in 33pts, 2 hepatitis (1 severe).

The etiologic diagnosis: NS1 antigen in 41, IgM in 11 and epidemiological nexus in 28.

Classification: dengue without warning signs and no comorbidity 50, with comorbidity 2, with warning signs 26 pts. There were 2 serious dengue and there were no deaths.

Conclusions

In the analyzed period 80 pts with confirmed or suspected Dengue were attended in our hospital. The most common features were fever, headache, myalgia- arthralgia, abdominal pain, and rash. A large percentage had leucopenia, thrombocytopenia and increased transaminases. There were only 2 serious dengue and no deaths, this could be because is the first large outbreak in Buenos Aires, with a low prevalence of Dengue in the population

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0787

DIAGNOSTIC ACCURACY OF INTERLEUKIN-6, INTERLEUKIN-8 AND INTERLEUKIN-10 FOR PREDICTING BACTEREMIA IN CHILDREN WITH FEBRILE NEUTROPENIA

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Background

Despite improvements in diagnosis and treatment, infections are still major cause of morbidity and mortality in children with febrile neutropenia. In majority of febrile episodes, infection source cannot be defined. In this study, we aim to identify the earlier predictors of bacteremia/fungemia and a useful cytokine identify the source of infections and to discriminate the patients with culture-confirmed bacterial/fungal infection.

Methods

Thirty-eight patients [18 female, 20 male] with acute lymphoblastic leukemia [ALL] and acute myeloblastic leukemia [AML] developed 59 febrile neutropenia episodes between June 2013 and March 2014 prospectively recorded.

Results

A total of 59 febrile neutropenia episodes were enrolled during the study period. To compare the values, the groups with culture-confirmed infection and culture-negative groups, receiver operating characteristics [ROC] curves demonstrated the values of sensitivity, specificity, positive predictive value [PPV], negative predictive value [NPV] for IL-6, IL-8, IL-10 and CRP [Table 1].

Cut-off value	Gram (-) Bacteremia (n=9)				
	Sensitivity (%)	Specificity (%)	PPV ¹	NPV ²	Youden's index
IL ³ -6 ≥98.8 pg/mL	62.5	70.5	25	92.3	0.3867
IL-8 ≥61.3 pg/mL	87.5	74.5	35	97.4	0.6486
IL-10 ≥47.93 pg/mL	62.5	74.4	29.4	92.9	0.4467
CRP ⁴ mg/dL ≥4mg/dL	87.5	48	21.2	96	0.3787
Bacteremia (n=14)					
IL-6 ≥98.8 pg/mL	50	71.1	35	81.1	0.2211
IL-8 ≥61.3 pg/mL	64.1	75.6	45	87.2	0.3984
IL-10 ≥5.04 pg/mL	92.9	44.4	34.2	95.2	0.3730
CRP mg/dL ≥4mg/dL	78.6	50	33.3	88	0.2857

Conclusions

The most sensitive cytokine was IL-10 and the most specific was IL-8 in predicting culture-confirmed infections. IL-8 had greater sensitivity and specificity in determination Gram [-] bacterial infections and a higher NPV therefore IL-8 can be used particularly to rule out the Gram[-] bacterial infections.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0788

A COMPARISON OF RAPID ANTIGEN DIAGNOSTIC TESTING AND CLINICAL SCORE FOR DIAGNOSIS OF TONSILLITIS/PHARYNGITIS IN TWO TERTIARY PAEDIATRIC EMERGENCY DEPARTMENTS

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Background

Clinical diagnosis of Group A *Streptococcus* (GAS) tonsillitis/pharyngitis in children is problematic. While bacterial throat swab culture remains the gold-standard, results are not available in a useful timeframe for Emergency Departments (ED). Use of rapid antigen diagnostic tests (RADT) or clinical scores to aid diagnosis of GAS are not universally recommended. Despite educational interventions, antimicrobial prescription rates for children presenting to two tertiary Dublin paediatric ED with tonsillitis/pharyngitis remained high (65%).

Methods

In April 2015, a RADT for GAS was introduced in ED1 for diagnosis of children presenting with tonsillitis/pharyngitis while ED2 continued to use a clinical score routinely. Antimicrobial prescription rates were evaluated in both ED pre and post-introduction of the RADT. Diagnostic accuracy of the RADT and clinical score were compared to bacterial throat swab culture.

Results

502 children were included in the study. Antimicrobial prescription rates reduced significantly from 61% (84/137) to 33% (62/189) ($p < 0.001$) in ED1 post-introduction of the RADT, while the incidence of GAS positive cultures remained stable (20%). In contrast, antimicrobial prescription rates in ED2 using a clinical score were unchanged (58% (44/76) -59% (59/100)). The RADT demonstrated 85% sensitivity and 96% specificity for presence of GAS in antibiotic-naïve children. In contrast, clinical symptoms and signs either alone or in combination were not predictive for presence of GAS but did appear to influence antimicrobial prescription rates.

Conclusions

Antimicrobial prescription rates in children with tonsillitis/pharyngitis presenting to an ED reduced 46% after introduction of a RADT for GAS but remained persistently high in a comparable ED with continued use of a clinical score. Use of a RADT for GAS satisfies the clinicians need to treat GAS pharyngitis while promoting good antimicrobial stewardship.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0790

NEONATAL DENGUE INFECTION : A REPORT OF THREE CASES

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Title of Case(s)

NEONATAL DENGUE INFECTION: REPORT OF THREE CASES

Background

There has been an increase of dengue infection in pregnant women with transplacental transmission in endemic area. This vertical transmission imposes adverse effect on the fetus. We report three cases of neonatal dengue, highly probable of a vertical infection

Case Presentation Summary

Case 1, a term baby boy had fever and poor feedings at the age of three days. Fever subsided on day 4. His mother suffered from dengue fever 2 days before delivery. Leucopenia, thrombocytopenia, were present in mother and infant. Dengue infection in infant was confirmed by positive IgM and negative IgG. His mother also had positive Ig M and Ig G for dengue.

Case 2, a 2-day-old baby girl got fever, petechial on her leg, thrombocytopenia and elevated transaminase enzymes. Her mother suffered from dengue hemorrhagic fever grade II before delivery. Immunoglobulin M and Ig G for dengue were positive on both mother and infant, hence she was diagnosed as dengue fever.

Case 3, a 3-day-old baby girl got sudden fever, vomiting, and suck poorly for 2 days. She also looked icteric. Laboratory showed thrombocytopenia. Her mother complain of arthralgia, myalgia, and headache without fever before delivery. The serology examination confirmed Ig M/Ig G dengue positive with DEN 3 strain on both mother and infant.

There was no liver enlargement or plasma leakage in all neonates. They were supportively managed and made an uneventful recovery after 7 days of illness.

Learning Points/Discussion

In endemic areas, neonates born to dengue infected mothers, who develops fever in the first days of life should always be suspected for dengue virus infection. Early diagnosis and management is mandatory. Serologic confirmation leads to the conclusion of dengue virus vertical transmission.

22A. EDUCATION: OTHER

ESP17-0793

HEALTH SEEKING BEHAVIOR FOR COMMON CHILDHOOD ILLNESSES AMONG CARE-GIVERS OF UNDER-FIVES IN A SELECTED NIGERIAN POPULATION

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Background

Worldwide, the most common causes of death in children under the age of five years are pneumonia, diarrhoea, preterm birth complications and malaria. Among these, nearly all of child deaths due to pneumonia and diarrhea occur in sub-Saharan Africa and South Asia.

The aim of this study was to assess the health seeking behavior of care-givers of under-fives for common childhood illnesses in Epe Local Government Area, Lagos state, Nigeria.

Methods

This was a descriptive cross-sectional study conducted between March and October 2016. The sample size used was three hundred and thirty (330). Multi-stage sampling technique was used. Employed in this study was a structured interviewer administered questionnaire. The completed questionnaires were inputted and analyzed using the Epi Info Statistical software (version 7). Level of significance was predetermined at $p < 0.05$.

Results

Overall, most caregivers interviewed had poor knowledge (77.13%) of the causes and symptoms of common childhood illnesses. The most common known cause of childhood illnesses was some organisms (58.54%). Common symptoms mentioned were fever and not playing well. The number of children below the age of 5 years in a household was found to be statistically significant when associated with taking child to health facility with a value of $p = 0.029$. Good knowledge of common childhood illnesses prompted good practice with a value of $p = 0.024$.

Conclusions

This study showed poor knowledge of symptoms and causes of common childhood illnesses. Health workers need to educate the community, especially married caregivers on the importance of identifying symptoms, seeking timely and appropriate treatment for their children. Further research should be done to create more knowledge and understanding of factors that can be manipulated to enable the formation of community specific intervention programs that will improve health status.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0794

SPONDYLODISCITIS IN CHILDREN: CLINICAL PRESENTATION, TREATMENT AND LONG-TERM OUTCOME FOR 39 CHILDREN

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Background

Spondylodiscitis (SD) is a rare disease in children. Diagnosis is difficult because the symptoms are not very specific and due to the children's difficulty in communicating. SD have been diagnosed with increasing frequency. However, SD remain uncommon entities among pediatric patients. Early diagnosis and treatment may reduce risks of neurological complications, spinal deformities and segmental instabilities. Appropriate duration of intravenous and oral antibiotherapy is not well defined.

Methods

This was a retrospective study of children <15 years old admitted for the treatment of spondylodiscitis between 2006 and 2015 in a French pediatric hospital. Electronic medical records were reviewed for clinical, biological and radiological parameters and etiologic agents during this 10-year period.

Results

29 patients were diagnosed with SD. The median age was one year and 8 months, and the male:female ratio was 1,29. The median duration of symptoms before diagnostic was 15 days (3-172 days). Pain was the most common presenting symptom (100%), and only 59% (n = 25) of the patients had a history of fever ($\geq 38.0^{\circ}\text{C}$). Microorganisms were isolated in 5 cases (13%), 3 children had *Staphylococcus aureus* infection, one children had *Kingella kingae* infection and one had *Bartonella henselae* infection. Of the 39 patients, 77% (n = 30) had blood cultures taken, 20% (n = 8) underwent open surgical biopsy. Mean duration of intravenous antibiotic therapy was 8 days (+/- 4,6 days), mean duration of total antibiotic therapy was 50 days (+/- 21 days).

Conclusions

Only 20% children underwent surgical biopsy and none underwent percutaneous biopsy. Obtaining tissue culture is important to confirm the bacterial etiology of the infection and guide antibiotic therapy. Modern molecular methods can significantly increase the detection rate. Short-term parenteral medication is acceptable in uncomplicated cases.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0796

RETROSPECTIVE DIAGNOSIS OF CONGENITAL CMV BY TESTING GUTHRIE CARD HEEL-PRICK BLOOD SPOTS IN A COHORT OF IRISH INFANTS FROM 2007-2015

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Background

Cytomegalovirus (CMV) infection is the most frequent congenital infection in humans and can cause permanent damage. Guthrie card heel-prick blood spots, taken from day of life 3 to 5, may be tested to diagnose congenital CMV infection when the condition is first considered outside of the neonatal period. The aim of this study is to evaluate CMV testing of Guthrie card heel-prick blood spots for retrospective diagnosis of suspected congenital CMV in a cohort of Irish infants from 2007 to 2015.

Methods

Medical records and results of retrospective CMV testing of Guthrie card heel-prick blood spots from January 2007 to June 2015 were reviewed.

Results

208 Guthrie card heel-prick blood spots were tested for CMV DNA and CMV IgM from January 2007 to June 2015 with 108 charts available for review.

30 samples were CMV PCR+, 7 of these were also IgM positive. On review of the clinical information for 13, all were felt to have a probable diagnosis of congenital CMV.

39 samples were PCR-/IgM+. 11 (10%) of 16 with clinical information were felt to have a possible diagnosis of CMV, with 2 reassigned to probable CMV and 3 to unlikely as an alternate diagnosis was clear from the chart review.

111 samples were PCR-/IgM-. Of 34 charts available for review, 33 (31%) were still felt to be unlikely to be congenital CMV and 1 was reassigned to possible CMV.

Conclusions

Diagnosis of congenital CMV remains problematic if testing is not performed within the first three weeks of life. Retrospective testing confirmed the diagnosis in a minority (12%) of infants with suspected congenital CMV infection. Clinical correlation is still required to clarify the diagnosis.

16A. EDUCATION: PUBLIC HEALTH: MOLECULAR EPIDEMIOLOGY AND OTHER ASPECTS

ESP17-0797

EPIDEMIC VIRUS MENINGITIS IN CHANIA CITY , LABORATORY FEATURES.

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Background

Although enteroviral infection is usually asymptomatic, sometimes it is associated with diverse clinical syndromes ranging from minor febrile illness to severe, potentially fatal diseases such as aseptic meningitis, encephalitis, paralysis, myocarditis and neonatal enteroviral sepsis. Here, we describe an outbreak of enteroviral aseptic meningitis emerged in Chania in a period of two months during the last semester of 2016

Methods

Nine children were hospitalized with symptoms associated with neuroinfection and mild clinical features. Blood cultures, as well as cerebrospinal fluid (CSF) and stool samples were obtained from all children. The CSF and stool samples were sent to the National Poliovirus/Enterovirus Reference Laboratory of the Hellenic Pasteur Institute where molecular and cell culture methods were performed.

Results

All cerebrospinal fluid samples were tested negative for enteroviruses while in five out of the seven cases where stool samples were available, enteroviral RNA was detected. In three of the above positive cases (60%), sequencing analysis revealed EVA71 as the virulent enteroviral serotype

Conclusions

Sensitive and specific methods for the direct detection of EVA71 RNA in clinical samples await development since the differential diagnosis of neuroinfections, should definitely include enteroviruses. For that purpose, PCR could play a major role as it is the most sensitive and widely used method for the identification of the enteroviral genome.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0798

CONGENITAL TUBERCULOSIS: A RARE PRESENTATION

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Title of Case(s)

Congenital Tuberculosis

Background

Congenital TB is rare, but fatal if untreated, and is difficult to diagnose in time to treat successfully without knowledge of a maternal history of TB. We report 4 cases of congenital tuberculosis diagnosed on basis of revised Cantewell criteria.

Case Presentation Summary

Four vaginally delivered term neonates (aged 16-42 days) presented with cough, respiratory distress, abdominal distension and fever. One neonate presented with severe sepsis with shock and required blood transfusion, ionotropes and mechanical ventilation support. They had nonspecific pulmonary infiltrates in Chest x ray and massive hepato-splenomegaly. Gastric aspirates were positive for Acid fast bacilli in 3 neonates while endotracheal aspirate was positive in 4th neonate. Mantoux test was positive in all four neonates. Ultrasonography and computerized tomography of abdomen and thorax in one neonate showed multiple hypochoic lesions in liver along with regional lymphadenopathy, ascites and right pleural effusion. Other possible co-morbidities like malaria, TORCH infection, HIV and storage disease were ruled out thoroughly. Standard antitubercular therapy was started and all recovered well. The mothers of all four neonates were asymptomatic, but Mantoux test was positive. Histopathology for endometrial biopsies showed typical tubercular granulomas and PCR was positive for mycobacterial DNA. They all had good response with standard antitubercular treatment. Other contacts of neonates were healthy and had negative screening for tuberculosis.

Learning Points/Discussion

- Non-specific presentation of congenital tuberculosis should be familiar to clinicians because early identification and treatment can prevent devastating consequences of serious disease.
- Congenital tuberculosis should be considered in newborn with pneumonia not responding to antibiotic, if the mother is at risk for tuberculosis.
- As most of the women are asymptomatic, we recommend the screening of all possible pregnant women for tuberculosis.

08C. EDUCATION: HIV/AIDS

ESP17-0800

HIV IN CHILDREN - WHEN SHOULD WE SUSPECT THE INFECTION? SINGLE CENTRE EXPERIENCE FROM LAST 15 YEARS.

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Background

The number of HIV-infected children is low, but still underestimated in Poland. The majority of them were infected vertically, because the mothers hadn't known about their infection before pregnancy. The aim of the study was to sum up the 15 years of experience with HIV-infected children

Methods

46 HIV-infected children attending our department in years 2002-2016 from Lower Silesia, Poland, as well as from other voivodeships.

Results

HIV infection was diagnosed and confirmed by PCR in 46 patients (including 27 girls) aged 2 weeks - 16 years. The infection or death of mothers was the reason to start diagnostics in most children (15/46), other reasons were: AIDS defining condition (13/46), severe or atypical disorders, including opportunistic infections (11/46) or thrombocytopenia (3/46). The most frequent clinical manifestations on admission were: general lymphadenopathy (20/46), pneumonia (19/46), hepatomegaly (16/46), anaemia (14/46) and failure to thrive (12/46). Based on clinical symptoms the patients were classified as: B (19/46), A (11/46), C (12/46), N (3/46), U (1/46). Most patients were infected vertically from HIV-positive mothers (43/46), one patient was infected by sexual contact. Only 7/46 mothers knew about their infection prior to pregnancy, in 11/46 cases the HIV test was performed after the child's diagnosis. Six women died for AIDS before the children were diagnosed. The HAART was initiated in all patients as soon as possible and continued up to age 18 years.

Conclusions

Routine HIV testing in pregnancy may prevent the majority of infections in children. However, the doctors should always consider HIV infection in any child with unexplained generalized lymphadenopathy, hepatomegaly, blood abnormalities and failure to thrive.

22A. EDUCATION: OTHER

ESP17-0801

POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME (PRES) PRESENTING WITH STATUS EPILEPTICUS IN THE CONTEXT OF POST-STREPTOCOCCAL GLOMERULONEPHRITIS

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Title of Case(s)

POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME (PRES) PRESENTING WITH STATUS EPILEPTICUS IN THE CONTEXT OF POST-STREPTOCOCCAL GLOMERULONEPHRITIS.

Background

PRES is an increasingly recognized cliniconeuroradiological disorder, presenting with headache, nausea, vomiting, seizures, altered consciousness and visual disturbances. It is mainly associated with chronic and acute kidney disease, solid organ transplantation, immunosuppressives, Systemic Lupus Erythematosus and eclampsia. Typical MRI findings include white matter vasogenic oedema predominantly affecting the posterior parietaloccipital lobes of the brain. It evolves over a matter of hours, the symptoms may persist for several days and the radiological findings resolve within few weeks.

Case Presentation Summary

We report a previously healthy 7-year old patient, who presented with status epilepticus involving generalized tonic-clonic seizures, following a 2-day history of nausea, vomiting and headache. The patient was afebrile and had no history of epilepsy or recent history of head trauma or ingestion of toxic substances. During the seizures, raised systolic blood pressure of 170mmHg was recorded. Periorbital oedema and proteinuria were noted for 24 hours post-seizure. Microscopic hematuria and systolic/diastolic hypertension (>95th centile) were also recognized, with repeatedly normal urea and creatinine levels. An electroencephalogram was normal. Based on a positive personal history of tonsillitis 2 weeks before the onset of the seizures, persistent microscopic hematuria, raised blood pressure for one week, low C3 and C4 levels, raised Antistreptolysin O titer and typical MRI findings that resolved 4 weeks later, PRES was diagnosed in the context of post-streptococcal glomerulonephritis.

Learning Points/Discussion

PRES should always be considered in patients with glomerulonephritis presenting with acute hypertension and rapidly progressive neurological manifestations. Since it is often unsuspected, prompt recognition and treatment is important for the resolution of the symptoms and radiological features, as well as for preventing unnecessary investigations and therapies.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-0802

PNEUMOCOCCAL MENINGITIS, AGRANULOCYTOSIS AND CORTICOTHERAPY

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Title of Case(s)

Pneumococcal meningitis, agranulocytosis and corticotherapy

Background

Corticosteroids adjuvant therapy in children with pneumococcal meningitis is indicated in immunocompétent children but remains controversially discussed in immunocompromised children.

Case Presentation Summary

The patient is a boy, born in 2013. At 9 months old, a diagnosis of disseminated Langerhans cells histiocytosis with systemic symptoms and hematologic dysfunction. That fits the French recommendation for a myeloablative chemotherapy with aracytine and cladribine. He presented a febrile agranulocytosis with elevated C reactive protein, that was treated by imipenem, amikacin and medullar growth factor. After a week of treatment, he presented a brutal consciousness disorder that was concomitant with the end of agranulocytosis. The cerebral TDM showed an intracranial hypertension and a ventricular shunt was practised in emergency. The cerebrospinal fluid tests indicated hypoglycorrhachia, hyperproteinorrhachia. The cultures remained sterile but the research of pneumococcal antigen was positive. He was then treated by cefotaxime 300mg per kg per day, and dexamethasone 0,15mg/kg every 6 hours for four days and supportive care.

The cerebral MRI of the next days showed an aspect of ventriculitis and a tetra ventricular hydrocephalus. The patient needed two more interventions for ventricular shunts. Because of the persistence of ventriculitis with intracranial hypertension, we decided to add a corticotherapy with high corticosteroids doses: prednisolone bolus (30mg per kg per day) for 5 days and 2mg/kg/j for 3 weeks.

The patient had a gradual improvement of his neurological functions.

Today he still has 2 ventriculo peritoneal shunts. His neurological examination is almost for his age.

Learning Points/Discussion

This observation shows the interaction between infection, inflammatory response, and the role of steroid in bacterial meningitis in immunocompromised patients.

05B. EDUCATION: PREGNANCY AND THE NEONATE

ESP17-0804

COMPARATIVE STUDY OF NEONATAL SEPSIS IN MULTIPLE NICU IN JAPAN

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Background

Sepsis is a one of the most lethal incidence for preterm infant. In neonatal, the organisms of sepsis are different between the weight of birth, the age at onset, and the scale of the NICU. To reveal of those relationship is helpful to select the antibiotics empirically. But there are only a few studies that reveal the organism of sepsis in multiple NICU facilities.

Methods

We investigated blood culture results of the three different NICU for 3 years respectively. Two thousand nine hundred sixty four blood culture samples had collected between from 2013 and 2015. In those blood cultures, 93 cases were positive. We analyzed the relationship with the organisms and the weight of birth, the age at onset, and susceptibility of antibiotics.

Results

The total number of hospital admission was 3053 in 3 years include 92 cases of extremely-low-birth-weight infants (ELBWI). In blood culture positive cases, 13 cases were detected from ELBWI (14%). Furthermore, early onset (<72h) sepsis in ELBWI was only one case. On the other hand there were 12 cases of late onset (>72h) sepsis in ELBWI and the organisms were MRSA and MRCNS. *E.coli* was isolated in 9 cases. And they had no correlation with the weight of birth and the age at onset. Among them, 3 cases were Extended-Spectrum Beta-Lactamase positive *E.coli*.

Conclusions

In the NICU that many ELBWI are hospitalized, late onset sepsis should be given attention. In case of late onset sepsis, it might be considered use of glycopeptide empirically.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-0805

SEROPREVALENCE OF BORDETELLA PERTUSSIS IN HEALTHCARE WORKERS IN A PORTUGUESE TERTIARY REFERRAL HOSPITAL

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Background

Bordetella pertussis causes an acute infectious disease that, in newborns and little infants, can present with severe clinical manifestations or even death. The world prevalence is around 16 million cases per year, with 195.000 estimated deaths. In Portugal, whole cell pertussis vaccine was introduced in 1965 followed, in 2006, by the acellular form included in a triple vaccine (diphtheria, tetanus and pertussis). The national vaccine coverage is about 95%. A raising number of cases have been observed, with an incidence of 2.14 per 100.000 cases in 2012. Duration of protection against pertussis infection is unknown (after last immunization or disease itself). Healthcare professionals, working with children, can be the source of infection of hospital outbreaks. Knowing the seroprevalence of pertussis antibodies among them is important to reinforce the need for vaccination in susceptible professionals.

Methods

Prospective study including healthcare workers from neonatology and pediatric departments and clinical pathology laboratory of a tertiary referral hospital (physicians, nurses, medical auxiliars, laboratory technicians, administrative assistants). Demographic data were collected. People with acute respiratory symptoms, pregnant or vaccinated with pertussis during the year of 2016 were excluded. Seroprevalence for pertussis was tested through IgG for pertussis toxin by ELISA and it was considered positive (>100 UI/mL), negative (<40 UI/mL) or equivocal (40-100 UI/mL).

Results

97.8% (88/90) of the population tested was negative for IgG pertussis toxin; only the remaining 2.2% (2/90) showed equivocal results. We found no relation between gender, age, type of healthcare worker, years of vaccination and seroprevalence.

Conclusions

This population is all susceptible to pertussis infection and a major reservoir for disease and for its transmission. A booster immunization should be recommended to these individuals.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0806

SURGICAL EXCISION FOR DIAGNOSIS AND TREATMENT OF CERVICOFACIAL GRANULOMATOUS LYMPHADENITIS IN CHILDREN: RETROSPECTIVE STUDY WITH LONG TERM FOLLOW-UP

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Background

Cervicofacial granulomatous lymphadenitis is common in children. Nontuberculous mycobacterial (NTM) infections and cat-scratch disease (CSD) are the most frequent causes. Although complete surgical excision of the enlarged lymph nodes has long been considered the treatment of choice of NTM lymphadenitis, recent studies have reported successful use of antibiotic treatment or wait-and-see approach. The aim of our study is to describe early and late outcome following surgical procedures and compare clinical characteristics of patients based on final diagnosis.

Methods

We performed a retrospective multicenter study of all children who underwent surgical excision of granulomatous lymph nodes in the cervicofacial area from January 1, 2000 to March 1, 2016 at 2 tertiary care centres in Belgium.

Results

Forty patients were included in this study. The median age at first symptoms was 3.7 years (13 months to 14 years). The sex ratio was 1:1. The primary surgical procedure consisted in total excision (n=27), incision/drainage (n=9) or incomplete excision (n=4). None of the patients who had a primary complete excision went on to another surgery but a further operation was required in 54% who had an initial procedure other than complete excision. Early facial nerve palsy (marginal branch) occurred in 8 children with full recovery in all but 2 patients who kept very discrete lip asymmetry when smiling. Mean follow-up was 5.5 years (6 months - 15.3 years). At long term follow-up, all patients were healthy without evidence of recurrence. Twenty-five patients fit with diagnosis of NTM infection, 6 with CSD while diagnosis remained uncertain in 9 patients

Conclusions

Early surgical intervention with complete excision allowed to reach quick resolution and reduced the need for additional surgery with satisfactory long term outcome.

07B. SCIENCE: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0808

VITAMIN D DEFICIENCY AMONG SCHOOLCHILDREN IN A RURAL REGION OF MOROCCO

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Background

Micronutrients deficiencies can affect the growth and development of children. In Morocco many clinical studies showed that vitamin D deficiency is a public health problem. The aim of this study is to determine vitamin D status of schoolchildren in a rural region of Morocco.

Methods

An observational study 191 children (aged 7-9years) were selected from 3 primary schools and participated in the study. Weight and height were measured; fasting blood samples were taken to assess vitamin D as [25(OH) D] concentration.

Results

The mean age was 8.0±0.7 years, with a mean weight of 22.8±2.6 kg and height of 121.5±5.2 cm. vitamin D deficiency was prevalent in schoolchildren 65.8% of subjects had a 25 OHD<75 nmol/l, no significant difference was observed between boys and girls (p>0.05).

Conclusions

This study showed the presence of a high prevalence of vitamin D deficiency among the school children. These results need appropriate interventions to address the problems of poor vitamin D status in children.

Clinical Trial Registration (Please input N/A if not registered)

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0811

SALMONELLA THYPHIMURIUM EARLY ONSET NEONATAL SEPSIS

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Title of Case(s)

SALMONELLA THYPHIMURIUM EARLY ONSET NEONATAL SEPSIS

Background

Early onset neonatal sepsis due to salmonella spp is rare in developed countries. Vertical and horizontal transmissions were described, including faecal contamination of the birth canal. After a short incubation period, newborns may remain asymptomatic or present with sepsis or meningitis. Mortality rate as high as 58% were reported.

Case Presentation Summary

We report a case of transplacental *Salmonella Typhimurium* infection in a premature infant.

A mother with a one day history of fever and diarrhoea spontaneously delivered a premature boy at 35 weeks of gestation.

On day 3, the infant presented with symptoms suggesting necrotizing enterocolitis: apnea, respiratory distress, feeding intolerance, bloody diarrhea and fever. Feeding were suspended and intravenous antibiotic therapy (ampicillin, amikacine and metronidazole) initiated. Laboratory data showed an inflammatory syndrome with elevated C-reactive proteine (71 mg/l), leukocytopenia (7270/mm³) and severe lymphopenia (580/mm³). Enterocolitis stage 1 (Bell classification) was diagnosed based on clinical and radiological evaluation.

Salmonella spp were grown from the baby's blood and stools and from the mother's stools; the National Reference Center identified a *Salmonella Typhimurium*.

Cerebrospinal fluid culture remained sterile. Clinical and biological evolutions were rapidly favourable with 14-days of cefotaxim IV.

Maternal history revealed consumption of raw meat 3 days before delivery. **Learning Points/Discussion**

Salmonella spp should be considered in the differential diagnosis of early onset sepsis, particularly when mother presents gastrointestinal symptoms. Food safety education is crucial. The consumption of raw or uncooked meat during pregnancy should be avoided regardless toxoplasmosis immunization status.

To avoid outbreaks in the neonatal ward (as reported in the literature), rapid detection and prompt institution of isolation and clustering measures are important.

02A. SCIENCE: ANTIMICROBIAL RESISTANCE

ESP17-0813

FREQUENCY AND ANTIBIOTIC SUSCEPTIBILITY OF EXTENDED-SPECTRUM BETA-LACTAMASE-PRODUCING ESCHERICHIA COLI AND KLEBSIELLA SPP. IN URINARY TRACT INFECTIONS IN CHILDREN

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Background

Extended-spectrum beta-lactamase producing (ESBL+) bacteria are infrequent pathogens of urinary tract infections (UTI) in children. The objective of our study was to investigate the rate of ESBL+ *E. coli* and *Klebsiella* spp. in ITU and compare the antibiotic susceptibility between ESBL+ and ESBL- strains.

Methods

Retrospective study conducted in a large tertiary hospital. UTI in children aged < 5 years from 2011-2016 were eligible. Data were collected from the Microbiology Laboratory data system. *E. coli* and *Klebsiella* isolates were selected. The rate of ESBL+ *E. coli* and *Klebsiella* isolates was calculated. Then, we compared the antibiotic susceptibility patterns of ESBL+ and ESBL- isolates.

Results

2467 *E. coli* and 249 *Klebsiella* were isolated (4.1% *E. coli* ESBL+ and 4.8% *Klebsiella* ESBL+). ESBL+ *E. coli* showed good susceptibility to amikacin (96%), amoxicillin-clavulanate (82%), cefoxitin (88%), piperacillin-tazobactam (100%), imipenem (100%), fosfomycin (99%) and nitrofurantoin (99%). ESBL+ *E. coli* susceptibility to ciprofloxacin was lower compared with ESBL- *E. coli* (47% vs. 94%; p<0.01). ESBL+ *E. coli* susceptibility to norfloxacin was also lower compared with ESBL- *E. coli* (36% vs. 94%; p<0.01). ESBL+ *Klebsiella* showed good susceptibility to amikacin (91%), amoxicillin-clavulanate (92%), cefoxitin (100%), piperacillin-tazobactam (100%), imipenem (100%) and fosfomycin (83%). ESBL+ *Klebsiella* susceptibility to ciprofloxacin was lower compared with ESBL- *Klebsiella* (50% vs. 97%). ESBL+ *Klebsiella* susceptibility to norfloxacin was also lower compared with ESBL- *Klebsiella* (46% vs. 96%). ESBL+ *Klebsiella* susceptibility to nitrofurantoin was 67% compared with ESBL- *Klebsiella* (94%).

Conclusions

Amikacin, amoxicillin-clavulanate, piperacillin/tazobactam, fosfomycin and imipenem showed an excellent activity against ESBL+ isolates of *E. coli* and *Klebsiella*. ESBL+ strains resistance to quinolones was high compared with ESBL-, probably indicating that both resistance mechanisms are transmitted together in many cases.

Clinical Trial Registration (Please input N/A if not registered)

N/A

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0814

A COMPARISON OF TWO COMMERCIAL ASSAYS FOR MEASUREMENT OF IGG SUBCLASS CONCENTRATIONS

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Background

IgG subclass (IgGSc) measurements can provide useful information in patients presenting with recurrent infections. The two leading commercial providers of subclass assays have been standardised to different reference materials ERM-470DK and WHO67/97. As a consequence there may be differences in the values returned for IgG1-4 in addition to those seen due to platform variabilities. Here we compare the performance of both assays using samples from patients with known diagnoses.

Methods

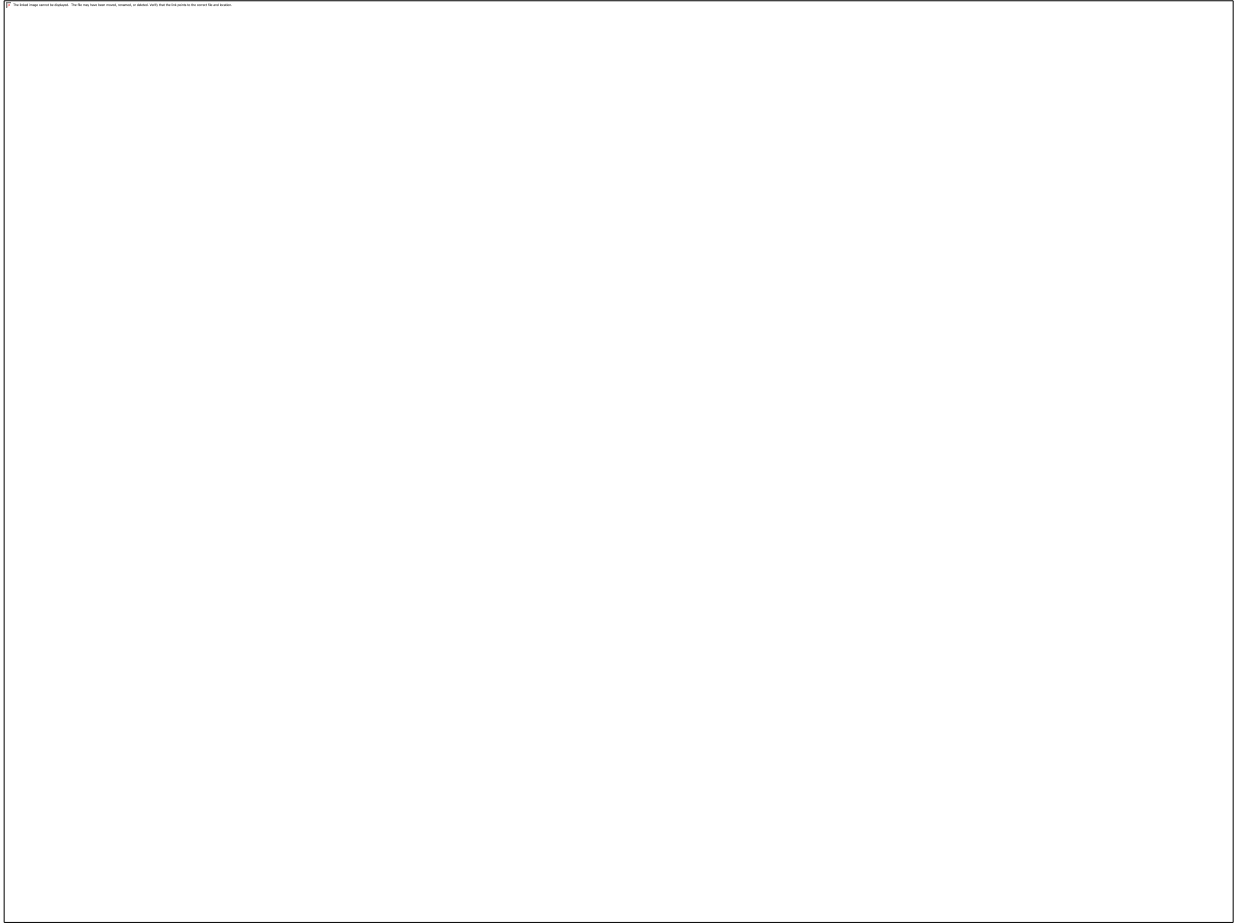
Serum samples were collected from 74 paediatric and adult patients (diagnosed with immunodeficiency (n=23), pulmonary (n=20) and other diseases (n=31)) attending the Hospital Universitario Reina Sofía, Córdoba, Spain (median age 44yrs, range 2-85yrs). IgGSc concentrations were determined using The Binding Site (TBS) assay (calibrated using ERM-470DK) on the Optilite® turbidimetric analyser and the Siemens assay (calibrated using WHO67/97) on a BN™II analyser.

Results

Overall quantitative differences were observed when comparing TBS and Siemens subclass assays (Spearman correlation: IgG1 r=0.67; IgG2 r=0.77; IgG3 r=0.71; IgG4 r=0.95. Deming regression slope and intercept: IgG1:1.20, -316.70; IgG2:0.81, 24.56; IgG3:1.23, 7.28; IgG4:0.46, 2.69. Bland Altman bias (mg/dL): IgG1:-185.44; IgG2:-32.02; IgG3:16.45; IgG4: -39.06).

TBS assays classified 13/23, 14/20 and 15/31 patients as immunodeficient, compared with 8/23, 4/20 and 5/31 using Siemens assays.

Application of age and assay-specific reference ranges showed agreement differences. Positive Predictive Values (PPV) and Negative Predictive Values (NPV) also highlighted some variation between assays (Table 1).



Conclusions

Differences exist between the TBS and Siemens IgGSc assays which could lead to different interpretations of IgGSc involvement in disease pathogenesis. Data here indicates that the two assays should not be used interchangeably.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0815

RESPIRATORY SYNCYTIAL VIRUS INFECTION AND RISK FACTORS FOR COMPLICATIONS

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Background

Respiratory syncytial virus (RSV) is the leading cause of lower respiratory tract infections in the first two years of life and is responsible for an important number of hospital admissions. The aim of this study was to identify the risk factors for complications in patients with RSV admitted to a tertiary hospital in Lisbon.

Methods

A retrospective study was performed between January 2015 and June 2016. Demographic and socioeconomic data, risk factors and complications were analysed.

Results

A total of 146 patients were included with a median age at admission of 7 months. 68,5% had older siblings, 44,5% were from a poor socioeconomic context, 30,1% had smoking parents and 34,2% attended day-care. 32,9% children had a family history of asthma and 36,3% had reactive airway disease. 13% had a history of prematurity and 21,9% had chronic disease: congenital heart disease (11), chronic lung disease (13) and immunodeficiency (8). We found coinfection with another virus in 64 (43,8%) patients. Complications occurred in 89,1% of the patients: hypoxemia (79,5%), secondary bacterial infection (58,2%), respiratory failure (19,9%), atelectasis (7,5%) and apnea (2,7%). 8,2% of the patients needed intensive care and mechanical ventilation. There was no mortality. Congenital heart disease ($p=0.029$) resulted as risk factor for apnea. A poor socioeconomic context ($p=0.021$) and chronic lung disease ($p=0.023$) were risk factors for respiratory failure and reactive airway disease ($p=0.001$) a risk factor for hypoxemia. No child with complications had made palivizumab.

Conclusions

Viral co-infection may contribute to a worse prognosis but RSV has the potential to cause severe lower respiratory tract infections. There is no specific and antiviral therapeutics. In high-risk groups it is important to establish clear national guidelines to the prevention of RSV infection.

22A. EDUCATION: OTHER

ESP17-0816

ESTIMATION OF THE BURDEN OF VARICELLA IN EUROPE BEFORE THE INTRODUCTION OF UNIVERSAL CHILDHOOD IMMUNIZATION

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Background and Objective

Varicella is generally considered a mild disease. Disease burden is not well characterized and country-level estimation is challenging. Varicella disease is not notifiable, notification criteria and rates vary between countries. Surveillance systems do not capture cases that do not seek medical care; most are affected by underreporting and underascertainment. We aimed to estimate the overall varicella disease burden in Europe to provide critical information to support decision-making regarding varicella vaccination.

Methods

We conducted a comprehensive literature review to identify epidemiological data on varicella-zoster virus (VZV) IgG antibody seroprevalence, and varicella-related primary care, hospitalization, and mortality. We then developed methods to estimate age-specific varicella incidence and annual number of cases by level of severity (community, primary care, hospital, and deaths) for Europe (European Medicines Agency countries and Switzerland).

Learning Points Discussion

A total of 5.5 million (95% CI: 4.7-6.4) varicella cases are expected to occur annually across Europe. Variation exists between countries but overall, the majority of cases (3 million; 95% CI: 2.7-3.3) occur in children < 5 years. Annually, it is estimated that 3-3.9 million varicella patients consult a primary care physician, 18,200 - 23,500 are hospitalized, and 80 varicella-related deaths occur (95% CI: 19-822).

In the absence of universal varicella immunization, varicella disease burden is substantial. This information should be considered when planning varicella control strategies. A better understanding of the factors driving country-specific differences in varicella transmission and health care utilization is needed. Improving and standardizing varicella surveillance in Europe, as initiated by the European Centre for Disease Prevention and Control (ECDC), is important to improve data quality to facilitate inter-country comparison.

12B. EDUCATION: INVASIVE FUNGAL INFECTIONS

ESP17-0818

INVASIVE CANDIDIASIS IN PATIENTS OF INTENSIVE CARE UNIT

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Background

Among invasive fungal infections *Candida spp.* is the most frequent causative agent of sepsis in intensive care unit (ICU), and among all agents takes about 5% of cases of severe sepsis and septic shock. Today the mortality from *Candida* bloodstream infection (BSI) is 47%, and at a septic shock even higher. Early diagnosis of invasive candidiasis is crucial for the administration of appropriate therapy in the shortest time, which significantly improves the prognosis. In addition, number of non-albicans species and resistance to standard antifungal agents increased last time.

Methods

This study analyses *Candida* BSI in hospitalized patients in ICU of Children's Hospital of the Infectious Diseases in Minsk in 2015-2016 years. The retrospective study of 8 disease histories with a diagnosis of invasive candidiasis was conducted. Criteria for inclusion were isolation of *Candida* species from blood culture.

Results

Causative agents of fungal sepsis in 62.5% of cases were *Candida parapsilosis*, 12,5% *Candida albicans*, 12,5% *Candida glabrata* and 12,5% *Candida Lusitaniae*. The age structure: 75% were infants and 25% - children from 1 to 4 years old. Among these, 62.5% fungal sepsis developed in postoperative period (children were operated on various congenital malformations), and 37.5% on the back of bacterial sepsis. All patients were treated by 3 and more broad-spectrum antibiotics over 7 days before the development of *Candida* BSI. We analyzed clinical and laboratory parameters and didn't find significantly important criteria for diagnosis.

Conclusions

Considering high mortality and the severity of *Candida* BSI the improvement of the diagnostic, the use of new methods for the isolation of the pathogen and antifungal susceptibility testing are necessary in order to develop optimal algorithm of management for such patients.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0819

A CASE STUDY OF STAPHYLOCOCCAL TOXIC SHOCK SYNDROME FOLLOWED BY 'SACRIFICES': A MNEMONIC TO GUIDE MANAGEMENT OF SEPTIC SHOCK

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Title of Case(s)

A Case Study of Staphylococcal Toxic Shock Syndrome followed by 'SACRIFICES': a mnemonic guide to management of septic shock

Background

Early identification of patients with sepsis is key to the delivery of the sepsis 6 bundle including antibiotic therapy within an hour.[1-3]. However, compliance with the Sepsis Six remains poor, and interventions to improve reliability of completion have shown only modest success.

We present an interesting case of toxic shock syndrome and then propose an easy mnemonic for the assessment and management of septic shock (Fig1).

Case Presentation Summary

A 15 year-old girl who presented unwell to our ED. She had complained of headache, myalgia, vomiting and faecal incontinence with severe diarrhoea prior to arrival. She deteriorated rapidly and within half an hour became confused and delirious with a GCS of 12, temperature 41 °C, saturating 92% in 15litres of oxygen, with a HR of 188/min, BP of 84/42mmHg. Examination revealed a tampon in situ. Her initial blood gas showed severe metabolic acidosis. Blood results showed acute renal failure (ARF), deranged clotting with a peak CRP of 122 (Table1). She received ceftriaxone, clarithromycin, acyclovir and Clindamycin.

Intubated, received a total of 80ml/kg of fluid bolus and inotropes. Her CT brain was normal. She received haemofiltration as she was anuric. Discharged on day 5 to complete 14 days course of antibiotics. Staphylococcus aureus was grown on her high vaginal swab and blood culture.

Learning Points/Discussion

The proposed mnemonic is incorporating the sepsis 6 bundle in order to most effectively manage these patients (Fig1). Ideally this could be taught to medical students and junior doctors as a memory aid and will help improve outcomes in a condition that is so dependent on accurate and rapid management.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0821

NEONATAL SEPSIS DUE TO VERTICAL TRANSMISSION OF NON-TYPEABLE HAEMOPHILUS INFLUENZAE.

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Title of Case(s)

Neonatal sepsis due to vertical transmission of Non-Typeable *Haemophilus Influenzae*.

Background

Neonatal infections are estimated to account for a quarter of the 2-8 million annual neonatal deaths. *Haemophilus influenzae* (Hi) has been described as a well-known perinatal pathogen. Non-Typeable *Haemophilus influenzae* (NTHi) bacteraemia in pregnant women is strongly associated with pregnancy loss, preterm delivery, chorioamnionitis, early-onset infection and perinatal mortality. We report a case of NTHi neonatal infection acquired by vertical transmission.

Case Presentation Summary

Preterm neonate born at 24 weeks, weight appropriate according to the gestational age. No information was available about the maternal screening for *Streptococcus agalactiae*. The mother suffered from chorioamnionitis and premature rupture of membranes; the antibiotic treatment included azithromycin and ampicillin[JCM1]. The neonate further developed early-onset infection (<48h hours after birth) and was treated with cefotaxime. Microbiological cultures carried out in the Amniotic fluid and the neonate blood were positive for Hi. The cerebrospinal fluid culture was negative. The isolates were sent to the reference center, Carlos III Health Institute, and both isolates were typed and analysed by pulsed-field gel electrophoresis (PFGE). Both isolates were identified as NTHi by PCR, susceptible to ampicillin and cefotaxime, and indistinguishable by PFGE. The neonate was transferred to the reference mother hospital.

Learning Points/Discussion

Neonatal sepsis is a major cause of morbidity and mortality. In the post-Hib vaccination era, most invasive infections are due to NTHi strains. Usually NTHi is more genetically heterogeneous than capsulated strains. Keeping these facts in mind and the potential risk for vertical transmission, preventive actions, screening for Hi during pregnancy, could be useful in order to prevent the mother to newborn transmission. However, due to the lack of data, the cost-effectiveness of this measure should be considered.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0822

BACTERIAL ISOLATES IN APPENDICITIS/PERITONITIS IN A TERTIARY HOSPITAL IN SPAIN: A 9 YEAR RETROSPECTIVE REVIEW

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Background

Acute appendicitis is the leading cause of acute abdomen requiring surgery in children; sometimes it complicates to peritonitis. Microbiology of peritoneal liquid in children is hardly described. The resistance to antibiotics among *Enterobacteriaceae* is increasing. We describe the microbiology in relation to empirical treatment in this population

Methods

Retrospective review of the medical and surgical charts of all children under 16 years old whose peritoneal liquid was analyzed by the Microbiology Department, after a surgery for appendicitis/peritonitis, between October 2007 and April 2016.

Results

775 cultures were analyzed in children with a median age of 7 years, 60% were male and all had community-associated abdominal infection. 271 samples (35%) were culture positive. The most frequent microorganism isolated was *E.coli* (67,15%), followed by *B.fragilis* (25%) and *P.aeruginosa* (19,5%). 123 (67,5%) of *E.coli* isolates were not wild-type. 234 patients (86%) received antibiotherapy, and the most common regimen was ampiciline-gentamicine-metronidazol (62,8%). Among them, 103 (70%) presented with microorganisms resistant to one antibiotic of the tritherapy employed (ampiciline, 96%) and 23 (15,6%) to two antibiotics. 6 were ESBL producers (1,3%) and 1 was a multidrug-resistant carbapenemase-producing *K.pneumoniae* (0.4%). These last 7 children were healthy, median 11 years old, and one complicated to abdominal abscess. Globally, 70 patients (25,8%) presented some complication, and the most frequent one was abdominal abscess (45 patients, 64% of complications). Antibiotic resistance to the antimicrobial regimen received was found in 38 patients who suffered a complication (54%),

Conclusions

The antibiotic resistance among bacterial isolates in community-acquired intraabdominal infection is worrying, specially between patients who presented complications after surgery. Surveillance of antibiotic resistance is needed to optimize the treatment and management of patients with appendicular pathology

20A. EDUCATION: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0823

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Background

Over the last two years Romania has been facing major difficulties ensuring the vaccination of the pediatric population due to: the discontinuity of vaccine supply, the parent's declining confidence in public health policies, the online campaigns that spread anti-vaccination messages. With a background of vaccination coverage below 80%, a measles outbreak was triggered in 2016 and has already led to 15 deaths amongst 2357 cases of measles. In this context, family physicians involved in the vaccination process confront with many problems needing to be solved.

Methods

The main objective was updating medical knowledge related to vaccination and communication skills of family physicians involved in activities preventing life-threatening infectious diseases

Between 2016-2017, the Vaccine Advocacy group of AREPMF organized training workshops on the vaccination practice, dedicated to family physicians, in the country's 8 Euro-regions. The workshops were interactive, using various working techniques: brainstorming, role-playing, case studies, small group activities and plenary discussions.

Results

The workshops were held by 17 trainers, with an attendance of 250 family doctors.

The analysis of the final evaluation forms proved the utility of the information acquired by the participants and highlighted the most popular topics discussed: vaccine recovery schedule, communication techniques when facing the vaccination refusal, barriers encountered in the vaccination process, management of adverse events following immunization. **Conclusions**

1. The success of Romania's immunization program requires the cooperation and the responsible involvement of not only the medical staff, but also the civil society and the health policy-makers (legislation, long-term perspective).
2. Continuous medical education amongst healthcare professionals is a critical condition for achieving and maintaining a high standard of medical services.
3. Improving communication skills with patients is an effective method of increasing the vaccination coverage.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0824

COMPLICATED HERPES ZOSTER IN A PREVIOUSLY HEALTHY CHILD

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Title of Case(s)

Complicated herpes zoster in a previously healthy child

Background

Herpes zoster (HZ) is caused by the reactivation of varicella-zoster virus (VZV) and requires previous infection. It's unusual in children and immunocompetent individuals. A child exposed to VZV *in utero* may develop HZ without previous history of postnatal chickenpox. Secondary bacterial infection is its main complication and when the ophthalmic branch of the trigeminal nerve is affected there is a higher rate of complications.

Case Presentation Summary

A 4-year-old girl with previous history of maternal chickenpox in the third trimester was brought to the emergency department with a 1-day history of left supraorbital pain, vomiting, fever, intense lethargy and anorexia. On examination, only mild left supraorbital oedema was noted. Over the next 24-hours she developed a vesicular rash over that area, extending to the ipsilateral side of the nose. Ophthalmologic examination excluded ocular involvement. Blood results, head CT, biochemical and cytological analysis of cerebrospinal fluid (CSF) showed no abnormalities but microbiologic analysis detected VZV DNA on CSF. HZ was diagnosed affecting the ophthalmic region of the trigeminal nerve, complicated by encephalitis and IV acyclovir was initiated. Two days later IV flucloxacillin was initiated due to significant palpebral inflammatory signs. By the 3rd day of admission her level of consciousness and general condition improved. She was discharged after 14-days of acyclovir with optimal recovery.

Learning Points/Discussion

This case encompasses several unusual characteristics of HZ: appearance in a previously healthy child, history of maternal infection during pregnancy, absence of previous clinically detectable chickenpox and involvement of the ophthalmic branch of the trigeminal nerve. Additionally, besides local secondary bacterial infection, this child had Central Nervous System involvement which is a rare but serious complication that led to a longer hospitalization.

17A. EDUCATION: REFUGEE CHILDREN

ESP17-0825

HEMOLYTIC ANEMIA IN INFANT FROM GUINEA ECUATORIAL

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Title of Case(s)

HEMOLYTIC ANEMIA IN INFANT FROM GUINEA ECUATORIAL.

Background

Immigration is increasing in developed countries, pediatricians should know about imported diseases. Early detection and appropriate treatment can avoid fatal evolution.

Case Presentation Summary

We describe an 6 month old African infant referred from Guinea Ecuatorial for Fever of 2 weeks of evolution, vomiting and decay, without response to antibiotics or antimalarials. On exam, he was observed to have tachypnea, pale skin, panfocal systolic murmur, abdominal distension and hepato splenomegaly 3 cm BRC and peripheral facial paralysis. No adenopathies. Laboratory findings revealed a normocytic anemia (hb 8g/dl) with elevated LDH and elevated transaminase, 18300 leucocytes (30 % neutrophils) and CRP 1,3 mg/dl. Peripheral blood smear with 10 % segmented neutrophils. Malaria rapid test was negative. Treatment was started with malarone and ceftriaxone. Third day of treatment the patient remains. Serologic test for leishmania and VIH was obtained. After bone marrow puncture, weight-adjusted treatment with liposomal Amphotericin B and Trimethoprim-sulfamethoxazole prophylaxis was initiated. Viral load (vc) 5000.000 cop (4 log), HAART was initiated. Opportunistic infection were excluded. The fever reappears again with decrease in hemoglobin until 6g/dl. Transfusion was indicated, with a positive IgG coombs test. Wait and see approach were decided. The patient developed a thrombophlebitis and bacteriemia caused for klebsiella extended-spectrum β -lactamases (ESBL). He received ertapenem and low molecular weight heparin with adequate response. PCR for leishmania in blood and bone marrow negative. After 14 days of HAART the hemoglobin levels raised to 10g/dl and the vc was 8000 copias 3 log.

Learning Points/Discussion

Most HIV-infected children are in Africa, and active HIV-seeking in an immigrant child should be done. The HAART must be initiated early in children under 12 months. Hemolytic anemia improves with immune recovery.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-0826

MENINGOCOCCAL SEROGROUP B SEPTIC SHOCK: VACCINE FAILURE

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Title of Case(s)

Background

Invasive meningococcal disease (IMD) continues to be the most devastating infectious disease in childhood, affecting otherwise healthy, young individuals. Its incidence has been decreasing due to the use of vaccines against different serogroups. The 4 component vaccine against serogroup B is available in Portugal since 2014.

Case Presentation Summary

A previously healthy 7-year-old boy that was adequately vaccinated against serogroup B *Neisseria meningitidis* was admitted in the intensive care unit because of septic shock and meningitis. He received ceftriaxone and organ-support (catecholamines and mechanical ventilation). His course was unremarkable and he was discharged after 15 days. *Neisseria meningitidis* was identified in the blood culture, later confirmed to be serogroup B, belonging to the ST409, clonal complex (cc) 41-44. Vaccinated children should be protected against this strain, according to the results of Meningococcal Antigen Typing System of Portuguese strains (MATS). Evaluation for an underlying immunodeficiency revealed that the patient was immunocompetent.

Learning Points/Discussion

We present the first case of vaccine failure in Portugal. Serogroup B *Neisseria meningitidis*, belonging to the cc 41-44 is one of the the most frequently serogroup B meningococcal clones found in Portugal and responsible for IMD. The effectiveness of a vaccine is determined not only by the immunogenicity of its components, but especially by how widely it covers the disease-causing strains circulating in a given region and number of cases of vaccine failures.

22A. EDUCATION: OTHER

ESP17-0827

AN UNUSUAL MENINGITIS AGENT - CASE REPORT

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Title of Case(s)

An unusual meningitis agent – Case report

Background

Meningitis is the most common cause of fever and neurological symptoms in pediatric age group. Bacterial meningitis is a medical emergency, prognosis depends on early and appropriate treatment. We present rare cause of meningitis in healthy children.

Case Presentation Summary

A 6-month-old male, with a previous hospitalization for acute bronchiolitis, presented to the emergency department with a 3-day history of lethargy, fever and dyspnea. On physical examination, he was lethargic, with erythematous papules in abdomen and lower limbs. He had polypnea and wheezes, increased expiratory time and fine rales were found on pulmonary examination. Laboratory tests showed high neutrophil and C-reactive protein (CRP) levels. X-ray depicted a right infiltrative image. Intravenous antibiotic therapy with amoxicillin and clavulanic acid was started. However, on the second day his condition worsens: he got more lethargic and his anterior fontanelle became full and tense. A lumbar puncture was performed and results were suggestive of bacterial meningitis. *Pseudomonas aeruginosa* was isolated on the blood and cerebrospinal fluid. Antibiotic therapy was changed to ceftazidime and gentamicin. On sixth day of hospitalization, child's mother informed that several days before admission he had been in a swimming pool with untreated water.

During clinical evolution, he had some complications: neurological, articular and cutaneous.

He was discharged after 25 days, without evidence of sequelae. Immunological study was unremarkable.

Learning Points/Discussion

Pseudomonas meningitis is an unusual infection, that can occur after exposition to a contaminated steamy environment. This case demonstrates the importance of a careful and detailed clinical history.

05B. EDUCATION: PREGNANCY AND THE NEONATE

ESP17-0832

SURVEILLANCE AND FOLLOW UP OF INFANTS BORN TO ZIKA VIRUS CONFIRMED OR SUSPECTED WOMEN RETURNING FROM AFFECTED COUNTRIES TO A NON-ENDEMIC AREA, BARCELONA, SPAIN

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Background

Clinical outcomes from Zika virus (ZIKV) infection were not described until the outbreak of 2007 in Yap islands. Due to recent epidemics, its causal relationship with brain anomalies, miscarriages and stillbirths was confirmed in 2016. Long-term effects of ZIKV infection during gestation remain unknown. Follow-up of exposed mother-baby cohorts is crucial

Our aim is to describe the physical, neurological and psychomotor developmental follow up of the infants born to ZIKV infected mothers in a non-endemic area.

Methods

An epidemiological surveillance system among pregnant travellers was established at Hospital Clinic Barcelona. Infants born to positive or suspected ZIKV study women are being followed up until 12 months of age at the paediatric Hospital Sant Joan de Deu. Clinical, anthropometrical and obstetric information is collected through standardized questionnaires in antenatal visits; and data about pregnancy outcomes and samples at the delivery and infants' follow up, including others complementary test.

Results

Since 1st January to 31st December 2016, 107 pregnant women were enrolled. 8 women were positive ZIKV , 12 suspected cases. Outcomes of the confirmed and suspected cases include 14 live births, one miscarriage and a termination of pregnancy. Infants' demographic and clinical characteristics are described. All placentas (except the case of miscarriage), cord blood and infants' urine and blood examined tested negative for ZIKV. No infant presented growth retardation, microcephaly, or delay of psychomotor development. The hearing, fundus and neuroimaging were normal, except for one case.

Conclusions

The relevance is the description of follow up of infants born to ZIKV affected mothers and its impact on infant health in a non-endemic area. Comprehensive evaluation during the first year of life of clinical and neurodevelopmental of ZIKV exposed infants is instrumental for identification of possible anomalies.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0833

EPIDEMIOLOGY AND OUTCOME OF CHILDREN WITH ENCEPHALITIS IN A TERTIARY CARE HOSPITAL IN SEVILLA DURING AN 11-YEAR PERIOD

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Background

Encephalitis is a severe neurological syndrome caused by a wide variety of infectious agents and non-infectious aetiologies. We conducted an audit of the epidemiological features and outcome of paediatric patients diagnosed with encephalitis over an eleven-year period.

Methods

Patients were identified via a database search of all children aged 1 month to 14 years admitted to a single tertiary referral centre with a discharge diagnosis of encephalitis between 2006 and 2016. Enrolled patients met the diagnostic criteria for encephalitis established by the International Encephalitis Consortium. PCR testing for HSV and enterovirus was performed routinely in cerebrospinal fluid from encephalitis patients during the study period. More extensive PCR testing for enterovirus (throat and faeces samples) and serotyping were introduced in June 2016.

Results

Seventy-six children (71 episodes) with encephalitis were identified. Median age was 45 months (mean 56 months, range 2-162 months). A confirmed or probable viral aetiology was found in 12 cases (18%): VHS and enterovirus (n=6 each). Recurrence was observed in 5/6 (80%) patients with herpetic encephalitis. Serotype A71 was identified in two epidemiologically related cases of enteroviral encephalitis. A bacterial agent was found in 5 cases (7%): *Mycobacterium tuberculosis* (n=4) and *Campilobacter jejuni* (n=1). A non-infectious aetiology was identified in 6 cases (9%) (8 episodes): acute demyelinating encephalitis (n=3), anti-NMDAR (n=2) and two additional episodes in patients with recurring herpetic encephalitis and GAD (n=1). One patient died (1%) and 21 children (27%) had significant residual sequelae.

Conclusions

Paediatric encephalitis caused a significant burden of disease in our geographical location. Aetiological yield was low. More extensive viral testing and neural autoantibodies evaluation are warranted in order to detect emerging viral pathogens and newly characterized forms of autoimmune encephalitis.

08C. EDUCATION: HIV/AIDS

ESP17-0834

CAN WE PREVENT LATE HIV INFECTION DIAGNOSIS IN PEDIATRIC PATIENTS?

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Background

The prevalence of HIV infection in Portugal is lower than 1% in 2014. In this year, 0.29% of pregnant women were infected and the newborn infection rate was 0.29%. Mother-to-child transmission is steadily decreasing, but we are still diagnosing children and teenagers with advanced stage of disease. We aim to describe the main time points of misdiagnosis of HIV infection in a pediatric cohort from a tertiary hospital in the Northern Portugal.

Methods

Medical records were reviewed for each pediatric patient with late HIV infection diagnosis.

Results

From 44 patients, 15 (34%) had a late HIV infection diagnosis. In these patients, the mean age of diagnosis was 5.8 years (minimum 6 months, maximum 16 years). About half resulted from monitored pregnancies (53,3%), where every woman tested negative for HIV in the first and third trimesters. All others resulted from non-monitored pregnancies and hospital deliveries. None of these had a rapid HIV test in the delivery room. Seven had symptoms and signs at time of diagnosis, 7 were diagnosed after their mothers' diagnosis and 1 tested positive after an accidental in-hospital needle injury during blood sampling.

Conclusions

Early diagnosis of HIV infection in pediatric patients is of utmost importance as it reduces the risk of progression to AIDS and death. Therefore, every new HIV infection diagnosis in a woman should imply screening of all her children, irrespective to age. Half of our late diagnosed patients were born from women who tested negative for HIV during pregnancy. This result raises the debate whether a population-based postnatal maternal HIV infection screening should be considered.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0836

PEDIATRIC TRAVELERS COMPLIANCE WITH RECOMMENDATIONS PROVIDED IN AN INTERNATIONAL TRAVELERS' MEDICAL SERVICE

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Background

French people traveling abroad are increasing. Travel-related morbidity particularly affects children. An essential mean of prevention is pre-departure consultation, but compliance with pre-travel advices has rarely been evaluated with children.

Methods

We conducted a prospective study, including children under 16 consulting at the International Vaccination Center in Tours from December 2015 to May 2016. Demographic and travel data were collected. Families were contacted fifteen days after their return and asked about compliance via a survey.

Results

Among the 73 children enrolled in the study, 73% traveled to Sub-Saharan Africa (SSA), and mainly to visit friends and relatives (VFR) (71%). The vaccines recommended in France were updated in 33% of the cases. Compliance with travel-related immunizations was 97%, 91% for chemoprophylaxis, 41% for dietary rules and 18% for use of repellents. The non-use of repellents was significantly related to a trip to SSA. Stopping the prophylaxis on return was related to VFR children. Young age was also linked to compliance.

Conclusions

Pre-travel counseling must be adapted to each trip and each child. They also improve coverage of vaccines recommended in France.

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-0837

STAPHYLOCOCCUS AUREUS BACTEREMIA IN BRAZILIAN CHILDREN: MICROBIOLOGICAL TRENDS OVER TIME

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Background

Staphylococcus aureus (SA) is a major cause of invasive infection and mortality in children and of increasingly importance in health care-associated infections. Bloodstream infections in a Pediatric Unit were retrospectively analyzed to determine antimicrobial susceptibility and outcomes.

Methods

an ongoing surveillance study in children aged under 17, from January 2013, through December 2016 was conducted. All positive blood cultures for *Staphylococcus aureus* were identified followed by demographic, clinical, and laboratory information extraction from digital medical records. Patient's age, sex, antimicrobial susceptibility, and outcomes were analyzed. Duplicate and polymicrobial samples were excluded.

Results

We included 127 non-duplicate cases from 116 patients, of which 52% were male. A total of 53.8% (63/117) were collected in the first 48h of hospitalization. The median age was 22 months. The prevalence of methicillin-resistant *S. aureus* (MRSA) steadily increased from 2013 to 2016: 34% (9/26); 31.5% (12/38), 43.2% (16/37) and 50% (11/22), respectively; likewise clindamycin and ciprofloxacin resistance also increased during the studied period, respectively: 34% and 7.7% in 2013, 40.5% and 27% in 2014, 43.2% and 26.3% in 2015, 45.4% and 37.5% in 2016. **Sulfamethoxazole-trimethoprim** resistance was 10% (2/20), 15.6% (5/32) and 4.5% (1/22) from 2014 to 2016. No strain showed resistance to vancomycin. Thirty-days mortality along the studied years were 16.6%, 9%, 0% and 8.3%, respectively.

Conclusions

The absolute number of SA infections remained stable during the studied period. Antimicrobial resistance increased for all current options used in community-acquired infections, indicating vancomycin the first option for invasive infections. SMX-TMP is a cheap and accessible option for mild/moderate SA infections.

03A. EDUCATION: GROUP A STREPTOCOCCUS

ESP17-0838

EVALUATION OF ANTIMICROBIAL SUSCEPTIBILITY AND SEROLOGICAL TYPING OF STREPTOCOCCUS PYOGENES ISOLATED IN CHILDREN WITH INVASIVE DISEASE FROM A TERTIARY HOSPITAL IN MADRID

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Background

S.pyogenes(GAS) characterization is limited to species identification while molecular studies are restricted to specialized laboratories. Whereas all serotypes may be associated with invasive infections(iGASi), M1 and M3 are particularly linked to severe infections. Virulence is determined by a series of genes encoding the production of exotoxins, some related to more aggressive syndromes. Aim: Evaluate antimicrobial susceptibility and serological typing of GAS and its association with the severity of different clinical syndromes

Methods

Strains of GAS isolated from children with invasive infection diagnosed in a Madrid hospital between January2006-July2016 were typified by molecular-techniques, and demographic, clinical, microbiological data and outcome was analyzed.

Results

Forty-six GAS isolates were studied. Most common clinical syndromes were ENT abscess(26%), mastoiditis(21%) and septic arthritis(13%). Thirteen different serotypes of GAS were identified, especially M1(32.6%), M6(21.7%) and M5(8.7%). All cases of pneumonia were caused by serotype M1. Children with M1 isolation were more likely admitted to PICU(31%vs10%;p=0.17) and had more risk factors(42.2%vs26.6%;p=0.025). No differences in the frequency of serotypes within the study period were found. The most frequent endotoxin genes detected were *speF-speB-speG*. Association was observed between the presence of *speA* and PICU admission(71%vs33%;p=0.093) and more aggressive syndromes(56%vs32%,p=0.14). Conversely, the presence of *speC* was associated with better outcome(71,4%vs38,9%;p= 0.027). The presence of *speG* was related with more surgical interventions(95%vs67%;p=0.077), whereas the *saa* gene was associated with less surgery(7.5%vs50%;p=0.022). Only 2%of the isolates were resistant to erythromycin and clindamycin(1case each).

Conclusions

GAS strains isolated from invasive infections showed great gene diversity; however, there was a tendency of clustering, with M1 being the most common and virulent serotype, whereas *speA* and *speG* being more frequently associated with complications. Therefore,molecular analysis of GAS isolates could be an important tool in the management of iGASi.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0839

RALSTONIA PICKETTII BACTEREMIA IN A BOY WITH HEMOPHILIA

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Title of Case(s)

Ralstonia Pickettii bacteremia in a boy with Hemophilia

Background

Ralstonia Pickettii, a non-fermenting waterborne gram-negative bacillus, is an emerging pathogen in hospital settings capable of causing invasive and severe infections. Infection with *Ralstonia* spp. is mainly due to environmental sources such as contaminated water supplies and pharmaceutical solutions. Treatment can be challenging because of resistance to usual disinfectants, common antibiotics, and survival in biofilm environment.

Case Presentation Summary

4 year old boy with severe type A hemophilia presented an episode of fever, tachycardia and chills during recombinant factor VIII injection through his Port-a-Cath (PAC) at our center. The patient reported chills and rigors for the past two weeks when injecting factor VIII treatment.

Routine lab showed normal leukocyte count and CRP 14 mg/l. Peripheral and PAC blood cultures grew multiresistant *Ralstonia Pickettii* (RP). Ongoing bacteremia documented for 4 days despite targeted iv antibiotics lead to PAC removal. PAC culture grew RP. The patient received 14 days of Piperacillin-Tazobactam and Sulfamethazole-Trimethoprim and a new PAC was placed before the end of treatment. The patient's evolution was favorable. There were no signs of endocarditis on cardiac ultrasound. The source of infection was not identified on environmental investigation. There was no other case of RP infection at our institution.

Learning Points/Discussion

RP is an emergent opportunistic pathogen from water supplies.

Management of RP infections involves early detection, treatment with appropriate antibiotics, removal of infected foreign body (such as PAC) and environmental investigation to identify the possible source of infection.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0840

CHARACTERISTICS AND EXPERIENCES OF FAMILIES OF CHILDREN IN CARE FOR CERVICAL LYMPHADENITIS DUE TO NON TUBERCULOUS MYCOBACTERIA

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Background

Infections due to Non-Tuberculous Mycobacteria (NTM) seem to emerge around the world last years, coinciding with stop of systematic BCG immunization. The most frequent presentation in children is cervicofacial lymphadenitis due to NTM from MAI complex (*M. avium* and *intracellulare*). Consultations for lymphadenitis are common in pediatrics but rate of cases due to NTM is unknown. The diagnosis is lengthy and there is no consensus about management.

Methods

A retrospective study was done from 2011 to 2013, describing cases of cervicofacial lymphadenitis due to NTM in hospitalized children from Tours University Hospital. Incidence of NTM cases was estimated among all children hospitalized for cervicofacial lymphadenitis. Then, in NTM, we analyzed characteristics of the population, clinical presentation and localization, management, outcome and family experience about hospitalization.

Results

One hundred and one children were hospitalized for cervicofacial lymphadenitis, whom 19 were NTM cases (18,8%). There were 6 boys and 13 girls, the median age was 2,5 years (interquartile-range 2,1;3,7), no children was immunocompromised and none was immunized with BCG. Most of them lived in rural areas (79%). The average time before diagnosis was 2,8 month (+/-1,2). Complete healing was obtained after an average time of 9 months (+/-10). In 90% (17/19) of children, management consisted in surgery only. Family experience was globally difficult.

Conclusions

The rate of NTM cases among cervicofacial lymphadenitis requiring hospitalization is not negligible. Urgent standardization of diagnostic and therapeutic management is required in the context of a possible link with the stop of systematic BCG immunization.

22A. EDUCATION: OTHER

ESP17-0841

ACUTE EPIGLOTTITIS – ABNORMAL PRESENTATION

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Title of Case(s)

ACUTE EPIGLOTTITIS – ABNORMAL PRESENTATION

Background

Acute epiglottitis is a medical emergency that warrants immediate intervention to secure the airway. The incidence of *Haemophilus influenzae* type B (Hib) epiglottitis declined significantly after the introduction of routine immunisation with a Hib conjugated vaccine.

Case Presentation Summary

A 5-years-old boy, fully immunized, presented with a 24 hours history of fever, sore throat, cervical mobility limitation and headache. Clinical examination revealed a red oropharynx without leaks or midline deviations, pain to bilateral cervical palpation and a refusal to cervical mobilization. There was no respiratory distress, stridor or drooling, Laboratory evaluation showed leukocytosis with neutrophilia ($21.0 \times 10^9/L$) and high levels of C-reactive protein (218.7mg/L). Laryngeal nasofibroscope was performed, which revealed epiglottitis edema without obstruction of the upper airways. Due to suspicion of epiglottitis, empirical therapy with ceftriaxone and intravenous corticoid was started. The patient was electively intubated and transferred to a Pediatric Intensive Care Unit. On the second day of hospitalization, a cervical CT (Computerized Tomography) was performed, which confirmed epiglottitis and retropharyngeal space edema. This result led to the addition of clindamycin to the antibiotic therapy already in progress. During steroid therapy hypertension, hyperglycemia and cerebral salt-wasting syndrome developed.

The Patient showed signs of good clinical progress, being electively extubated on day 7th of hospitalization. On the 9th day CT revealed no changes. Blood culture tests were negative. The patient was submitted to fourteen days of antibiotic therapy and six days of corticotherapy.

Learning Points/Discussion

Despite the absence of the classic symptoms of upper airway obstruction at admission, early diagnosis of epiglottitis was primordial for the early establishment of adequate treatment. Despite all the diagnostic exams performed, it was not possible to identify the etiological agent.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0842

STAPHYLOCOCCUS AUREUS OSTEOARTICULAR INFECTIONS IN CHILDREN: AN 8-YEAR REVIEW OF CLINICAL AND MOLECULAR EPIDEMIOLOGY CHARACTERISTICS

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Background

The purpose of the present study was to investigate the clinical, phenotypic and genotypic characteristics of *S.aureus* pediatric osteoarticular infections.

Methods

We retrospectively reviewed the records of children who were hospitalized with the diagnosis of *S.aureus* osteomyelitis or/and septic arthritis in the two-major tertiary pediatric hospitals of Athens during an 8-year period. In addition, we prospectively analyzed the *S. aureus* isolates regarding detection of 10 pathogenicity genes and differences in genotypes using *SCCmec*, *agr* typing, PFGE and MLST.

Results

During the study period, 123 children with *S. aureus* osteoarticular infections were detected, with mean age 96.86 ± 45.79 months and MRSA accounted for 44 of them (34.1%). CRP was higher in children with MRSA infection ($P=0.04$), but no other differences in blood parameters or in positive radiology findings (X-rays, Scanning Tc99m, CT or MRI) were detected. Children with MRSA infection had a significantly higher admission rate to ICU (5.7% vs 0%, $P=0.04$) and longer duration of hospitalization (21.6 versus 16.7 days, $P=0.04$). During the course of infection complications developed in 30.8% of children. From 42 MSSA and 26 MRSA that were available for molecular analysis, all MRSA strains were *mecA*-positive. Most MRSA isolates carried the *SCCmec* IV cassette (88%), belonged to the PFGE type C (92.3%), *agr* type 3 (92.3%) and to the MLST ST80 complex (92.3%). In contrast MSSA strains showed polyclonality in PFGE and *agr* typing. Regarding pathogenicity genes MRSA vs MSSA isolates have higher detection of *PVL* (96.2% vs 4.8%, $P<0.0001$) and *fib* (84.6% vs 50%, $P=0.004$).

Conclusions

Children with MRSA infection had higher admission rate to ICU and longer duration of hospitalization. MRSA isolates were found to belong to limited number of clones and had higher incidence of specific virulence factors.

22A. EDUCATION: OTHER

ESP17-0844

ACTINOMYCOSIS IN CHILDREN

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Title of Case(s)

When common symptoms lead to an uncommon disease

Background

Actinomyces organisms are part of the endogenous oral flora in humans and rarely cause disease in children. Lung involvement is uncommon and may mimic tuberculosis or neoplastic disorders. Pulmonary actinomycosis should be considered in the differential diagnosis of persistent lung infiltration.

Case Presentation Summary

We present the case of a 5-year-old girl, with a previous diagnosis of microcytic anemia without investigated etiology, who presented with productive cough and episodes of nonmassive hemoptysis. Chest radiograph revealed a heterogeneous hypotransparency of the right upper lobe. Pneumonia was assumed and her assistant physician empirically treated her with azithromycin. Cough persisted and seven months later she had another episode of hemoptysis. Lung sounds were diminished in the right apex and she had developed digital clubbing. She remained afebrile. Chest radiograph showed homogeneous hypotransparency of right upper and middle lobes and CT showed consolidation of these two segments with images of bronchiectasis. The bronchofibroscopy revealed an epithelized mass in right upper lobe bronchus. Tuberculosis and fungal infection were excluded. Cultural examination of bronchoalveolar lavage was negative but histologic sample showed numerous sulfur granules, characteristic of *Actinomyces*. Immunodeficiency disorder was excluded and some dental cavities were observed. She started treatment with penicillin and clindamycin for four weeks and after eight months of oral treatment with amoxicillin there was significant clinical and radiologic improvement, eschewing the need for surgery.

Learning Points/Discussion

This case demonstrates that, even when there is extensive disease, medical treatment with antibiotics can be effective thus avoiding a highly complex surgery and retaining lung capacity. Hemoptysis is a rare symptom, and digital clubbing has not been described before. As is common in children, no risk factors were identified.

05A. EDUCATION: CONGENITAL DISEASES

ESP17-0846

TREATMENT OF CONGENITAL CMV IN EUROPE: FROM CHAOS TO COLLABORATION

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Background

Antiviral agents have been used to treat congenital cytomegalovirus (cCMV) infection for decades. Optimal treatment regimens and efficacy in preventing long-term sequelae remain, however, poorly defined. Side effects, including potential carcinogenicity, inhibit injudicious use of treatment.

Many European countries have consequently set up local or national databases in order to evaluate treatment and outcomes in babies with cCMV.

Methods

Data held in cCMV databases in 5 European countries were reviewed and data interrogated for trends in management and treatment in babies born between 2007 and 2013.

Results

Database aims were similar and definitions of symptomatic infection largely consistent but actual data recorded in individual databases varied widely. Data were available for 414 babies (43% 'symptomatic'); 14% of infections were diagnosed antenatally. Retrospective diagnosis using dried blood spots was recorded in 52 cases. Cranial ultrasound was performed routinely but MRI recorded in only 4%-48% with no increase evident over time.

223 babies received treatment with differing combinations of valganciclovir and/or ganciclovir. Treatment duration also varied between countries with longer treatment courses often preferred in both Spanish and Italian cohorts.

Conclusions

Although there were many similarities there were some notable differences between cohorts, primarily in antiviral therapy usage. There was a predominance of symptomatic babies and combining data was limited by data recording differences. These issues are being addressed by the development of a shared database for all cCMV cases for use in centers throughout Europe and proposed unification and sharing of data outputs where feasible in established cohorts. Key hearing and neurodevelopment outcomes will be recorded thus allowing for better comparison between different treatment practices.

13A. EDUCATION: FIGHTING VIRUSES

ESP17-0849

HAND, FOOT AND MOUTH DISEASE (HFMD) – A NEW FACE OF DISEASE

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Background

The most common cause of Hand, Foot and Mouth Disease (HFMD) is Coxsackie virus (CV) A16. The epidemic increase of atypical HFMD cases caused by CVA6 was observed in 2016 in south-western Poland. The aim of this study was to characterize clinical and epidemiological aspects of the disease.

Methods

A questionnaire survey on HFMD was conducted in 14 day care centers (DCC) in Wrocław among the parents of 1115 children. The main outcome measures were: epidemiology, signs and symptoms, and recognition of the disease among doctors.

Results

HFMD outbreaks occurred in all DCC. Altogether 105 cases of HFMD among the attendees were confirmed. Most of the infected children (79%) were aged between 1 and 3 years. Additionally 18 adult household contacts developed the disease. Vast majority of the children (86.2%) demonstrated atypical disease. Only in 2 HFMD cases eruptions were limited to sites included in the name of a disease (HFM). Lesions extending beyond the HFM sites were reported in 91,5% of children. In 6 children HFM sites were unaffected. The following delayed cutaneous findings were reported in 68.6% cases: palmar/plantar desquamation (64.3%), cutaneous desquamation of other affected skin sites (37.1%), Beau lines (18.6%). All but one of the infected children were seen by a physician. As much as 85.6% cases were diagnosed correctly; 13 % of the parents had not been informed about the delayed manifestations of HFMD.

Conclusions

The emergence of the CVA6 in Wrocław, Poland resulted in an epidemic increase in the incidence of atypical HFMD that affected both children and adults. Despite the changes in the clinical features of HFMD, the disease was correctly identified by the doctors. However, awareness of the delayed HFMD symptoms is unsatisfactory.

04A. EDUCATION: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-0852

WHOOPIING COUGH IN THE LAST 11 YEARS: CASUISTIC FROM A LEVEL II HOSPITAL IN PORTUGAL

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Background

Whooping cough (WC) is a major cause of mortality and morbidity among infants. The introduction of the vaccine caused a decrease in the incidence of this pathology, however, it seems there has been an increase in the number of cases. Young adults and adolescents appear to be the source of transmission.

The aim of this study was to characterize the cases of WC admitted in a level II hospital in the north region of Portugal, between January 2006 and December 2016.

Methods

Case review of inpatients diagnosed with pertussis confirmed by positive polymerase chain reaction. Descriptive analysis was made with Excel®.

Results

Fifty-one cases of pertussis were diagnosed, 70,59% in the last six years, specially in 2012 (17,65%), 2015 (13,73%) and 2016 (19,61%). The age ranged between 25 days and 10 years (median 2 months), of which 51% were female. 45% of the patients had started the WC vaccine schedule, 56,25% had one dose, 21,74% had two. On admission, all the patients had cough, but only 43,14% presented with cyanosis. The winch was observed in 3,92% of the children. Laboratory results revealed that lymphocytosis was present in 58,62% (mean 10,160/mL) and 62,95% had thrombocytosis (mean 501.609x10⁶/L). The average length of hospitalization was 7 days. 94,12% received macrolides. Co-infection was present in 15,9% of admissions (11,36% caused by Respiratory syncytial virus).

Conclusions

It seems there has been an increase in the diagnosis of WC in the last years, mainly in small infants. New recommendations suggest that all pregnant women should be vaccinated between 27th and 36th week of gestation. This measure has been implemented in Portugal since 2017. High level of suspicion and early treatment are essential for a good clinical evolution.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0854

DESCRIPTIVE CLINICAL AND LABORATORY STUDY OF CHILDREN ADMITTED WITH VIRAL PNEUMONIA IN A TERTIARY HOSPITAL IN MADRID, SPAIN

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Background

Lower respiratory tract infections are common childhood diseases. Distinguishing between bacterial and viral etiology is important to establish adequate management. New techniques to detect viral-nucleic acids/antigen in respiratory tract secretion are helpful to establish the diagnosis and may impact management. Aim: To determine the impact on clinical management of a rapid diagnosis of viral pneumonia in hospitalized-children and assess the association with PCR-PCT

Methods

Medical records of children admitted in a hospital in Madrid (March 2013–July 2016), with a diagnosis of pneumonia (presence of lung infiltrates on chest X-ray) and a confirmed viral etiology (positive antigen-test/PCR (Neumocvir®)) in respiratory tract secretions, were retrospectively assessed. Patients were classified in 3 groups. A: viral pneumonia (no antibiotic was given or it was withdrawn after virus identification); B: possible bacterial coinfection (received antibiotic 7 or more days); C: confirmed co-infection (bacterial diagnosis was also established).

Results

107 children with viral-pneumonia were identified. Eight viruses were detected: RSV (53.3%), rhinovirus (11.2%) and influenza-A/B (9.3%). Median age 21 months (IQR: 8-24); 56.1% female; 59 patients were classified as group A (55.1%), 39 children as B (36.4%) and 9 as C (8.4%). CPR > 6 mg/d was found in 33% of children. 51% of this corresponded to viral pneumonias, with no statistically significant differences. In 49 cases procalcitonin was measured; being > 2 ng/dl in 16 children (32.7%) and between 0.5-2 ng/dl in 10 (20.4%). PCT was > 2 ng/dl in 28% of the patients in group A. There was a significant increase in the proportion of viral pneumonia in the last 2 years (66.1%) compared to the first years of the study (43.1%) (p: 0.011)

Conclusions

There has been a greater diagnosis of viral pneumonias in recent years, probably due to improvements in virological diagnosis, leading to a more appropriate antibiotic restriction in children with pneumonia. Viral pneumonia may be associated with increased PCT-levels. Our findings highlight the need to obtain a rapid diagnosis of viral etiology in order to improve clinical management.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-0855

ETIOLOGY AND PATTERNS OF ANTIMICROBIAL RESISTANCE IN UTI. A THREE YEAR SURVEILLANCE OF URINE CULTURE IN A PAEDIATRIC DEPARTMENT.

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Title of Case(s)

Etiology and patterns of antimicrobial resistance in UTI. A three year surveillance of Urine Culture in a Paediatric Department.

Background

UTI is one of the most common bacterial infections of childhood. Urine culture is the most frequently obtained product during acute illness. Epidemiological surveillance and updated information on antimicrobial resistance is essential to adequate empirical therapy. This retrospective study involved all positive urine samples ($\geq 10^5$ CFU/mL) collected from children attending a district Hospital in Portugal from 2014 to 2016. Isolated bacteria were identified by standard tests, and antibiotic susceptibility was determined by disk diffusion method.

Case Presentation Summary

From the 7244 samples analyzed, 1406 (19,4%) were positive for bacterial infection. 1404 urinary pathogens were isolated from 1394 patients. Mean patient age was 58,34 months \pm 1,58. Four age groups were considered: Group I (0 - 2 months), Group II (2 – 12 months), Group III (1-5 years), Group IV (> 5 years). UTI was more frequent in boys in Group I, girls predominate afterwards. *Escherichia coli* was the most common etiological agent (71,7%), followed by *Proteus mirabilis* (12,3%), *Enterococcus faecalis* (4,1%), *Staphylococcus saprophyticus* (2,9%) and *Klebsiella pneumoniae* (2,9%). There were no differences related to the bacteria implicated per age. Extended-spectrum beta-lactamases (ESBLs) resistance has decreased over the study period (4,94% in 2014, 6,38% in 2015, 1,9% in 2016). The most frequent ESBL+ organism was *Klebsiella pneumoniae* and its resistance has also been decreasing (40% in 2014, 47,4% in 2015, 7,7% in 2016). Oxacillin and vancomycin resistance hasn't changed during the period analyzed.

Learning Points/Discussion

Empirical antibiotic therapy should be based on the awareness of the different bacterial etiology considering age and sex, as well as the changes on local antimicrobial resistance patterns due to antibiotic selective pressure.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0856

ANALYTIC PERFORMANCES OF RAPID VIRAL DIAGNOSTIC TESTS IN FEBRILE INFANTS UNDER 3 MONTHS

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Background

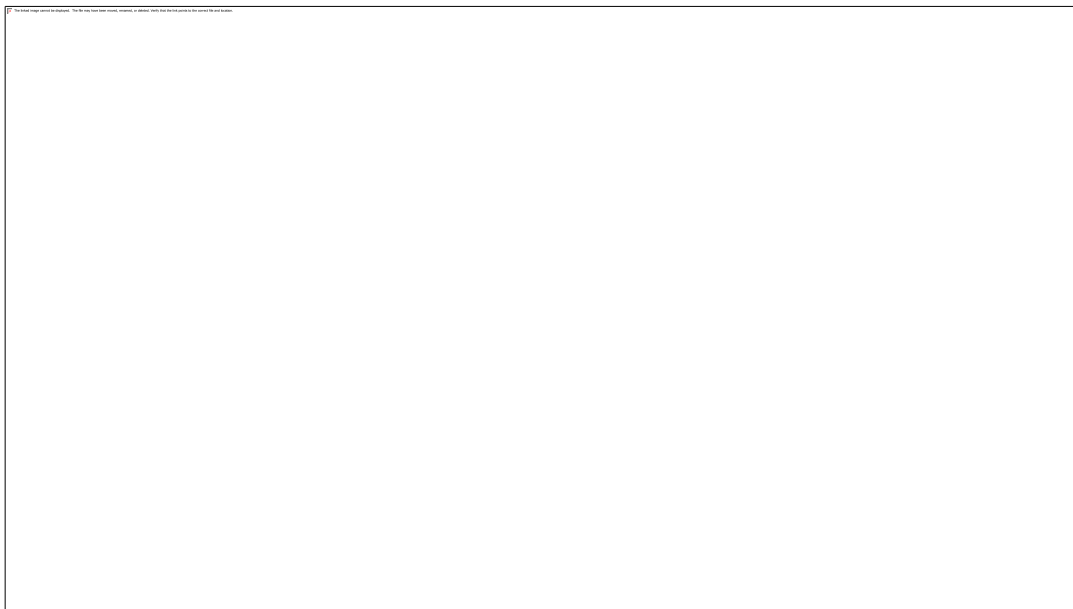
Febrile infants under 3 months for which a viral infection can be documented have a significantly lower risk of severe bacterial infections (SBI). Rapid diagnostic tests (RDT) for virus are easily available as they do not need high qualified staff. We evaluated the analytic performances of RDT in this particular population.

Methods

From 15th November 2010 to 14th November 2011, all febrile infants under 90 days admitted to the emergency department were prospectively enrolled. Clinical, biological and microbiological data were recorded. Viral diagnosis on nasopharyngeal aspirates consisted in RDT of the 3 most prevalent viruses depending on the season among influenza A and B, hMPV, RSV, parainfluenza, adenovirus in addition to viral culture.

Results

336 febrile episodes occurred in 321 infants; in 325 of the cases (96.7%) viral RDT were performed. Viral RDT were positive in 30.2% of the infants, and 84.7% of these positive results were confirmed by culture. From the 15 RDT positive-culture negative, 10 were hMPV, whose culture growth is known to be difficult. For the 5 different virus species tested by RDT, viral culture was positive only in 6.3% of the cases with negative RDT. The analytical performances of RDT according to the virus tested is shown in the table. Using viral culture as gold standard, the highest performance was observed for RSV followed by Parainfluenza. SBI was diagnosed in 7.1% of the whole population; 2.0% in RDT-positive and 9.3% in RDT-negative infants ($p=0.018$).



Conclusions

RDT present globally good performances in febrile infants under 3 months. Making their results rapidly and widely available can contribute to identify infants whose management could be lightened.

22A. EDUCATION: OTHER

ESP17-0857

FEVER, RASH AND CHOLESTATIC HEPATITIS: AND WHEN THE DIAGNOSIS IS UNUSUAL?

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Title of Case(s)

A curious case with unexpected diagnoses

Background

Common symptoms of infectious diseases like fever, rash and hepatomegaly may also be clinical features of uncommon diseases, posing a challenge to the clinician.

Case Presentation Summary

A 17 year-old girl with Leri-Weill syndrome presented with high fever, pruritic rash, jaundice and vomiting. Because of oral and vaginal ulcers since she was 8 years old and suspicion of Behçet's disease she had started sulfasalazine 6 weeks before. Observation showed facial edema, diffuse eruption, jaundice and hepatosplenomegaly with ascitis. Blood tests depicted eosinophilia ($1,42 \times 10^9/L$), thrombocytopenia ($76 \times 10^9/L$) and cholestatic hepatitis (AST 942 IU/L, ALT 770 IU/L, total bilirubin 7,59mg/dL, direct bilirubin 5,82mg/dL, GGT 322 IU/L). From the infectious and auto-immune workup, she had positive food allergy panel, positive HLA B27 and positive ANA (1/160). DRESS syndrome was suspected, sulfasalazine was suspended and high-dose corticotherapy was started with sharp clinical and analytical improvement. A 9 days corticosteroid taper led to fever and rash relapse, simultaneously with eosinophilia and cholestatic hepatitis. She showed a long corticoid-dependent pattern of the disease, and because after 10 months she presented persistent high bilirubin level due to the indirect fraction, Gilbert syndrome was suspected and genetically confirmed (TA7/TA7 in the UGT1A1 promotor). Prednisolone was then suspended and she kept clinical remission.

Learning Points/Discussion

DRESS syndrome is a rare but potentially fatal disease (10%), especially when liver involvement occurs. When important peripheral eosinophilia, multiorgan involvement and a history of recent drug exposure is present, DRESS syndrome should be suspected. Diagnosis can be challenging and a high suspicion index is needed. Infectious causes and autoimmune diseases must be excluded and a slow taper of corticotherapy is advisable. When the response is unfavorable, concomitant diseases should be rolled out.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0859

PARENT-PROXY CHILD QUALITY OF LIFE OF CHILDREN WITH ACUTE RESPIRATORY INFECTION WITH COUGH UPON PRESENTATION TO AN EMERGENCY DEPARTMENT AND OVER THE FOLLOWING FOUR WEEKS

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Background

In children, acute respiratory infections (ARIs), and associated symptoms such as cough, are common and associated with a high use of medical resources and time off work and/or school. However there are little data on their quality of life (QoL). This study evaluated the impact on, and predictors of, QoL in children with ARI with cough.

Methods

Children (n=292) aged <15 years presenting to a paediatric emergency department (ED) with ARI with cough were recruited in 2013-2014. Children were enrolled and followed-up weekly for four weeks post-ED presentation. QoL was assessed using a parent-completed validated 16-item questionnaire that measures QoL on a 7-point Likert type scale, with lower scores indicating poorer QoL. Linear regression and mixed effect modelling were used to identify factors influencing QoL at baseline and follow-ups.

Results

Median parent-proxy child QoL was 2.72 (IQR 2.06-3.63), 4.94 (IQR 3.75-6.13), 6.59 (IQR 5.06-7.00), 6.81 (IQR 4.94-7.00) and 6.97 (IQR 5.16-7.00) at baseline and 1, 2, 3 and 4 weeks post-ED presentation, respectively. Child's and father's age, cough severity, history of wheeze, having private health insurance and father's education explained 40% of the variation in baseline QoL scores. Family size, having private health insurance, cough severity, medication use, carer missed activities, financial concerns and health care utilisation were found to be significantly ($p<0.05$) associated with QoL over the four weeks.

Conclusions

Poor parent-proxy child QoL is related to the burden on time and money required by families to care for their child during an ARI episode with cough, particularly for younger and more severely ill children. A comprehensive understanding of cough-specific QoL is needed to ensure responsiveness to the needs and experiences of children and families, and to ultimately improve health outcomes.

08C. EDUCATION: HIV/AIDS

ESP17-0860

TUBERCULOSIS IN CHILDREN WITH HIV LIVING IN SPAIN: A RETROSPECTIVE COHORT STUDY

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Background

Although less common in high-income countries, tuberculosis (TB) is the leading opportunistic infection in HIV-infected children worldwide. Due to globalization, TB prevalence is changing in many regions. We describe TB epidemiological and clinical characteristics in HIV-infected children in Spain during the last two decades, to assess the impact of ART implementation in 1999, and the rise in immigration since 2000.

Methods

Active TB cases were identified among HIV-infected children enrolled in CoRISpe-Spanish National Pediatric HIV Cohort and pTBred, Spanish Network for Paediatric-TB. HIV infected children <18 years diagnosed with TB between 1994-2016 were included. Three periods were compared; 1994-1999, 2000-2009 and after 2010.

Results

Twenty-eight cases of TB were diagnosed among 1198 children enrolled in CoRISpe during the study period (2.3%). Clinical data were available in 24 children; 8 of them diagnosed before ART implementation (33.3%). Median age at TB diagnosis was 6.4 years (IQR 3.9-10.4). In the last period most children were older than 10 years (25% vs 10% vs 83.3%; $p < 0.009$). The proportion of children born abroad increased along the study periods; 12.5% vs 90% vs 50%, $p = 0.004$. Thirteen children (54.2%) were diagnosed with TB several years after HIV diagnosis. One third of cases presented with extrapulmonary-TB (37.5%), and 4 (16.7%) with TB-meningitis. Four children died during the study period (16.7%); 3 of them before 1999.



Conclusions

The rate of TB in HIV-infected children in Spain is low and comparable with other European cohorts. Especially in the first years of the HIV-epidemic, this condition was associated with high morbidity and mortality. Our study reveals the impact of immigration in the epidemiology of TB/HIV co-infection in low prevalence regions as our country.

03A. EDUCATION: GROUP A STREPTOCOCCUS

ESP17-0861

A CLUSTER OF PAEDIATRIC INVASIVE GROUP A STREPTOCOCCAL AND PRIMARY VARICELLA INFECTIONS

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Background

Group A *Streptococcus* (GAS) can cause severe invasive disease, with three characteristic presentations; necrotising fasciitis, toxic shock syndrome and sepsis with/without identifiable source of infection. Health Protection Surveillance Centre reports from 2011-2014 show a marked increase in invasive Group A streptococcal disease (iGAS) in Ireland, (incidence increased from 1.65/100,000 to 3.65/100,000). Varicella Zoster Virus (VZV) is a recognised risk factor for paediatric iGAS. VZV vaccine is not part of the Irish national childhood immunisation schedule.

We sought to characterise a cluster of iGAS infections referred to the paediatric infectious disease department (PID) of Children's University Hospital (CUH), Temple Street in 2016.

Methods

All referrals to the PID in CUH are recorded on an electronic database which was searched for cases of GAS in 2016. Cases not fitting criteria for invasive disease were excluded. A medical chart review was conducted and data collected on demographics, clinical presentation and hospital course.

Results

Ten patients, 5 female, median age 2.5years (range 0.8 – 3.9 yrs) had iGAS. All cases occurred over 16-weeks from February to June.

Seven (70%) patients with iGAS had VZV infection, admitted a median of 5 days after rash onset. All seven patients with VZV had persisting, increasing or secondary fever.

Median length of hospital stay (LOS) of patients with iGAS was 21.5 days (range 7-103 days). Six required PICU admission (median LOS, 6.5days [range 3-22 days]). All patients survived.

Conclusions

This cluster highlights the significant ongoing morbidity of iGAS in infants and young children in Ireland, reaffirms the association of paediatric iGAS with preceding primary VZV infection, and in the absence of an effective GAS vaccine, the potential added benefit of introducing VZV vaccine in the national childhood immunization schedule.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0862

TYPHOID REDUX

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Title of Case(s)

TYPHOID REDUX

Background

Third-generation cephalosporins are widely used for the treatment of typhoid fever in children. While longer courses (>7 days) have higher cure rates, the relapse rate may still be 4-14%. Recent randomized trials attest to the safety and efficacy of azithromycin for the treatment of multidrug-resistant typhoid fever, with a relapse rate of 0%. Azithromycin appears to be a convenient treatment alternative for uncomplicated typhoid fever.

Case Presentation Summary

A previously healthy 4 year-old female returned from a 4-week trip to India with fever and diarrhea. She presented to a local hospital, where blood and stool cultures grew *Salmonella typhi*. She was treated with a 14-day course of ceftriaxone. At time of discharge, stool cultures were negative x 3 and blood culture was negative >48 hours. Three weeks later, she presented to our hospital with fevers but no localizing signs of infection on exam, and was thought to have a viral syndrome. Infectious diseases recommended blood cultures and a parasite blood smear prior to discharge. The next day, blood cultures grew gram-negative rods. Upon admission, she had fever, hyponatremia (131 mmol/L) and a mild transaminitis (alanine aminotransferase 153 U/L, aspartate aminotransferase 188 U/L). She was started on ciprofloxacin and ceftriaxone. When blood cultures grew ciprofloxacin-resistant *Salmonella typhi*, she was narrowed to PO azithromycin 10 mg/kg daily. She completed a 14-day course without relapse.

Learning Points/Discussion

Relapsed typhoid fever may occur within 3 months after treatment, and is generally milder and of shorter duration than the initial illness. *Salmonella typhi* multiplies intracellularly, making it difficult to completely eradicate when using antibiotics that act poorly on intracellular bacteria. Azithromycin has excellent intracellular penetration, and should be considered for the treatment of typhoid fever.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0866

CULTURE PROVEN INFECTIONS AND ANTIMICROBIAL USE IN PEDIATRIC PATIENTS ON EXTRACORPOREAL MEMBRANE OXYGENATION SUPPORT (ECMO)

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Background

ECMO support implies an increased risk of mortality and nosocomial infection. The aim of this study is to describe culture proven infections and antimicrobial use during ECMO support in pediatric patients.

Methods

Retrospective study in children <15 years of age on ECMO, between June 2009 and February 2016. Neonates were excluded. Demographic, clinical and microbiological data were recorded. Culture proven infections were defined as microbiological isolation after 48 hrs of admission to ECMO and up to 48 hrs after its withdrawal.

Results

Forty ECMO connections occurred in 40 children; male: 62%; median age 2.7 years (1 month – 14 years); and 33 patients (82%) survived until discharge. All patients received empirical antibiotic therapy. Median days per antibiotic used were (IQ range): vancomycin 11 days (7-21), meropenem 12 days (9-22) and 3rd generation cephalosporins 3 days (0-7). Antifungal therapy was used in 37,5%. Rate of culture proven infections was 25.5 per 1000 ECMO-days, median time of microbiologic isolation was 14 days (5-19). Most frequent sites of infection were respiratory (8) and urinary tract (4). Main etiologies identified were *Candida spp* (5), *P.aeruginosa* (3), *S.maltophilia* (2) and *E. faecium* (2). *Candida spp* infection occurred in five patients (urine), at median ECMO-day 12 (12-14). Regarding culture proven group, their median ECMO-days were 21 and median length of stay in PICU were 42 days versus non infected group with 8 and 24 days respectively (p <0,05). There were no differences in mortality between both groups.

Conclusions

Culture proven infections and its rates were similar to those reported in literature. Microbiological isolation occurs during 2nd week, associated with long-time of broad spectrum antibiotic use, fungal infections, longer ECMO support time and length of stay in PICU.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0867

A SCHOOL OF THOUGHT: USING SCHOOLS FOR THE EARLY CASE DETECTION OF LEPROSY

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Background and Objective

Leprosy is a Neglected Tropical Disease (NTD) causing significant physical and functional disabilities globally. Identifying leprosy in its early stages and facilitating access to Multi-Drug Therapy (MDT) treatment has been found to reduce the transmission of the disease, as well as associated disability and functional impacts. School screening has been trialed in several countries as a means of identifying early leprosy cases – but is it effective?

Methods

Using the PRISMA method, thirty peer reviewed publications from around the world were identified. These papers were investigated to explore whether school screening for leprosy was successful in identifying early cases, as well as establishing an evidence base for 'best practice' approaches to school screening.

Learning Points Discussion

The results of the review of the literature concluded that:

- Cases of leprosy can be identified through school screening;
- School screening for leprosy appears to be most appropriate in areas of high leprosy endemicity; due to large sample sizes required, and low rates likely to be detected;
- School screening is useful in detecting leprosy cases in students in the 10-14 year age group;
- The inclusion of capacity building, health education and screening for other skin conditions (in addition to leprosy) could improve the feasibility and sustainability of school screening programmes;
- School screening interventions could improve symptom recognition and knowledge transfer to households and the wider community (needs validation).

- School screening could be an effective solution for the early identification of leprosy, particularly in areas of high endemicity in conjunction with capacity building, health education and screening for other conditions. There is limited data on its effectiveness compared with other interventions and this requires further exploration.

05B. EDUCATION: PREGNANCY AND THE NEONATE

ESP17-0869

PREVALENCE OF GROUP B STREPTOCOCCUS SEROTYPES AMONG PREGNANT WOMEN IN SAO PAULO, BRAZIL

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Background

Group B *Streptococcus* (GBS) is a coccus that colonizes the gastrointestinal and genital tracts of 15 to 40 percent of pregnant women. It's the leading cause of sepsis and meningitis in neonates. There are 10 different serotypes. Despite significant advances in the prevention and treatment of neonatal diseases, GBS still represents a significant public health care concern globally and additional prevention strategies against infection are desirable. Immunization with conjugate vaccines appears as new choice to avoid neonatal infection. The serotype distribution differs among geographic regions. To introduce a conjugate vaccine it's important to know the serotypes prevalence. The aim of this study is to determine the prevalence of GBS serotypes among pregnant women in labor admitted at two private hospitals in São Paulo, Brazil.

Methods

A total of 194 positives GBS isolates from cultures collected from 12/2014 to 01/2016 at Maternidade Santa Joana and Promatre Paulista were included in this study. Isolates were re-identified by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF). DNA was extracted by phenol–chloroform method. Isolates were typed by 3 multiplex PCR using specific primers for nine serotypes: 1- Serotypes Ia, Ib and II; 2- Serotypes III, and V and; 3- Serotypes IV, VI, VII and VIII.

Results

About 35% of the GBS isolates were typed as Ia; 6.2% as Ib; 10.8% as II; 12.4% as III; 1% as IV; 31% as V; 1% as VIII. A total of 5 isolates (2.6%) were not classified as any of the serotypes tested.

Conclusions

Serotypes Ia, Ib, II, III and V were the most prevalent GBS serotypes in the present study. A conjugate vaccine for all 5 serotypes would be adequate to cover about 95.4% of GBS serotypes in pregnant women in this community.

22A. EDUCATION: OTHER

ESP17-0871

SUSCEPTIBILITY TO MALARIA ON PAPUAN CHILDREN

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Background

In Timika Papua, malaria is still threat especially in children. Susceptibility to malaria makes children more easy to be infected by malaria. The objective of this study is to know the susceptibility to malaria in Papuan children.

Methods

A cross sectional household survey was conducted between April and July 2013 in 800 households of 16 villages in District of Mimika Papua Indonesia. Children (0-18 years old) were included in the study. Diagnosis of malaria is based on microscopic.

Results

Among 1839 children, 1335 were examined malaria. There were 646 (48.4%) male and 689 (51.6%) female. The median age was 7.9 years old (range 7 month old to 18 years old). Bed net was used by 459 (34.4%) children. Most of children (1250 or 93.6%) stayed in lowland. Papuan ethnic children were 693 (51.9%) whereas non Papuan was 642 (48.1%). There were 216 (16.2%) children who suffered from malaria, which consist of Plasmodium (P) vivax 109 (50.46%), P falciparum 89 (21.4%), P malariae and mix infection were 9 (4.2%) and 9 (4.2%) respectively. Malaria was found in 147 (21.2%) of Papuan Children and 69 (10.7%) of non Papuan (OR 2.24 ; 95% CI: 1.64 – 3.05).

Conclusions

Papuan children were more susceptible to contracted malaria than non Papuan.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0875

MALARIA' TROJAN HORSE: A CASE OF MIXED-SPECIES MALARIA INFECTION

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Title of Case(s)

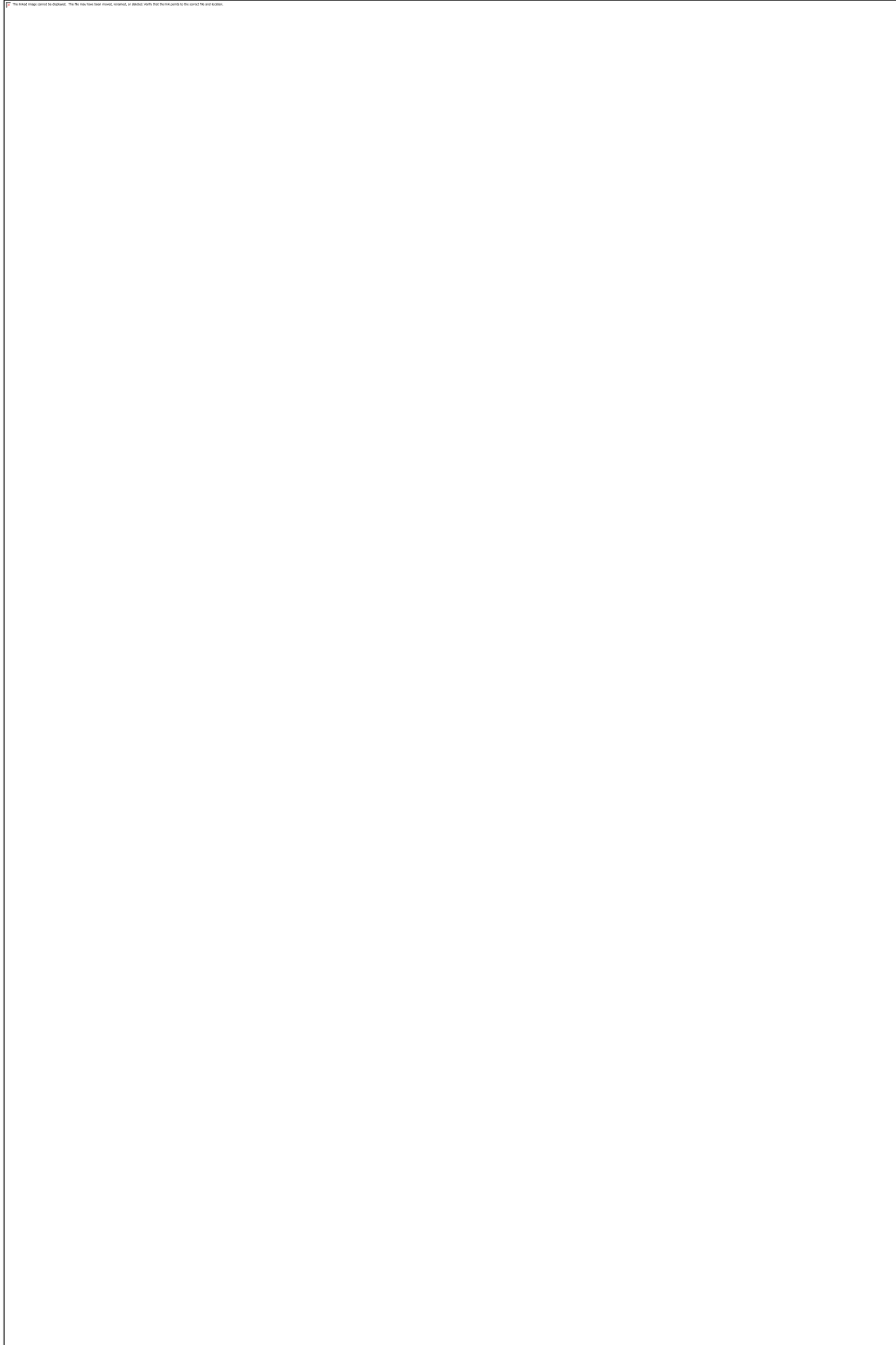
MALARIA' TROJAN HORSE: A CASE OF MIXED-SPECIES MALARIA INFECTION

Background

Malaria is a common cause of fever in the returning traveler, and can be a rapidly progressive and a potentially fatal infection, making early evaluation and detection crucial. Mixed-species malaria infections often go unnoticed in clinical practice. However, longitudinal studies demonstrate that mixed infections are remarkably common, with the delayed appearance of one cryptic species even after initial antimalarial treatment.

Case Presentation Summary

A previously healthy 10-year-old male presented immediately after a 2-month trip to Guinea and Liberia with fever, lethargy, hypotension, hyperbilirubinemia (total bilirubin 17.1 mg/dL; conjugated bilirubin 11.9 mg/dL), thrombocytopenia (platelets 71 K/uL), and severe anemia (hemoglobin 3.9 g/dL; hematocrit 11.9%). He was found to have <1% *Plasmodium falciparum* and query of a second *Plasmodium species*. He was treated for severe malaria in the PICU with 24 hours of IV quinidine, 4 days of clindamycin, and 3 days of atovaquone-proguanil. Malaria species-specific PCR testing was positive only for *P. falciparum*. Patient was discharged in stable condition. One month later, he presented with fever, neck pain and headache. Again, <1% *Plasmodium species* was identified. He was treated with 4 doses of hydroxychloroquine with rapid clinical improvement. Subsequent PCR testing of blood identified *P. ovale*. Prior to starting primaquine, he underwent erythrocytapheresis after he was found to have severe G6PD deficiency. He completed a 14-day course of primaquine uneventfully.



Learning

Points/Discussion

Clinicians should be aware of mixed-species malaria infections. Repeat parasite smear should be obtained if symptoms recur, even after initial antimalarial treatment. Primaquine is the only drug available for dormant malaria and G6PD status matters. Erythrocytapheresis is an option for patients with severe G6PD deficiency and can prevent fatal primaquine-induced hemolysis.

04E. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0876

PNEUMOCOCCAL CARRIAGE AND SOCIAL CONTACT VARIES BY ETHNICITY IN FIJI: A CROSS-SECTIONAL STUDY

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Background

Indigenous Fijians (iTaukei) have a higher burden of pneumococcal disease and nasopharyngeal (NP) carriage than Fijians of Indian Descent (FID), despite similar poverty levels and other risk factors. This study investigates the association between ethnicity, social contact and pneumococcal carriage.

Methods

Healthy infants (5-8 weeks), toddlers (12-23 months), children (2-6 years) and their caregivers completed a carriage risk factor survey, and questionnaire regarding contacts in the preceding 24 hours. NP swabs were collected via standard methods. Pneumococci were detected via *lytA* quantitative-PCR. Generalized estimating equation logistic regression determined odds of carriage and associated risk factors.

Results

For all participants (n=2,020) the mean number of contacts was significantly higher (p<0.001) for iTaukei (7.37, 95%CI 7.14–7.60) compared with FID (4.94, 95%CI 4.78–5.09). The mean number of physical contacts was significantly higher (p<0.001) for iTaukei (5.54, 95%CI 2.54–5.40) compared with FID (4.10, 95%CI 1.80–3.98). Similarly, the mean number of conversational only contacts was significantly higher (p<0.001) for iTaukei (1.83, 95%CI 1.67–1.98) compared with FID (0.83, 95%CI 0.73–0.94).

Preliminary results for toddlers (n=498) found pneumococcal nasopharyngeal carriage was significantly higher (p<0.001) in iTaukei (58.3%, 95%CI 52.7%–63.9%) compared with FID toddlers (24.0%, 95%CI 17.9%–30.0%). Being iTaukei (aOR 4.21, 95%CI 2.74–6.46; p<0.001), and each additional contact with a toddler (aOR 1.49, 95%CI 1.04–2.12; p=0.029) or a child (aOR 1.31, 95%CI 1.02–1.69; p=0.034) were independent risk factors associated with carriage.

Conclusions

Social contact varies by ethnicity. Being iTaukei and contact with young children are risk factors for pneumococcal carriage in Fijian toddlers. Following final analyses, this study will help identify which age groups transmit pneumococci and the type of contact that is important for transmission. This is crucial information for disease transmission model development.

Clinical Trial Registration (Please input N/A if not registered)

N/A

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0878

EPIDEMIOLOGY OF ACUTE GASTROENTERITIS IN A PEDIATRIC POPULATION FROM CALI, COLOMBIA

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Background

Little epidemiologic data exists for Latin American children with acute gastroenteritis (AGE) in the post-rotavirus vaccine era.

Methods

During 12 months (2015-2016), active surveillance was performed in 36,070 children <5 years of Cali, Colombia to detect AGE. Stool samples of patients with AGE were tested with a bead-based nucleic acid assay for 16 pathogens (xTAG gastrointestinal pathogen panel, Luminex).

Results

Stool samples were collected in 199 of 767 hospitalized patients, and in 197 of 5766 outpatients with AGE. The most common etiologies in hospitalized patients were rotavirus (n=67;34%), *shigella* (n=52;26%), and norovirus (n=45;23%), while in outpatients were *shigella* (n=55;28%), rotavirus (n=50;25%), and *campylobacter* (n=36;18%) (Table). 95% of study patients had received complete rotavirus vaccination.



Conclusions

Gastroenteritis remains an important cause of morbidity in this population of children <5 years, especially in those under 2 years, despite rotavirus vaccination. Long standing and emerging etiologies are prevalent. Preventive measures, including novel vaccination strategies are necessary in this population.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0879

CLINICAL AND MICROBIOLOGICAL CHARACTERIZATION OF SURGICAL SITE INFECTIONS IN CHILDREN IN A TERTIARY CARE HOSPITAL IN MEDELLIN, COLOMBIA. JANUARY 2012 -DECEMBER 2014

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Background

Surgical site infections (SSI) can complicate up to 5% of all inpatient surgeries. They cause major morbidity, prolonged hospitalization, additional health-care costs and are associated with increased risk of mortality. In our institution SSI is the most frequent health-care associated infection. Data about this infection in children is scarce; with this study we planned to describe clinical characteristics, antibiotic prophylaxis and microbiological isolates from children with SSI in a tertiary care hospital.

Methods

Descriptive, retrospective study performed at Pablo Tobón Uribe hospital in Medellín, Colombia between 2012 and 2014. All patients under 15 years with diagnosis of SSI, based on a positive culture of the wound were included. Electronic medical records were reviewed and demographic, microbiological and antibiotic prophylaxis data were analyzed

Results

Seventy five SSI episodes were analyzed, median age was 3 years. Colorectal surgery (32%), neurosurgery (25%) and orthopedic surgery (13%) were the specialties with more cases. Most frequent isolates were *S. aureus*, CNS, *E. coli* and *E. faecalis*. Surgical prophylaxis was inadequate in 39% of cases because of incorrect dose, and in 24% due to inadequate timing prior to incision. Nine patients (12%) had concomitant bacteremia due to the same microorganism isolated from the wound. There were no fatal cases.

Conclusions

SSI is an important cause of morbidity in our institution. Correct administration of antibiotic prophylaxis and appropriate timing before the incision are two key factors in the SSI bundle. These measures need to be fine tuned in order to decrease the frequency of these infections

04E. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0881

QUANTIFYING THE BURDEN OF DISEASE DUE TO STREPTOCOCCUS PNEUMONIAE: RESULTS FROM THE GLOBAL BURDEN OF DISEASE STUDY 2016

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Background

To better understand the true health burden of *Streptococcus pneumoniae*, the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) estimates health loss by age, sex, and population from 1990-2016. Disability adjusted life years (DALYs), as measured in GBD, is a sum of mortality and morbidity which gives us a comprehensive picture of disease burden. This helps inform change through appropriate and targeted policy decisions around the world.

Methods

Pneumonia mortality has decreased substantially since 1990 (19.3%, 13-25%), but remains the leading cause of infectious disease mortality among children under 5 years old (703,918 deaths, 651-763,000). The attributable fraction of pneumonia episodes and deaths due to pneumococcal pneumonia is estimated using a counter-factual approach based on the ratio of vaccine effectiveness of pneumococcal conjugate vaccine (PCV) against all-cause pneumonia to pneumococcal pneumonia. Recent advances in the use of urine-antigen diagnostics have improved vaccine effectiveness estimates and subsequently have increased the pneumococcal pneumonia attributable fraction.

Results

Streptococcus pneumoniae was the leading cause of pneumonia mortality (56%, 33-75%) and was responsible for nearly 400,000 deaths among children under 5 years in 2015 (393,000; 229-532,000) and over 1.5 million deaths among all ages (1,517,000; 858,000-2,184,000).

Conclusions

Our findings support the urgent need for the global expansion of PCV, particularly for infants, toddlers, and the elderly.

Systematic Review Registration (Please input N/A if not registered)

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0886

CHILDHOOD TUBERCULOSIS IN FINLAND 1995 - 2015

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Background

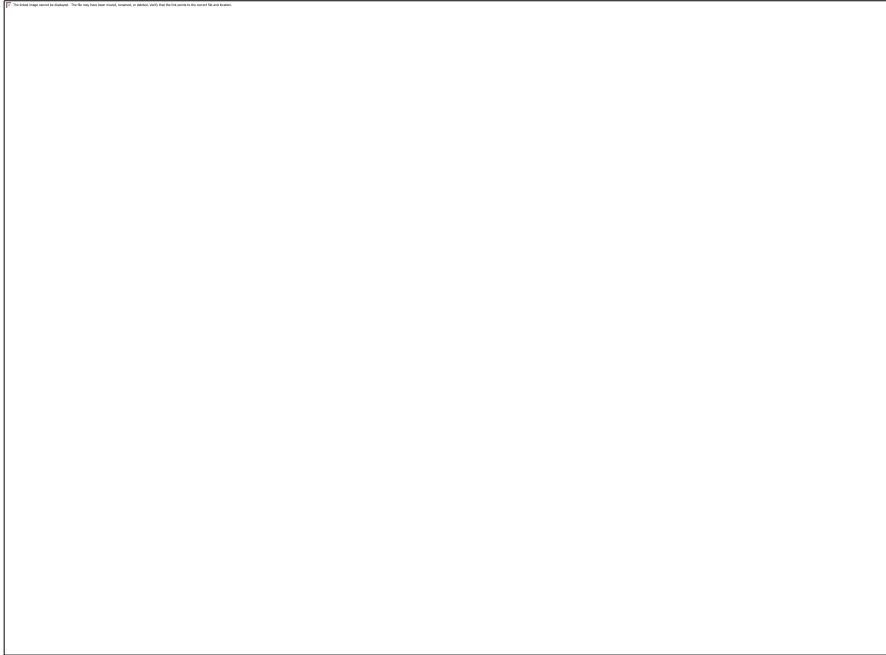
Infant Bacillus Calmette–Guérin (BCG) vaccination effectively prevents serious TB disease in young children. In 2006 BCG policy in Finland changed from general immunisations to a risk group based approach and proportion of infants vaccinated fell from over 98% to below 10%. The aim of the study was to describe trends in the epidemiology and clinical manifestation of childhood tuberculosis in Finland.

Methods

A retrospective study of all patients under 16 years of age registered from 1995 to 2015 in Finland to the Contagious Disease Registry (TTR) with TB infection or to the Hospital Discharge Registry (HILMO) with any ICD-9 or ICD-10 diagnostic code for TB infection. We evaluated the medical records of registered cases to validate the TB diagnosis and collected data concerning demographics, clinical manifestations, test results, treatment and outcome.

Results

Our registry search found a total of 487 patients: 113 (23%) from both registries, 14 (3%) only from TTR and 360 (74%) only from HILMO. The medical records of 446/487 (92%) were available for evaluation. TB diagnosis was appropriate in 154/446 (35%) of the cases of which 75/154 (49%) were bacteriologically confirmed. There were additional 28 cases that were originally diagnosed outside Finland. There was one TB death; a non-BCG-vaccinated child born in 2009 to Finnish parents.



Conclusions

In low incidence countries like Finland childhood TB burden is concentrated to immigrant families from high incidence countries. However, identifying low-risk group children, who are unvaccinated and vulnerable for severe TB infections, exposed to TB is crucial. Obtaining bacteriological confirmation from children is challenging and accepting clinically diagnosed cases is important for epidemiological monitoring, though this can increase registry errors and the data should be reviewed regularly.

01A. EDUCATION: ANTIMICROBIAL STEWARDSHIP

ESP17-0889

ANTIBIOTIC RESISTANCE AND ANTIMICROBIAL THERAPY OF 55 CHILDREN WITH GROUP B STREPTOCOCCUS BLOOD STREAM INFECTION IN CHINA

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Background

Since 1970s, Group B streptococcus (GBS) had been the important pathogen which caused severe and invasive infections in children in developed countries. But the series of reports on GBS invasive infections in infants were rare in China. The experience of clinical practices of GBS infection in Chinese infants was rare. This survey summarized the clinical findings, managements and outcomes of children with GBS blood stream infection.

Methods

We reviewed the hospital records of 55 cases with GBS blood stream infection confirmed by positive blood cultures, who attended Shenzhen Children's Hospital from 1st January 2010 to 31st December 2015. We analyzed the onset ages, clinical findings, antibiotic treatments and outcomes.

Results

There were 30 boys and 25 girls, the ages ranged from 1 hour to 78 days. 6 cases were early-onset disease and 49 late-onset. 40 cases occurred in neonates. The meningitis was diagnosed in 20 patients (36.4%).

All of isolates were susceptible to penicillin, ampicillin, linezolid and vancomycin, the resistance rates to erythromycin, clindamycin were 56.6%, 77.4%.

The patients were treated with meropenem in 18, penicillins or cephalosporins in 37 and combined with linezolid in 13 and vancomycin in 3 patients. 54 children were improved and 1 dead.

Conclusions

GBS blood stream infection occurred commonly in the infants aged younger than 3 months, more than 1 in 3 complicated purulent meningitis. All of isolates were susceptible to penicillin whilst the resistant rates were high to erythromycin and clindamycin. The prescription percentages of meropenem and combined with two kinds of antibiotics were high. The outcomes were not good.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0890

HEALTHCARE-ASSOCIATED FACTORS CORRELATED WITH NEONATAL COAGULASE-NEGATIVE STAPHYLOCOCCUS SPP. INFECTION

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Background

Coagulase-negative *Staphylococcus* spp. (CoNS) are the leading cause of late-onset sepsis in hospitalised neonates. However, there is limited information regarding how healthcare-associated factors affect the likelihood of CoNS infection. To improve infection prevention strategies, this study aimed to identify healthcare-associated, organisational risk factors for CoNS infection.

Methods

neonIN is a multi-national neonatal infection surveillance network which receives prospectively-collected infection data from 60 units worldwide. Infection episodes from 2011-2016 were extracted from neonIN (with infection defined as a positive culture from a sterile site, e.g. blood, CSF). Infection data were then synthesised with results of a unit-specific questionnaire distributed to neonIN units. The questionnaire covered basic unit characteristics (based on British Association of Perinatal Medicine (BAPM) standards) and healthcare-associated factor data relevant to 2011-2016. Univariate and multivariate analyses were performed using the Stata 14 statistical package.

Results

25 of 60 (42%) units responded to the survey, of which 21 were Level-3 (NICUs). *Table 1* shows how various healthcare-associated factors affected the risk of CoNS versus other infections. Increasing numbers of trainee medical staff increased the odds of CoNS infection (per 1 increase: OR 1.08, 95%CI 1.03-1.13, p=0.003), while meeting BAPM recommendations for intensive care nurse:patient ratios (i.e. 1:1) decreased the odds of CoNS infection (OR 0.52, 95%CI 0.32-0.85, p=0.009). CoNS were less likely to be isolated from UK/Australian than

Greek/Estonian units (OR 0.32, 95%CI 0.11-0.96, p=0.041).

Conclusions

Our study provides novel insights into healthcare-associated factors and their importance in CoNS infection. Failure to meet intensive care nurse:patient ratio recommendations was a significant risk factor for CoNS infection, underscoring the imperative of instituting adequate staffing. Increasing numbers of trainee medical staff and geography were additional risk factors; further investigation may explain these associations.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-0892

HEALTHCARE-ASSOCIATED FACTORS CORRELATED WITH NOSOCOMIAL NEONATAL ENTEROCOCCAL INFECTION

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Background

Enterococcus spp. are ubiquitous pathogens which cause significant morbidity in critically-ill neonates. However, healthcare-associated risk factors for these infections are not well-established. This study aimed to identify healthcare-associated factors correlated with neonatal enterococcal infection, with a view to improving infection prevention strategies.

Methods

neonIN is a collaborative, multi-national, neonatal infection surveillance network which receives prospectively-collected infection data from 60 units worldwide (UK, Greece, Estonia, Australia). Infections cases from 2011-2016 were extracted from neonIN, with infection defined as a positive culture from a sterile site (e.g. blood, cerebrospinal fluid). Case data were then pooled with the findings of a unit-specific questionnaire distributed to all neonIN units. The questionnaire covered basic unit characteristics, based on British Association of Perinatal Medicine (BAPM) standards, and healthcare practices and policies data from 2011-2016. Univariate and multivariate analyses were performed using the Stata 14 statistical package.

Results

24 of 60 units (40%) responded to the survey, of which 21 were Level-3 (NICUs). *Table 1* shows the influence of various healthcare-associated factors on the risk of enterococcal versus other infections. An increasing number of trainee medical staff was associated with an increased risk of enterococcal infection (per 1 increase: OR 1.06,

95% CI 1.00-1.12, $p=0.050$) while the ratio of nurse:patient did not have any significant influence.



Conclusions

Our study suggests that traditional healthcare-associated factors have little influence on the risk of neonatal enterococcal infection; strategies for preventing this infection should therefore focus on different risk factors.

16A. EDUCATION: PUBLIC HEALTH: MOLECULAR EPIDEMIOLOGY AND OTHER ASPECTS

ESP17-0893

MOLECULAR CHARACTERIZATION OF NOROVIRUS ISOLATES FROM SOUTH KOREA

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Title of Case(s)

Molecular characterization of Norovirus isolates from South Korea

Background

Noroviruses (NoVs) is the dominant etiological agent of acute gastroenteritis in humans and recognized as a major etiologic agent of nonbacterial acute gastroenteritis in all age groups worldwide. Furthermore, variants and recombinant strains of this virus are continuously emerging worldwide.

Case Presentation Summary

Noroviruses (NoVs) is the dominant etiological agent of acute gastroenteritis in humans and recognized as a major etiologic agent of nonbacterial acute gastroenteritis in all age groups worldwide. Furthermore, variants and recombinant strains of this virus are continuously emerging worldwide. These variants could be related to antigenic variations that alter viral transmission and immune systems in human bodies, thus influencing the patterns of viral activities. Therefore, studies of the genetic diversity and evolution of human NoV could provide important information that may prove useful for controlling human NoV infection. And the full genome sequence analysis of NoVs is important to be able to pursue of sporadic gastroenteritis in the world by NoV.

Learning Points/Discussion

We determined the full-length sequences of a recombinant NoV strain and unique NoV strain isolated from clinical samples in South Korea. Because these strains may result in hazardous NoV outbreaks in Korea, this information should prove to be valuable. The results from this study highlight the many challenges in the identification of new recombination strains and suggest that guidelines be applied for identifying newly emerging recombinant strains of NoV. And this is a valuable contribution to the databases that enable viral evolutionary studies and molecular epidemiology studies. Furthermore, the information generated might facilitate the development of diagnostic tools and effective vaccines.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0894

INFECTION PROFILE AND ITS PREDISPOSING FACTORS OF THALASSAEMIA CHILDREN: A PROSPECTIVE ANALYSIS FROM BIKANER, NORTHWESTERN INDIA

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Background

Infection is still the predominant cause of death in thalassaemia children after heart failure. Nonetheless, data regarding incidence and spectrum of the causal microorganisms are very limited, and do not reflect the long-term impact of modern treatment modalities. In this context, this prospective hospital based study revealed the incidence of infections causing hospitalisation and the role of potential risk factors for these infections.

Methods

Seventy two children with b-thalassaemia major and intermedia were followed for 3 years for all infections necessitating hospitalization. Diagnosis was established by hemoglobin electrophoresis. Demographic and clinical information, with special emphasis on data related to infection, was collected. All infections were defined by the Centers for Disease Control and Prevention criteria.

Results

The overall adjusted rate of infection for the entire study group was 256 infections per 100 patient-years. The mean age at the time of infection was 5.4 ± 2.6 years, with an increased incidence between the ages of 4 to 7 years. The distribution of infections were pneumonia(32.6%), pyrexia of unknown origin(18.2%), gastroenteritis(16.6%), upper respiratory infection(14.2%), Urinary infection(10.1%) and Cellulitis(2.8%). Staphylococcus aureus was the major pathogen (23.4%) with S.pneumonia, K.peumonia, E.coli and other isolates. The infection rate in thalassaemia is affected mainly by the duration of the disease and is increased by splenectomy and, in the long term, by treatment with deferoxamine. Parathyroid dysfunction and glucose-6-phosphate dehydrogenase deficiency were significantly associated with infection.

Conclusions

With current therapy and the resulting extended survival in thalassaemic patients, more studies are needed in order to formulate up-to-date guidelines for prophylactic antibiotics and immune prophylaxis, adjusted for geographical differences. We conclude also that the decisions regarding splenectomy and the timing of splenectomy should take into account the high risk of infection.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0895

RANDOMIZED CONTROLLED TRIALS USING LINEAR GROWTH OUTCOMES: INCLUDING BASELINE VALUES INCREASES POWER

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Background

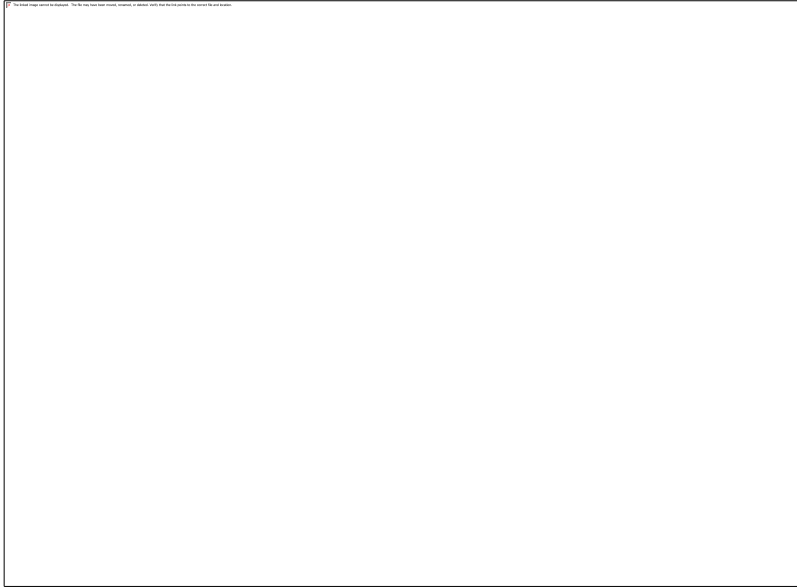
Poor linear growth in childhood is associated with increased morbidity and mortality. The relationship between exposure to infectious diseases and linear growth has been well described, however, interventions to reduce or prevent linear growth failure have demonstrated limited impact. Methods for optimization of analytic methods to detect impact are urgently needed to inform interventions for linear growth promotion.

Methods

We simulated data for randomized controlled trials using Monte Carlo methods and parameters from published trials. We evaluated the difference in power and Type II error rates for determining the effect of infectious disease treatment on linear growth, as measured by length-for-age z-scores (LAZ): 1) comparing final LAZ between groups using linear regression; 2) comparing change in LAZ from baseline to follow-up between groups using linear regression; 3) comparing change in LAZ from baseline and mid-point LAZ between groups in linear mixed models. Sensitivity analyses were performed to examine relationships between baseline LAZ, follow-up growth, and intervention effect size to determine consistency across scenarios.

Results

The results demonstrated that analyses based only on final LAZ (method #1) required more than three times as many children to reach 80% power as compared to models including baseline LAZ. Using mid-point values (method #3) showed modest gains in power over linear regression with change from baseline LAZ (method #2).



Conclusions

Controlled trials limiting analysis to only final LAZ require a larger sample size than trials using change in LAZ from baseline and midpoints as the primary outcome. Where possible, trials analyzing LAZ should use models incorporating baseline LAZ. Linear mixed models offer further small gains in power compared to change in LAZ analysis and allow for estimation of time dependent effects.

Clinical Trial Registration (Please input N/A if not registered)

N/A

03A. EDUCATION: GROUP A STREPTOCOCCUS

ESP17-0900

MULTI-CENTER STUDY EVALUATING THE CHARACTERISTICS AND OUTCOME OF CHILDREN WITH GROUP A STREPTOCOCCAL (GAS) BACTEREMIA COMPARED WITH OTHER INVASIVE GAS INFECTIONS IN MADRID COMMUNITY

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Background

Streptococcus pyogenes bacteremia may be primary or secondary to a focal infection, and may have a fulminant course. Therefore, it is crucial an early diagnosis and treatment. **Aim:** Determine clinical characteristics and outcome of children with GAS bacteremia and compared them with children with invasive GAS infection (iGASi).

Methods

Medical records from children with documented GAS bacteremia diagnosed in 13 hospitals of Madrid between 2005-2015, were evaluated. Cases of GAS bacteremia (group 1) were compared with other cases of iGASi without bacteremia (group 2).

Results

Eighty seven out of 252(34.5%) children evaluated with iGASi developed bacteremia. A source of bacteremia could be identified in 44.7% cases: most frequently skin/soft tissues (51,3%) and septic arthritis (23,1%). Most common clinical syndromes from group 2 were skin infections and pneumonia. Group 1 developed fever (91.9 vs 81,5%;p=0.017), were <2 years(OR:2,61[1,52-4,47]), had been vaccinated with PCV7/13 (80,3% vs 62,9%, OR: 2,4[1.18-4.87];p=0,014) and had complications (31.7 vs 25.6%;p=0.001) more frequently, but had pneumonia less commonly (1.1% vs 18.1%;p<0.0001) than Group 2. There were not differences in the rate of PICU admission. Furthermore, children from Group 1 required fewer surgical procedures (25,3% vs 84.7%;p<0.0001), but they were more commonly performed as a late intervention to resolve complications(53,3% vs 24% of surgical interventions;p=0.01).Children from group 1 tended to have more Erythromycin resistance (12.1 vs 5.1%;p=0,11), with no differences in the rate of Clindamycin resistance.

Conclusions

Children with iGAS and bacteremia were younger and had more complications than children without bacteremia. Bacteremia was less frequently associated with pneumonia, which may have accounted for a lower rate of surgery. It is unclear if receiving anti-pneumococcal vaccine may have an impact in developing GAS bacteremia.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0901

A PROSPECTIVE MULTINATIONAL SEROSURVEILLANCE STUDY OF BORDETELLA PERTUSSIS INFECTION AMONG 10-18 YEAR OLD ASIANS

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Background

Bordetella pertussis (Bp) is a highly communicable human pathogen which continues to cause outbreaks of pertussis worldwide. Since epidemiologic data from Asia are scarce, we performed this multinational serosurveillance study.

Methods

From July 2013 to June 2016, adolescents aged 10-18 years without chronic conditions who had not received any pertussis-containing vaccine within the prior year were recruited in 10 centers in China, India, Japan, South Korea, Sri Lanka, Taiwan, and Thailand. Serum specimens and demographic and medical history data were obtained from study participants. Serum levels of anti-pertussis toxin (PT) IgG were measured by ELISA (EUROIMMUNE AG, Germany). In the absence of pertussis immunization, The anti-PT levels ≥ 62.5 IU/mL were interpreted as Bp infection ≤ 12 months prior, and levels ≥ 125 IU/mL as Bp infection ≤ 6 months prior.

Results

A total of 1,802 adolescents were enrolled and 87 (4.8%) had levels of anti-PT IgG ≥ 62.5 IU/mL. Among them, 83.9% had received ≥ 3 doses of pertussis vaccine before 6 years of age; 1.1%, 56.3%, and 26.4% received 3, 4, and 5 doses, respectively. Among 30 participants with persistent cough during the past 6 months, one (3.3%) had levels ≥ 125 IU/mL. There was no significant difference in proportions achieving anti-PT IgG levels ≥ 62.5 or < 62.5 IU/mL between countries irrespective of DTP vaccines used ($p=0.75$), schedules with 4 or 5 doses by 6 years of age ($p=0.86$), presence of persistent cough during the past 6 months ($p=0.20$), or by age group ($p=0.47$).

Conclusions

We demonstrate significant circulation of Bp amongst Asian adolescents with 1 in 20 having serologic evidence of recent infection regardless of vaccination background. Adding adolescent booster doses to the pertussis childhood immunization programs should be considered.

This investigator-initiated study was supported by SANOFI PASTEUR.

Clinical Trial Registration (Please input N/A if not registered)

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0902

SOCIOECONOMIC DETERMINANTS OF THE EFFICACY OF AN ORAL CHOLERA VACCINE IN A HIGH RISK URBAN SETTING

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Background

Cholera is a public health threat particularly in low and middle income countries. Oral cholera vaccines (OCV) are now considered an important tool to control cholera. However, the sub-optimal protection offered by OCVs is a concern. Factors affecting OCV performance have not previously been reported. This study aims to investigate socio-economic risk factors affecting OCV performance in urban population in Bangladesh.

Methods

We conducted an open label large feasibility study on OCV in urban setting in Dhaka, Bangladesh. The study area included 30 clusters in each of three arms: vaccine, vaccine plus behavioural change, and a non-intervention arm. A structured questionnaire used for demographic and socio-economic characteristics of the study population. Vaccination records and hospital-based diarrhoeal case reports were documented.

Results

There were 268,896 participants in the study. Total 4,295 diarrhoeal cases identified, of which 528 (12.3%) had cholera and 236/528 (45%) of the cholera cases were severely dehydrated cholera (SDC). Participants, received two OCV doses were free from cholera and SDC episode were less likely who living in a household with ≤ 4 members (OR=0.55, 95% CI=0.32-0.96). Among non-recipients living in the intervention areas, younger age, diarrhoea at baseline census was found to be a risk factor for cholera. Among these individuals, females or individuals having diarrhoea at baseline were more likely to have SDC. In contrast, participants living in a house with poor floor construction, living in a high density area, living at further distance to the hospital and non-treatment of drinking water were at significantly higher risk of both cholera and SDC.

Conclusions

Vaccination with two OCV doses protected against cholera and severe cholera and can eliminate the risk for cholera due to socioeconomic disparities in a high endemic area.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0904

INVASIVE PNEUMOCOCCAL DISEASE CAUSED BY NON-PCV ISOLATES IN CHILDREN > 18 YEARS OF AGE IN CROATIA, 2005 TO 2016

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Background

Streptococcus pneumoniae is a leading cause of bacterial pneumonia, meningitis, and sepsis in children worldwide. The aim of this study was to assess serotype distribution and antibiotic resistance in non-PCV pneumococci causing invasive infections in children <18 years of age in Croatia in a twelve year period during which only risk groups were vaccinated.

Methods

Invasive pneumococcal strains were collected through the microbiological laboratory network with country coverage of >95%. Capsular typing was performed by the Quellung reaction (Statens Serum Institut, Copenhagen). Strains nontypeable by the Quellung reaction were submitted to PCR typing (CDC protocol). In vitro susceptibility testing was performed by disc diffusion method according to EUCAST guidelines. In strains with reduced susceptibility to penicillin (as detected by oxacillin screen disk), MIC for penicillin was determined (E-test, Biomerieux, France).

Results

Among a total of 451 invasive pneumococci 69 isolates (15%) were non-PCV serotypes while 48 isolates (11%) were not covered with any vaccine. The most prevalent non-PCV serotypes belonged to serotype 11A (5 isolates), 15B (4 isolates) and non-vaccine groups 25 (25F, 25A), 38, 43, 44, 45, 46, 48 (5 isolates) and 16 (16F, 16A), 36, 37 (4 isolates). 3% (16 isolates) of all isolates remain nontypeable by methods used. Non-susceptibility to penicillin was 17%, only one isolate was highly resistant. Resistance to macrolides was also 17%.

Conclusions

Non-PCV serotypes were detected in 15 % of all invasive pneumococcal disease in children. Non-PCV isolates were most frequently isolated in children 12– <60 months. Non-susceptibility to penicillin and resistance to macrolides were lower than 20 % and were not serotype specific.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0912

ROTHMUND-THOMSON SYNDROME WITH RESPIRATORY DISTRESS

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Title of Case(s)

Rothmund-Thomson syndrome with respiratory distress

Background

The management of end-organ CMV disease caused by antiviral-resistant strains in the immunocompromised host is challenging because of its difficulty to establish an accurate diagnosis and its poor improvement after initial standard therapy.

Case Presentation Summary

We present a 6-year-old child with Rothmund-Thomson syndrome born to consanguineous parents. He had a combined immunodeficiency (ALC <500 cells/mm³ and impaired response to OKT3) with panhypogammaglobulinemia and severe failure to thrive. He was under IVIG/3weeks and prophylactic cotrimoxazole and had been rejected for HSCT.

He presented fever and shortness of breath at the Emergency Department. The physical examination revealed bilateral scattered rales and wheezing. Blood test showed a CMV viremia of 53,890 UI/mL; CT scan showed interstitial pneumonitis and CMV was detected in BAL (410,438 UI/ml). Histopathology in lung tissue confirmed CMV pneumonitis.

IV foscarnet (180 mg/kg/day) and ganciclovir (10 mg/kg/day) were started but clearing viremia was impossible.

A genotypic assay was performed and yielded a mutation (C592G) in UL97. Since this mutation can be overcome theoretically by increasing the standard dose of ganciclovir, dose was tripled and specific cytotoxic T lymphocytes were infused, achieving viral clearance.

Learning Points/Discussion

If symptomatic disease or viral load is not improving after >2 weeks of ongoing full dose of IV ganciclovir, genotypic resistance should be assessed. Mutations in UL97 can confer low-grade resistance, which can be overcome by increasing the dose of ganciclovir or high-grade resistance, which should lead to switch to foscarnet. In contrast, mutations in UL54 can appear later in time and are related to foscarnet resistance, or cross resistance to ganciclovir and cidofovir. Adjunctive therapies as CTLs infusion or CMV specific IVIg need to be considered in this scenario.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0918

MEASLES OUTBREAK IN PEDIATRIC HEMATOLOGY AND ONCOLOGY PATIENTS IN SHANGHAI, 2015

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Background

Despite substantial progress towards measles control in China, measles outbreaks in immunocompromised population pose a challenge to interrupt endemic transmission. It is important to understand the features of measles in pediatric oncology patients and explore the reasons behind the outbreak.

Methods

We collected demographic, epidemiological and clinical data of immunocompromised measles children. All suspected measles cases were laboratory-confirmed based on presence of measles IgM and/or identification of measles RNA.

Results

From March 9th to Jul 25th in 2015, a total of 23 children with malignancies and post-transplantation were notified to develop measles in Shanghai. Of these 23 patients with the median age of 5.5 years (range: 11months~14 years), 20 (87.0%) had received 1-3 doses of measles vaccine previously; all patients had fever with the median fever duration of 8.0 days; 21 (91.3%) had cough; 18 (78.3%) had rash; 13 (56.5%) had Koplik's spot; 13 (56.5%) had complications including pneumonia and acute liver failure, and 5 (21.7%) vaccinated patients died from severe pneumonia or acute liver failure. All patients except the first patient had hospital visits within 7~21 days before measles onset and 20 patients were likely to be exposed to each other.

Conclusions

The outcome of measles outbreak in previously vaccinated oncology and transplant patients during chemotherapy and immunosuppressant medication was serious. Complete loss of protective immunity induced by measles vaccine during chemotherapy was indirectly indicated. Improved infection control practice is critical for prevention of measles in malignancy patients and transplant recipients.

04A. SCIENCE: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-0920

SURVEILLANCE OF MACROLIDE RESISTANCE IN BORDETELLA PERTUSSIS PRODUCING WHOOPING COUGH IN BARCELONA

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Background

Macrolides are considered the first choice antibiotics for treatment and post-exposure prophylaxis of pertussis. *Bordetella pertussis* resistant-strains have been reported sporadically in some countries. However, in the last years, a significant increase of these isolates has been observed in China, where 92% of clinical strains isolated between 2013 and 2014 were macrolide-resistant. In *B. pertussis*, this resistance is produced by the A2047G mutation in the 23S *rRNA* gene. The objective of this study is to detect the presence of the molecular determinant of resistance to macrolides in *B. pertussis* circulating in Barcelona.

Methods

A total of 237 diagnosed cases of pertussis at Hospital Vall d'Hebron (Barcelona, Spain) between 1986 and 2016 were studied. The samples evaluated in the study were divided in two groups: (I) 192 isolates of *B. pertussis* collected in the period 1986-2016 and (II) 45 respiratory samples collected in 2015 in which *B. pertussis* was detected by PCR. The presence of the A2047G substitution in the 23S *rRNA* gene was studied by an allele-specific PCR.

Results

None of the 192 *B. pertussis* isolates studied or the 45 respiratory samples was found to be positive for the A2047G mutation in the gene encoding the 23S *rRNA* conferring macrolide resistance.

Conclusions

Between 1986 and 2016 the macrolide resistance marker A2047G has not been detected in *B. pertussis* in Barcelona. Despite the significant increase of macrolide-resistant *B. pertussis* isolates recently detected in Asia, azithromycin and other macrolides could still be considered as the first choice agents to treat pertussis in our area. Surveillance of *B. pertussis* macrolide-resistant isolates should continue. This would allow its early detection which in turn would help to establish appropriate measures to prevent its dissemination.

Clinical Trial Registration (Please input N/A if not registered)

N/A

04A. SCIENCE: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-0924

NEW MOTHER'S ACCEPTABILITY OF A BIRTH DOSE PERTUSSIS VACCINE AND THEIR INTENTION TO HAVE THEIR NEWBORN IMMUNIZED: A LARGE, MULTI-SITE, MIXED METHODS SURVEY.

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Background

More than half of Australian babies are estimated to be born without any protection against Pertussis despite widespread availability of a funded prenatal vaccine. Newborn vaccination against pertussis is currently being investigated in Australia and may soon be an alternative. However, acceptability among new mothers has not been determined.

Methods

We surveyed 2490 postpartum mothers in a public and private hospital (Sydney, Australia) to determine their intention to have their newborn vaccinated against pertussis at birth. Using Health Belief Model constructs, we correlated this maternal attitudes towards pertussis and immunisation as well as documented routine newborn vaccination (Hepatitis B vaccine)(Chi-square analysis, SPSS). We also conducted a thematic analysis on maternal decision-making around newborn vaccination.

Results

Of the 2490 mothers surveyed, 83% would have their baby vaccinated against whooping cough. This intention was correlated with neonatal Hepatitis B vaccination(97.4%;<0.001) and reported pertussis booster vaccine receipt(<10 years) by mothers(35.8%; <0.001) and their partners(50.1%; <0.001). Key attitudinal correlates were perceived severity of pertussis infection in a newborn(<0.001), perceived ease of transmission(<0.001) and common in the community(<0.001). Key reasons why mothers declined or were unsure about accepting a birth dose pertussis vaccine included: needing more information (24.8%), perceiving the newborn as "too young" (19.3%) or receiving too many injections (13.9%), and concern over vaccine efficacy or long term effects.

Conclusions

Over 80% of mothers would vaccinate their newborn against pertussis, if available. Key reasons for vaccine decline or uncertainty included the needed additional information, the perception that the newborn was too young or receives too many injections, and concern over vaccine efficacy and long-term effects. Addressing these concerns with effective messaging should be a part of any initiative to include neonatal vaccination in Pertussis control.

Clinical Trial Registration (Please input N/A if not registered)

ACTRN12613000580774

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0925

THE CAMOUFLAGE OF THE DIAGNOSIS OF A PERINATAL INFECTION - EXTREMELY PRETERM CHILDREN AT RISK TO BE STIGMATIZED BY

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Title of Case(s)

The camouflage of the diagnosis of a perinatal infection - extremely preterm children at risk to be stigmatized by

Background

This case include twin brothers, very preterm, of which only 1 survived. It's interesting that survived not the biggest, and not the less severe. It's common in our region to stick the diagnosis "congenital infection" to all premiees. This case is not an exception, but the controversy is the results of blood cultures prelevated at birth, showing some bacteria not characteristic for ...intrauterine infection, but strange to be detected in the first hours of live even for a nosocomial infection.

Case Presentation Summary

Twin boys, 27 weeks, IVF, via cesarean section for abruption placentae.

1st baby - 1020g, bigger, intubated at birth for severe respiratory distress, received surfactant, no hemorrhage, no acidosis, WBC normal 9200, no left shift, but at Xrays severe RDV, started Ampicilline-Gentamycine. After surfactant administration apnea and bradycardia, no response to resuscitation, died at 1hr32min. Blood cultures revealed Klebsiella pneumoniae. At the autopsy - atelectasia and interstitial pneumonia.

2nd baby - 960g, smaller, also intubated at birth for severe RDV, received surfactant; periventricular hemorrhage 2nd degree, WBC 8900 (maxim 10700) so normal, CRP negatives, no left shift, started Ampicilline-Gentamycine, shifted to Imipenem (without clear indication, just because still at ventilator 3rd day), after 1 week to Ceftriaxon. Discharged at home at 3 months. Blood culture revealed Streptococcus hemolyticus III, sensible to Imipenem-Amikacine.

Learning Points/Discussion

1. The diagnosis of Cong. infection is controversial as Klebsiella is a sign of hospital-acquired infections, as Strept. hemolyticus.
2. Very unlikely for Klebsiella at just a few hours of live? after a cesarean section? mother without signs of infection?
3. Severe RDV is appropriate for extremely preterm babies and should not be the single reason to change the antibiotics

17A. EDUCATION: REFUGEE CHILDREN

ESP17-0927

VACCINATION OF REFUGEES, ASYLUM SEEKERS AND OTHER MIGRATING PEOPLE IN FLANDERS: A PRAGMATIC SOLUTION TO PROTECT PEOPLE AND SOCIETY

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Background

In Flanders a public health goal on immunization with an action plan was approved in 2013. As the commonly available vaccination possibilities seem not to be adapted to the needs of some specific groups (e.g. asylum seekers, refugees, migration populations such as Roma) a specific approach might facilitate vaccination coverage (Tailored Immunization Programme TIP).

Methods

A mobile vaccination team was established in 2015. They offer easier vaccination facilities for children in schools not covered by school health services (SHS) (e.g. some Jewish schools), people living camps of migrating Roma people, etc.

With the arrival of the wave of asylum seekers in 2015, a new approach was needed. At the moment of the central registration of the asylum demand, TB screening is performed. This opportunity is used by Fedasil (Federal Agency for the Reception of Asylum Seekers) to offer the first (catch-up) vaccinations at that moment.

Results

The mobile vaccination team first offered catch-up vaccination in some schools without SHS, Now the vaccination programme is offered systematically in those schools. After winning confidence, the team is invited to offer vaccination to new migrating people in some camps.

Fedasil offers vaccination to all new asylum seekers at the moment of their asylum demand. Special attention is paid to the supplementary polio-vaccination for those coming from specific countries and to vaccination against measles (MMR) in order to avoid outbreaks of measles and not endanger the elimination goal of WHO.

Conclusions

A tailored approach with a mobile vaccination team and making use of existing medical consultations to vaccinate asylum seekers and other migrants makes it possible to protect people, their families and society against vaccine preventable diseases as soon as possible after arrival.

22A. SCIENCE: OTHER

ESP17-0928

WHAT IS NEEDED TO FEASIBLY CONDUCT CLINICAL PAEDIATRIC PANDEMIC RESEARCH IN EUROPE: CONSENSUS ON CLINICIAN AND RESEARCHER PRIORITIES

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Background

Infectious disease pandemics may disproportionately affect children and it is essential to include this population in pandemic research to ensure evidence based clinical practice and public health decision-making. The unique features of a pandemic require special considerations of processes to facilitate clinical research. We aimed to identify the key priorities of paediatric clinicians and researchers to feasibly conduct clinical paediatric pandemic research in Europe.

Methods

Mixed method study: Priority needs for conducting paediatric pandemic research were identified from a workshop and interviews with paediatric clinicians and researchers attending the European Society for paediatric Infectious Diseases (ESPID) meeting in 2015. An on-line consensus survey was developed using this information and 85 participants (paediatric clinicians and researchers) from 17 EU and EU associated countries were invited to complete this survey.

Results

23 paediatric researchers and clinicians from ten European countries attended the workshop and 39 participants from fifteen European countries completed the survey.

The top priorities, determined by consensus, focused on structural and operational requirements including: 1) Clarity within the new European clinical trials Directive for paediatric epi/pandemic clinical trials and observational studies; 2) Simplified regulatory processes for research involving collection, use and sharing of anonymised clinical samples and data; 3) Recognition of a common purpose and improved relationship between regulatory bodies, ethics committees and researchers and 4) Coordinated processes for early identification of potential new outbreak cases and pathogen detection.

Conclusions

Our results demonstrate that key changes need to be made to the current regulatory environment to facilitate and improve academic/pandemic research in the paediatric context.

Clinical Trial Registration (Please input N/A if not registered)

18D. SCIENCE: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-0930

MOLECULAR STUDY OF GIARDIA LAMBLIA IN CHILDREN UNDER 5 YEARS OLD IN MAGUDE VILLAGE, MAPUTO- MOZAMBIQUE

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Background

Polymerase chain reaction (PCR) is the method for studying genetic variability in *Giardia lamblia* from different hosts. In Mozambique, most of *G. lamblia* studies do not include genetic characterization.

Methods

We collected 291 stool samples. Parental informed consent was obtained for every participant. We used formalin-ether method, for molecular study we used the triose phosphate isomerase method.

Results

Microscope analysis showed that 83 samples (28.5%) were positive for *G. Lamblia*. Only 46 of the 291 samples (15.8%) were positive. Out of 54.3% (25/46) were female, 45.7 % (21/46) were male. Stool examination revealed the presence of *G. lamblia* in 71.7% (33/46), *Entamoeba coli* 13 % (6/46), *Entamoeba histolytica/dispar* 8.7 % (4/46), *Endolimax nana* 6.5% (3/46), *Chilomastix mesnili*, *Iodomoeba butschlii*, *Hymenolepis nana* 4.3% (2/46) and *Trichuris trichiura* 2.2% (1/46).

The PCR analysis identified *G. lamblia* assemblages A and B, with 24 (53%) and 21 (47%) respectively. There were four different sub-assemblages; AI (37.8% n=17), AII (15.6% n=7), BIII (2 % n=1) and BIV (41 % n=19). One sub-assemblage was mixed (BIV and BIII).

Conclusions

Sub-assemblage BIV was the most prevalent. The second most prevalent was sub-assemblage AI. Our study demonstrate that *G. lamblia* assemblage A and B are prevalent in children <5 years in Magude. These findings suggest that anthroponotic transmission is the main transmission route for *G. lamblia* in Magude.

Clinical Trial Registration (Please input N/A if not registered)

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0931

ONLY THE FLU? – FOUR SIBLINGS WITH LIFE THREATENING RHABDOMYOLYSIS ASSOCIATED WITH INFLUENZA B

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Title of Case(s)

Only the flu? – Four siblings with life threatening rhabdomyolysis associated with influenza B

Background

Rhabdomyolysis is potentially life-threatening and can be triggered by drugs, seizures, trauma, exercise and infections. Particularly for Influenza A it is well known that rhabdomyolysis can occur as complication. Influenza B associated rhabdomyolysis is infrequent.

Case Presentation Summary

An 8 year old girl presented with flu-like symptoms and ambulation difficulty due to myalgia. Laboratory evaluation showed rhabdomyolysis with cardiac involvement. She was treated symptomatically with hydration and forced diuresis. After two days she worsened with dyspnea and needed mechanical ventilation. She went into cardiac arrest and despite aggressive dialysis and immediate resuscitation hyperkalemia and metabolic acidosis were not controllable. The girl died after three hours of resuscitation. At the same time three siblings also suffered from fever and myalgia. Diagnostic evaluation revealed rhabdomyolysis and cardiac involvement with or without renal failure in all of them (Tab. 1). They all needed mechanical ventilation and were set on hemodialysis and Oseltamivir because of suspected influenza infection. None of them was on any medication, toxicologic screening was negative and no trauma was reported. PCR from nose swabs was positive for Influenza B in all children. All recovered after 3-7 days of intensive care. Extensive diagnostic workup did not reveal any predisposition, especially no neuromuscular disease. Considering the familial clustering, a genetic lesion was suspected. Whole genome sequencing revealed mutations in myosin-encoding genes; their clinical significance is currently being

investigated.



Learning Points/Discussion

Influenza B can cause severe rhabdomyolysis with consecutive multi organ failure. Patients with flu-like symptoms, muscle pain and dark urine should be carefully evaluated to decrease mortality and provide optimal care. Early hemodialysis may be life-saving.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0934

EPIDEMIOLOGY AND OUTCOME OF SEPTIC ARTHRITIS IN CHILDREN – A 16-YEAR EXPERIENCE IN A SINGAPORE TERTIARY CHILDREN'S HOSPITAL

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Background

Septic arthritis is a devastating infection with a high rate of sequelae. The aim of this retrospective study is to determine the clinical epidemiology and outcome of children admitted to our hospital with septic arthritis.

Methods

Patients with bacteriologically and/or radiologically confirmed septic arthritis from January 1999 to December 2014 were identified from discharge and laboratory records and data collection was done by retrospective review of their case notes.

Results

75 patients (62.7% male) met the inclusion criteria. The median age at presentation was 6 years (range 2 weeks to 15 years) and 6 patients (8%) were neonates. Fever and localised pain were the main presenting symptoms (84% and 85% respectively). Erythrocyte sedimentation rate (ESR) (1st hour in mm; median 65; range 5–165), C-reactive protein (CRP) (mg/l; median 83; range 5–390) and White Blood Cell (WBC) ($\times 10^9/l$; median 14; range 4.25–32.40) were elevated in 90%, 88% and 69.3 % of patients, respectively. Blood cultures and synovial fluid cultures were positive in 32% and 39% of patients respectively and *Staphylococcus aureus* was the most common organism. Radiological abnormalities were noted in 84 % of patients. 68% underwent arthrotomy and the average hospital stay was 15.39 days. Sequelae of septic arthritis were observed in 9 patients (12%) during follow-up.

Conclusions

Our data suggests that laboratory parameters ESR and CRP were most valuable in diagnosing septic arthritis. Timely diagnosis and appropriate treatment could minimize the complications of septic arthritis.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0935

VACCINATION THRESHOLD FOR THE ELIMINATION OF MEASLES IN FLANDERS: CONFIRMED IN INFANTS, PROGRESSION IN ADOLESCENTS, BUT POOR COMPLIANCE TO THE CAMPAIGN IN ADULTS *T. Braeckman¹, H. Theeten¹, M. Roelants², K. Hoppenbrouwers^{2,3}, S. Blaizot¹, G. Top⁴, P. Van Damme¹, C. Vandermeulen^{3,5}*

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Background

The Belgian strategic plan to eliminate measles contains several vaccination strategies including routine immunization programmes and catch-up campaigns. A new EPI-based survey (2016) assessed the uptake of the recommended measles-containing vaccines in 3 different cohorts: young infants, adolescents and parents of young children. Predictive factors for incomplete vaccination were identified through multiple logistic regression for infants and adolescents.

Methods

Through randomized cluster design 875 toddlers (age 18-24 months) and 1250 adolescents (°2000) were selected from 105 municipalities in Flanders. After consent of the parent(s), 746 (85.2%) families of infants and 1012 (81.0%) of adolescents were interviewed at home. Requested information included socio-demographic characteristics and documented vaccination history. Children's vaccination data were updated from the electronic Flemish vaccine-registry (Vaccinnet) and medical files when incomplete. We assessed coverage of recommended vaccinations in infants and adolescents, including measles-mumps-rubella (MMR) vaccine and inquired about measles vaccination status among mothers and/or fathers of infants.

Results

Coverage rates for the measles vaccination were high at 18-24 months (96.2%) and 81.5% were vaccinated at recommended age. Infants who had two siblings or a non-working mother or changed vaccinator were more at risk for not being vaccinated. The coverage of the booster dose assessed in adolescents reached 93.5% and proved to be lower in adolescents with educational under-achievement and whose mother was part-time working or with a non-Belgian background. Only 56% of mothers and 46% of fathers remembered having received at least one measles-containing vaccine.

Conclusions

Although measles vaccination rate in infants meets the required standards for elimination, administration of the second dose of MMR vaccine and parent compliance to the recent measles catch-up campaign in Flanders leave room for improvement.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0936

COMPARISON OF BD VERITOR SYSTEM WITH FLUORESCENT IMMUNOASSAY RAPID TEST QUIDEL SOFIA FOR DETECTION OF INFLUENZA A+B IN TERTIARY PEDIATRIC CENTER

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Background

The aim of this study was to evaluate the Rapid Antigen Detection Test as a screening tool for influenza virus in children with acute respiratory disease in comparison with multiplex PCR.

Methods

798 positive influenza virus (confirmed by RT-PCR), were retrospectively analyzed. between June 2011 and May 2016 for 5-year surveillance in Tertiary Pediatric Center, AnYang City, Korea. The Veritor system kit was tested during the June 2011 through Dec 2014, and the Sofia system kit was tested during the Jan 2015 through May 2016. All the patients were tested RT-PCR and RADT simultaneously.

Results

Compared to multiplex PCR of influenza A, the positive agreement was 76.5% (Veritor) and 75.0% (Sofia). The negative agreement was 96.1% (Veritor) and 98.2% (Sofia). Compared to multiplex PCR of influenza B, the positive agreement was 36.4% (Veritor) and 75.7% (Sofia). The negative agreement was 99.5% (Veritor) and 99.4% (Sofia).

Influenzatype	RADT	Positive agreement(%) (95%CI)	Negative agreement(%) (95%CI)	PPV(%) (95%CI)	NPV(%) (95%CI)
A	Veritor TM *	76.47%	96.08%	81.25%	98.00%
Sofia TM †	75.00%	98.18%	81.81%	97.30%	
B	Veritor TM *	36.36%	99.51%	80.00%	96.68%
Sofia TM †	75.75%	99.40%	92.59%	97.64%	

Conclusions

The detection rate of influenza A was about 75% in both Rapid Antigen Detection Test, but the detection rate of influenza B was superior in Sofia than Veritor system.

04A. SCIENCE: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-0937

EMERGENCE OF *BORDETELLA HOLMESII* AS A CAUSATIVE AGENT OF PERTUSSIS-LIKE ILLNESS IN BARCELONA

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Background

Bordetella holmesii (Bh) has recently been isolated from nasopharyngeal samples from patients with pertussis-like symptoms in several countries. Most molecular diagnostic kits used for the detection of *Bordetella pertussis* (Bp) target the insertion sequence IS481, which is also found in the Bh genome. For this reason, a pertussis-like illness caused by Bh could be misdiagnosed as a Bp infection. The objective of this study is to identify the presence of Bh on individuals diagnosed with whooping cough by the IS481-assay.

Methods

378 nasopharyngeal samples positive by the IS481-assay obtained between January 2013 and December 2016 at Hospital Vall d'Hebron (Barcelona) were studied. The presence of Bp and Bh was detected by a species-specific real-time PCR assay, based on the detection of the Bp toxin operon, and of the Bh *recA* gene

Results

Of the 378 nasopharyngeal samples analyzed, 369 (97.6%) were positive for Bp and 14 (3.7%) for Bh. Bh was not detected from January-2013 to March 2015. Concurrently with the 2015 epidemic wave, the first Bh cases were detected on April-2015, May-2015 (3 cases), June-2015 (2 cases), August-2015, March-2016, April-2016 (2 cases), May-2016 (3 cases), and June-2016. Five Bp and Bh coinfections were detected on April-2015, June-2015 (2 cases), April-2016 and June-2016.

Conclusions

Bh has emerged as a causative agent of whooping cough in Barcelona. Since 2013, Bh has not been detected in nasopharyngeal samples from patients with pertussis-like symptoms until mid-2015. Afterwards, the presence of Bh has been detected periodically and in some cases Bp and Bh have been codetected in the same patient. Bh prevalence needs to be accurately monitored to assess its contribution in the epidemiology of the pertussis-like illness.

Clinical Trial Registration (Please input N/A if not registered)

N/A

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-0939

CHANGING PATTERN OF ANTIMICROBIAL SENSITIVITY OF MICROORGANISMS CAUSING PEDIATRIC COMMUNITY ACQUIRED URINARY TRACT INFECTION IN A TERTIARY CARE HOSPITAL IN SOUTH INDIA

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Background

Knowledge of the etiology and antibiotic resistance pattern of the organisms causing urinary tract infection is essential for initiating empiric antimicrobial treatment. We undertook a retrospective study of the types of community acquired Urinary Tract Infection (UTI) causing organisms and their antimicrobial susceptibility patterns in 3 different time periods.

Methods

The data of all culture positive UTI in patients aged 1 month to 18 years in our hospital between January 2010 and Mar 2010 was compared with the corresponding periods in 2013 and 2016.

Results

About 7 different species of uro-pathogens were identified from 63 cases in 2010, 80 cases in 2013 and 61 cases in 2016. In all 3 groups, *Escherichia coli* (*E.coli*) was commonest pathogen (62.2% in 2010, 54.5 % in 2013, 70 % in 2016) followed by *Klebsiella* (22 % in 2010 vs 14 % in 2013 and 13.1 % in 2016) and *Proteus sp.* (7.9% in 2010 vs 10 % in 2013 and 3.27%). *Enterococcus sp.* was not isolated in 2010 but seen in 12.5 % in 2013 and 6.5% in 2016..

Out of the 7 antimicrobials tested, the organisms showed highest resistance to ampicillin & co-trimoxazole. There was a dramatic increase in the Extended Spectrum Beta Lactamase (ESBL) producing organisms from 15% in 2010 to 65% in 2013 which continued into 2016.

Conclusions

Though *E.coli* remains the most common pathogen causing UTI, the increase in the ESBL producing organisms (15% to 65%) is alarming. The high rate of ESBL-positive organisms and their resistance to commonly used antibiotics brings a concern for future options in treating these conditions. There is risk of therapeutic failure when cephalosporins are used as the first line agents.

02B. EDUCATION: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-0940

A COMPARATIVE EVALUATION OF RELATIVE POTENCY OF DIFFERENT BRANDS OF FOSFOMYCIN AVAILABLE IN INDIA BY AGAR DIFFUSION METHOD: IMPLICATIONS FOR CLINICAL MANAGEMENT

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Background

Therapeutic use of intravenous fosfomycin sodium may be considered as the last option for the treatment of multidrug resistant Gram negative bacilli/potentially drug-resistant infection where there is documented colistin resistance and where there is no other alternative option. In India several generic brands of fosfomycin sodium, are available under different brand name. There is a lack of information regarding the relative potency of these brands of fosfomycin.

The objective of this study was to evaluate and compare the relative antimicrobial potency of three Indian generic formulations of fosfomycin sodium with an international brand.

Methods

The study was done in the microbiology laboratory at Tata Medical Center, Kolkata, India. The methodology for relative potency determine by agar diffusion technique followed by Clinical Laboratory Standard Institute (CLSI) guidelines. All four tested antibiotic were reconstituted with analytical grade water. The potency test concentration was fixed to 260µg/µl based on the median Cmax of fosfomycin from previous study. ATCC strains were used to check the potency variation. The median zone diameter was used for calculation of the product relative potency compared with the international brand by a mathematical equation.

Results

Results showed a difference of minus 10 to minus 57% of the potency of the generic brands when compared against the international brand. The relative potency difference with double strength of Cmax was also seen to vastly vary based on the tested organism.

Conclusions

This study showed a suboptimal relative potency of all the tested Indian fosfomycin lot as compared to international brand. Lower potency may lead to under dosing and resultant decrease in therapeutic effect. The findings if confirmed by advanced methods like MS or HPLC and in various batches would have significant implications for patient management.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-0941

SYMPTOMATIC CONGENITAL CYTOMEGALOVIRUS INFECTIONS IN SEROPOSITIVE WOMEN

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Title of Case(s)

Symptomatic Congenital Cytomegalovirus Infection

Background

The risk of congenital CMV (cCMV) is highest for primary infection during pregnancy, but secondary infections (through reactivation of latent virus or re-infection with a new strain) contribute to a greater proportion of symptomatic CMV infections than assumed so far. Once an expecting mother shows seroconversion or signs of active infection, there are no established procedures to reduce the risk of transmission, or fetal treatment. Postnatal (val-)ganciclovir therapy improves hearing ability and neurodevelopmental outcome, but studies suggest that the benefit of a 6-week course could wane over the first years of life.

Case Presentation Summary

Here we describe a case of symptomatic congenital CMV infection with prior maternal immunity. After uneventful pregnancy until 26 weeks of gestation, fetal ultrasound revealed subependymal cysts, ventriculomegaly and white matter hyperintensities. Suspected CMV infection was confirmed by PCR from amniotic fluid and fetal MRI at 26 and 36 weeks of gestation. After birth, the newborn presented with jaundice, hepatosplenomegaly, petechiae and microcephaly. CMV was detected in infant blood and urine, and intravenous ganciclovir was initiated and continued orally for a total period of 6 weeks. By newborn hearing screening, unilateral sensorineural hearing loss was detected. Apart from persisting deafness, the child exhibited normal neurological development until the last follow-up with 4.5 years.

Learning Points/Discussion

Recent studies show favorable effects on audiologic and neurodevelopmental outcomes after 6 months long-term treatment. However, the most effective strategy to prevent vertical CMV transmission is hygiene counseling of childbearing women, which according to our case applies to seronegative as well as seropositive women. Beside, postnatal hearing screening of all newborns followed by CMV-PCR and antiviral therapy in symptomatic infants provides best practice to reduce the burden of CMV sequelae.

04E. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0944

EAST AFRICAN CHILDREN WITH ACUTE FEBRILE ILLNESS RAPIDLY CLEAR RESPIRATORY TRACT INFECTIONS BUT FREQUENTLY ACQUIRE NEW ASYMPTOMATIC INFECTIONS WITHIN 14 DAYS

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Background

Molecular methods like PCR-techniques have revolutionized infectious disease epidemiology in children. Multiple findings of pathogens in one individual make the interpretation of which infection is actually causing the illness difficult. It is not known whether multiple pathogen detection is due to prolonged infections or frequent exposure. The aim of this study was to analyse short term pathogen clearance from nasopharynx and frequencies of new respiratory tract infections in febrile children.

Methods

We included 207 children 2-59 months of age with uncomplicated acute febrile illness, defined as history of fever in the preceding 24 hours or a measured axillary temperature of $\geq 37.5^{\circ}\text{C}$. Patients were recruited from the outpatient department of a primary health centre in Zanzibar, Tanzania April-July 2011. Paired nasopharyngeal swab samples, the first collected on inclusion and the second 14 days later and analysed by multi-targeting real-time PCR for 15 respiratory pathogens. An age- and geographically-matched asymptomatic control group (n=166) underwent nasopharyngeal sampling on one occasion.

Results

On the day of inclusion 158 of 207 (76%) patients had at least one pathogen detected, in total 196 infections. After two weeks only 36/196 (18%) of these pathogens were still detected. Most of these persisting infections had a higher Ct-value, indicating a decrease in pathogen load. Almost all infections with enterovirus, influenza A virus, influenza B virus, metapneumovirus and parainfluenza virus were cleared on day 14. At follow-up, 95/112 (85%) of the pathogens were not found at base line and thus regarded as new infections.

Conclusions

Febrile children in Zanzibar rapidly clear respiratory tract infections but are frequently infected with new pathogens. Longitudinal sampling is of outmost importance to understand the epidemiology and course of respiratory tract infection in children.

Clinical Trial Registration (Please input N/A if not registered)

clinicaltrials.gov: NCT01094431

19B. EDUCATION: TREATMENT OF DRUG RESISTANT TB (MONORESISTANT, MDR, XDR)

ESP17-0945

HETERORESISTANCE FOR RIFAMPICIN IN AN INFANT WITH DISSEMINATED TB AND JAK 3 HOMOZYGOUS SEVERE COMBINED IMMUNODEFICIENCY

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Title of Case(s)

Heteroresistance for Rifampicin in a infant with disseminated TB and JAK 3 homozygous severe combined immunodeficiency

Background

Tuberculosis (TB) continues to be a killer disease in the developing world. The *Xpert MTB/RIF* assay is a fully automated molecular diagnostic test for TB disease . It can simultaneously detect *Mycobacterium tuberculosis* (MTB) complex DNA and mutations associated with rifampicin (RIF) resistance (a reliable proxy for MDR-TB) directly from specimens in less than 2 hours, and it minimizes staff manipulation and biosafety risk

We present herewith an infant with disseminated TB in whom one specimen showed MTB RIF resistance while another specimen showed MTB RIF sensitive

Case Presentation Summary

6 months boy, first born to 3rd degree consanguineous parents was admitted with severe pneumonia. Endotracheal aspirate detected MTB RIF resistance by Genexpert. Bone marrow biopsy showed granulomas suggestive of tuberculosis and in the aspirate MTB RIF sensitive was detected by Genexpert. He had received BCG and completed 3 primary doses of DPT-Hib- HBV, OPV and PCV. The child was evaluated for immunodeficiencies. He was seronegative for HIV. Lymphocyte subset analysis by flow cytometry was suggestive of SCID. He was started on second line antituberculous drug and replacement doses of IVIG. He has improved considerably . Genetic tests have confirmed JAK 3 homozygous mutation for SCID. The two specimens were cultured for AFB but showed no growth.

Learning Points/Discussion

In some patients, *M. tuberculosis* strains are composed of a mixture of susceptible and resistant subpopulations, so-called heteroresistant strains It is considered a preliminary stage to full resistance . Conventional drug susceptibility testing has been found to be superior to molecular tests to detect heteroresistance especially when the resistant population forms less than 1% of the mycobacterial population

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0946

COMPLICATIONS OF INFECTIOUS MONONUCLEOSIS: A STUDY ON HOSPITALIZED CHILDREN

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Background

Mononucleosis is a common infectious disease in children. Most of them recover over a period of weeks and months but occasionally it can be complicated by a wide variety of complications.

Methods

In this study we analyzed the frequency of different complications of infectious mononucleosis in the children hospitalized in our department on a period of 2 years. We performed a retrospective study on the children hospitalized with serologic confirmation of mononucleosis disease in the Pediatric Department of the National Institute of Infectious Disease „Prof. Dr. Matei Bals” during 2014-2016. Diagnosis is confirmed with serological testing (IgM antibodies for EBV). We analyzed the frequency of different possible complications.

Results

We found a total number of 64 cases of acute mononucleosis. The complications noted were hepatitis (56,25%), hematologic disturbances (anemia, thrombocytopenia - 48,44%), electrolytic imbalance and hypoglycemia caused by dehydration syndrome (46,87%), pneumonia (22,22%) skin rash (6,25%) , encephalitis (1,56%), periorbital edema (1,56%), conjunctivitis (1,56%).

Conclusions

Acute mononucleosis is a frequent infection in children, the most common complication is hepatitis followed by hematologic disturbances and electrolytic imbalance. The most severe complication was acute encephalitis followed by subsequent epilepsy.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-0948

HUMAN HERPESVIRUS 7 RELATED ACUTE ENCEPHALOPATHY WITH BIPHASIC SEIZURES AND LATE REDUCED DIFFUSION

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Title of Case(s)

HUMAN HERPESVIRUS 7 RELATED ACUTE ENCEPHALOPATHY WITH BIPHASIC SEIZURES AND LATE REDUCED DIFFUSION

Background

Acute encephalopathy with biphasic seizures and late reduced diffusion (AESD) is a recently described entity so far exclusively in East Asian children. It is diagnosed on the ground of specific clinicoradiological criteria; biphasic seizures in the acute phase and reduced diffusion in the subcortical white matter in MRI in the subacute phase. Viral pathogens are often involved. Herein we describe the first case of AESD in a Caucasian immunocompetent child related to HHV7 infection.

Case Presentation Summary

A 6-year old girl of Greek origin was presented with febrile status epilepticus. CSF and MRI were normal on admission. Thinking of encephalitis extensive analysis for infectious, metabolic and autoimmune diseases was done with no apparent cause and she was empirically put on ceftriaxone, acyclovir and antiepileptic therapy. Despite a mild improvement on the 3rd day of symptoms she subsequently deteriorated with recurrence of seizures and severe cognitive impairment. A second MRI showed symmetrical restricted diffusion at the frontal and parietal white matter. A new spinal tap was non-pleocytic but HHV7 DNA was detected in CSF and pharyngeal swab. Transaminasemia was noted. On the ground of clinical and radiological findings AESD was postulated. Treatment switched to ganciclovir, g-globulin and high dose steroids with a significant improvement and no detection of CSF HHV7 DNA after 21 days course. The patient recovered gradually with excellent motility and slightly deficient verbal communication at 2 months follow-up.

Learning Points/Discussion

AESD diagnosis is based on clinicoradiological criteria, often non-accompanied by pleocytic CSF and characterized by hyperglycemia and transaminasemia. Here we present the first case of HHV7 related AESD in an immunocompetent child beyond 2 years old, of Caucasian origin.

20A. SCIENCE: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0955

COST-EFFECTIVENESS OF QUADRIVALENT INFLUENZA VACCINE IN COMPARISON TO TRIVALENT INFLUENZA VACCINE IN BRAZIL USING A DYNAMIC MODEL

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Background

Trivalent influenza vaccines (TIVs) containing three strains (A/H1N1, A/H3N2, one B strain) have been recommended in Brazil for many years. However, emerging co-circulation of both B-lineages and difficulty in predicting next season predominant B lineage has led to the development of quadrivalent influenza vaccines (QIVs) containing a second B strain. This analysis evaluates the public health and economic impact of using QIV instead of TIV in Brazil for the paediatric population (≥6 months to 4 years old included).

Methods

A dynamic compartmental model has been used to simulate influenza dynamics in Brazil under a TIV or a QIV program over 10 years (2017-2026). The model considers lineages' circulation, inter-individual contacts, population vital and immunological dynamics, vaccine efficacy (VE) by strain, and cross-protection. Subsequently, a decision tree model evaluated the cost-effectiveness of replacing TIV with QIV considering influenza-related disease outcomes and corresponding costs. Costs were estimated in 2016 Brazilian Reals (BRL); discount rate was 5%.

Results

Over 10 years, depending on the epidemiological scenario considered, a switch to QIV would prevent an additional 1.1M to 2.1M cases of influenza B, 21K to 39K hospitalizations, 3.3K to 6.1K deaths, would result in 38,783 to 71,074 QALYs gained. Considering the cost-effectiveness threshold of 3 times the GDP per capita, the cost-effective QIV price threshold per dose would be between BRL 57.8 and 94.6 from a public payer perspective and between BRL 70.5 and 117.8 from a societal perspective.

Conclusions

The switch from TIV to QIV in the paediatric population in Brazil would substantially reduce the number of influenza B infections, hospitalizations and deaths for all the population. QIV is expected to be cost-effective compared to TIV if the price per dose remains below the aforementioned prices.

Clinical Trial Registration (Please input N/A if not registered)

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-0956

DETECTION OF MENINGITIS PATHOGENS PREVALENT IN CULTURE NEGATIVE PEDIATRIC CSF SAMPLES COLLECTED ACROSS INDIA WITH REAL-TIME MULTIPLEX PCR

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Background

Meningitis remains a public health priority with approximately 100 thousand deaths per year in India. Though identification of specific organisms is of critical importance for judicious treatment, the evidence based diagnosis is still a challenge. Currently available methods such as Gram stain, culture, latex agglutination (LA) are less sensitive and hindered by the use of antibiotics. Consequently, culture negative CSF are of diagnostic dilemma for physicians. Rapid progression of clinical manifestations and need of 48 hrs for culture identification often encourages indiscriminate use of antibiotics.

In the study we present the use of Fast-track diagnostics multiplex PCR for pathogen detection.

Methods

120 bacterial culture negative CSF samples were subjected to testing. These samples were collected from children clinically suspected of meningitis. They were subjected to multiplex PCR on Qiagen Rotagene real-time PCR with FTD bacterial meningitis and Neuro 9 kit. Manufacturer's protocol was followed for testing.

Results

Out of 120 samples tested, 10 were positive for bacteria and 13 were positive for Virus. *S.pneumoniae* was detected in 8 of 10 samples. *H.Influenzae* and *Neisseria meningitidis* was present in one sample each. Mixed infection of *S.pneumoniae* and *Neisseria meningitidis* was present in one sample. The most common virus identified was Parvovirus B19 (8 No's), followed by 2 Varicella Zoster Virus and 1 each of Epstein Barr Virus, Human Herpes Virus-6 and Adenovirus.

Conclusions

The results of our preliminary study point out the usefulness of qmPCR based assay to establish the etiology of meningitis in settings where substantial number of specimens are culture negative. The findings suggest that pneumococcal meningitis is more prevalent in India than was previously suspected. The diagnostic molecular tool provides simultaneous detection of viral pathogens which is a neglected parameter.

20A. SCIENCE: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0960

EFFECTS OF 7 YEARS OF IMMUNIZATION WITH HIGHER-VALENT PNEUMOCOCCAL CONJUGATE VACCINES CHILDREN IN GERMANY

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Background

Two generations of PCVs have been used in Germany since the general recommendation in 2006, initially PCV7, replaced with PCV13 (mainly) and PCV10 in 2009. Few cases of vaccine-type IPD remain, particularly among children who adhered to the 3+1 schedule. We sought population-level factors that impact the likelihood of contracting vaccine-type IPD.

Methods

Pneumococcal isolates recovered from children with IPD were serotyped at the GNRCs using the Neufeld-Quellung-reaction.

Results

From July 2015 to June 2016, 100 IPD isolates recovered from children <2 years were sent in, of which only 18 had PCV13 serotypes. This represents a reduction of 35% compared to 2005/2006 (before vaccination introduction) and a reduction of 20% since the introduction of higher-valent vaccines. Among the PCV13-non-PCV7 serotypes, reductions were observed for serotypes 1 (-100%), 6A (-100%), 7F (-89%) and 19A (-75%). Serotype 3 showed no reduction, serotype 5 remains very rare in Germany. Among the remaining 18 PCV13 cases in children <2 years reported in 2015/2016, nine children were not vaccinated. Among the non-vaccine serotypes, 10A, 12F, 15A/B/C, 24F and 38 were most prevalent.

Compared to 2009/2010, among children 2-4 years and 5-16 years reductions were observed for serotype 1 (-100% and -92%) and serotype 7F (-100%, -50%), whereas cases of serotypes 5, 6A and 19A were rare in these age groups. Serotype 3 cases have decreased among 2-4 year old children from 2 to 1 and from 7 to 6 cases in 5-15 year olds.

Conclusions

More than seven years after the introduction of higher-valent vaccines, PCV13 serotypes have almost disappeared among children. Currently, serotypes 10A, 15A/B/C, 12F, and 24F are the most prevalent serotypes among children <16 years in Germany.

Clinical Trial Registration (Please input N/A if not registered)

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-0961

MENDELIAN SUSCEPTIBILITY TO MYCOBACTERIAL DISEASE: A CASE REPORT

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Title of Case(s)

MENDELIAN SUSCEPTIBILITY TO MYCOBACTERIAL DISEASE: A CASE REPORT

Background

This case is interesting because the Mendelian susceptibility to Mycobacterial disease is a rare immunodeficiency. Patient with this illness usually onset with an infection by *Bacillus Calmette-Guerin* in the vaccinated countries, or by non tuberculous Mycobacteria in other countries. This case is an infection by *Mycobacterium tuberculosis*, with cerebral pain (tuberculomas) what is a very rare onset

Case Presentation Summary

Mendelian susceptibility to mycobacterial disease (MSMD) is an immunodeficiency caused by defects in the phagocytic mononuclear system, which favor infections by intracellular pathogens. Its onset as a severe disease caused by the *Bacillus Calmette-Guerin* (BCG) vaccine is typical amongst the vaccinated population, as in the case of non-tuberculous Mycobacteria or other intracellular organisms such as *Salmonella* or *Listeria* in settings with a low incidence of tuberculosis. We describe the clinical case of a two-year-old female patient diagnosed with MSMD who developed severe miliary and cerebral tuberculosis, without involvement of her cerebrospinal fluid (CSF), as well as her subsequent evolution.

Learning Points/Discussion

Patient with this illness usually onset with an infection by *Bacillus Calmette-Guerin* in the vaccinated countries, or by non tuberculous Mycobacteria in other countries. This case is an infection by *Mycobacterium tuberculosis*, with cerebral pain (tuberculomas) what is a very rare onset

In this case the cerebral pain is caused by tuberculomas, originated by hematogenous dissemination, it is rare to find a severe tuberculosis illness in childness, with cerebral pain and normal CSF

It is important to suspect an immunodeficiency in case of several tuberculosis illness onset

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0962

INTRACRANIAL COMPLICATIONS OF FUSOBACTERIUM NECROPHORUM

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Title of Case(s)

An uncommon complication of a common infection

Background

Fusobacterium necrophorum is a non spore forming anaerobe usually found in the oropharynx as part of the normal flora. It is an infrequent cause of acute otitis and mastoiditis in young patients. Meningitis and cerebral abscesses are very rare and can have devastating effects.

Case Presentation Summary

We present the case of a 2 year-old girl with an otitis media with facial palsy. She started ceftriaxone and underwent a myringotomy. After three days she presented meningeal signs. The lumbar puncture showed 62149 leucocytes with 11,0 mg/dL of glucose and 92,3 mg/dL of proteins. The cultural exam was negative. A MRI-CT revealed an otomastoiditis and an epidural abscess. She underwent mastoidectomy and started vancomicine and ceftriaxone. She was discharge with a residual facial weakness and hearing impairment. At follow-up, 1 month later, the CT revealed an important destruction of the mastoid associated with an exuberant bony labyrinth osteitis. Clinically she still maintained hearing impairment. Bacterial DNA in the liquor showed *Fusobacterium necrophorum*. She returned to the OR for cleaning of the inner ear and also started amoxiciline plus clavulanic acid. One month later the patient recovered part of her hearing and new MRI and CT showed an improvement of the inflammatory process.

Learning Points/Discussion

Fusobacterium necrophorum is an emergent agent. This infection, when arising from the ear, seems to affect a younger age group and have a much higher rate of intracranial complications. It can bring about the rapid destruction of one of the most dense of human bones. This case shows the remarkable ability of the paediatric brain to overcome the impressive destruction of the inner ear as our patient recovered her facial movements and almost normal hearing.

22A. EDUCATION: OTHER

ESP17-0964

A CASE OF ANTI-N-METHYL-D-ASPARTATE RECEPTOR ENCEPHALITIS INDUCED BY HERPETIC ENCEPHALITIS IN A 9 MONTH-OLD INFANT

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Title of Case(s)

A case of anti-N-Methyl-D-Aspartate receptor encephalitis induced by herpetic encephalitis in a 9 month-old infant

Background

Anti-N-Methyl-D-Aspartate receptor (NMDAR) encephalitis is a recently described yet increasingly recognized entity. The role of preceding herpetic encephalitis as a trigger of NMDAR antibody synthesis has been demonstrated in literature. A high index of clinical suspicion is warranted, given its high mortality and the potential for treatment.

Case Presentation Summary

A nine month-old infant was admitted with a four day history of fever, diarrhea and vomiting. No significant findings were revealed on clinical examination and laboratory tests. Five days later, she developed irritability and restlessness. CSF examination revealed lymphocytic pleocytosis, increased erythrocytes and low glucose. Treatment with iv acyclovir was initiated. HSV-1 was detected in PCR testing of CSF. After 21 days of acyclovir treatment, she was discharged in good condition. The following day she was readmitted with fever and developed chorioathetosis, orofacial movements, dystonia and opisthotonic postures. She was started on acyclovir, γ -globulin and antiepileptic treatment and transferred to ICU. Differential diagnosis included relapse of herpetic encephalitis and anti-NMDAR encephalitis. PCR testing of CSF for HSV was negative. NMDAR antibodies were detected in CSF and blood, establishing the diagnosis of anti-NMDAR encephalitis. She was treated with γ -globulin and methylprednisolone. Not responding, she received treatment with rituximab and gradually improved. Four months later, she was discharged presenting mild chorioathetoid movements and psychomotor retardation.

Learning Points/Discussion

Anti-NMDAR encephalitis should be suspected in children with acute behavioral change, seizures, dystonia or dyskinesias. The diagnosis is confirmed by the detection of IgG antibodies to the GluN1 subunit of the NMDAR in serum or CSF. It should be considered in all patients with new or recurrent neurological symptoms following recovery from HSV encephalitis.

19C. SCIENCE: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-0966

MONOCYTE-DERIVED MACROPHAGES (MDMS) ACTIVITY AGAINST MYCOBACTERIUM IN PATIENTS WITH PRIMARY IMMUNODEFICIENCIES

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Background

Impaired ability to kill mycobacteria is well demonstrated in genetic defects that involve IL12/INF γ axis and ROS production. However, little is known about other immunological pathways possibly involved. Our study aimed to evaluate *in vitro* the anti-mycobacterial activity of MDMs in different primary immunodeficiencies in order to figure out the capacity to solve BCG infection and to detect new pathways involved in this specific response.

Methods

Sorted CD14⁺ cells from patients with primary immunodeficiencies were cultured for 7 days with huM-CSF to obtain MDMs. MDMs were infected with BCG and/or BCG-lux (modified with luciferase gene). Mycobacterial viability was evaluated by colony forming unit (CFU) and/or relative light unit (RLU).

Results

Initially we validated the BCG-lux assay enrolling healthy donors and X-CGD patients. Mycobacterial viability evaluated by both CFU and RLU showed that only X-CGD patients were unable to control BCG infection because their defective ROS production.

Then we studied by BCG-lux assay 4 APDS pts, 1 HIGM pt, 1 RAG1 pt, 2 XLA pts and 1pt with MYD88/CARD9 deficiency. Results showed that MDMs of all APDS and MYD88-CARD9 deficient patients failed to solve BCG infection demonstrating a crucial role of the PI3K/Akt/mTOR pathway and MYD88/CARD9 axis in the immunological response to Mycobacterium. Moreover MDMs from HIGM and RAG1 patients showed a normal control of the BCG infection, suggesting that the susceptibility to mycobacterium is due only to a dysfunction in T cell compartment. Finally, MDMs of XLA patients showed a normal anti-mycobacterial activity.

Conclusions

We showed that anti-mycobacterial *in vitro* assay performed on patients with primary immunodeficiencies could provide new information on mechanisms involved in the defense against mycobacteria, that could be useful to identify new targets for medical treatment.

Clinical Trial Registration (Please input N/A if not registered)

22A. EDUCATION: OTHER

ESP17-0967

GRANULICATELLA ADIACENS INFECTION IN CHILDREN

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Title of Case(s)

Granulicatella adiacens infection in children

Background

Granulicatella spp. are uncommon causes of infection. These microorganisms are usually difficult to identify and treat. *G. adiacens* has been associated with bacteremia and endovascular, central nervous system, ocular, oral, bone and joint, and genitourinary infections.

Case Presentation Summary

The study was conducted at Dr. Sami Ulus Maternity and Children's Health and Diseases Research and Education Hospital, a tertiary care center in Ankara, Turkey. Blood cultures were screened for *Granulicatella* spp. between January 2005 and January 2017 retrospectively. The clinical and laboratory features of patients were documented. During the 12-year study period, 4125 patients with positive blood culture results were found. Seven patients (five males and two females) were diagnosed with *G. adiacens* infection (0.1%). The mean age of the patients were 79.5 ± 49.8 months (median: 96 months, range: 10-140 months). Three patients had bacteremia, two patients had central line associated bloodstream infection (CLABSI), one patient had bacteremia and pneumonia, and one patient had infective endocarditis. Four of the infections were community acquired, and three were health-care associated. All of the patients fully recovered.

Learning Points/Discussion

Since *G. adiacens* might be responsible from invasive infections, awareness of clinicians and suspicion and identification of this microorganism by microbiologists is important for prompt diagnosis and treatment in children.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0968

BURDEN OF VACCINE PREVENTABLE DISEASES IN THAILAND AMONG CHILDREN ≤5 YEARS; ESTIMATES BASED ON 2015 GLOBAL BURDEN OF DISEASES, INJURIES, AND RISK FACTORS STUDY

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Background

World Health Organization estimates that about 1.5 million children around the world died in 2015 because of diseases that can be prevented by vaccination. Diseases caused by *Streptococcus pneumoniae*, rotavirus, and *Haemophilus influenzae* type b (Hib) were the leading causes. In Thailand, mumps, rubella, and measles were the most reported cases.

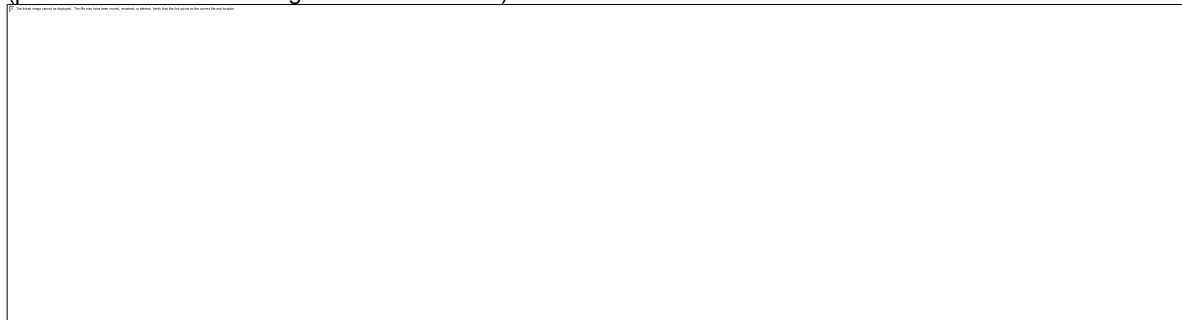
In order to assess the potential burden of vaccine preventable diseases in Thailand, we used the 2015 Global Burden of Disease (GBD) Study.

Methods

The GBD study had generated annual estimates of deaths, years of life lost due to premature death (YLL) and disability-adjusted life year (DALY) for 249 causes across 195 countries from 1990–through 2015. Within this database, 7 categories of potentially vaccine-preventable diseases were identified: hepatitis (A and B), cervical cancer, dengue, diarrhea, meningitis (pneumococcal and meningococcal), respiratory infections and otitis media.

Results

In 2015, lower respiratory infections caused 292 deaths, 25,039 YLLs and 25,748 DALYs annually in children ≤5 years, representing 81%, 81% and 57 % of the combined burden for the 7 selected categories, respectively. Diarrhea was the second most common cause. Dengue had about similar disease burden to meningitis (pneumococcal and meningococcal combined).



Conclusions

GBD estimates for Thailand reveal large burden of diseases that can be reduced by using the current licensed and available vaccines not yet been implemented in the country. For example, in children ≤5 years, the burden of lower respiratory infections and diarrhea could be reduced by Hib, pneumococcal, influenza and rotavirus

immunization. The extent of this reduction will depend on the epidemiology and etiology of these conditions in Thailand.

22A. EDUCATION: OTHER

ESP17-0971

PEDIATRICIANS' ATTITUDES AND MANAGEMENT TOWARDS OTITIS MEDIA AND EAR PAIN IN TURKEY

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Background

Acute otitis media (AOM) is predominantly a disease of childhood and common reason for antibiotic prescribing. The treatment of AOM has significant impact on child health and healthcare costs. Ear pain is the main symptom of AOM, resulting in parents frequently seeking medical assistance for their children.

Methods

Multicenter descriptive questionnaire study was conducted on 20 centers from different geographic location of Turkey with 977 pediatricians between 1 June 2015 and 30 December 2016. The questionnaire including sociodemographic variables, experiences and treatment approaches of pediatricians for AOM and ear pain was formed as 20 questions.

Results

The mean-age of pediatricians was 32,29±6.9 years old. The female-to-male ratio was 1.8:1. Of participants 58,2% was physician assistant, 36,5% was specialist and 4,3% was lecturer. Watchful waiting rates versus immediate antibiotic treatment of pediatricians were %41,6. Physician assistants used watchful waiting strategy less than specialists and lecturers (p<0.004). Also watchful waiting strategy was commonly performed in pediatric clinics where AOM was diagnosed frequently (p<0.001). The most common prescribing antibiotics for AOM were amoxicillin clavulanate (77,2%), amoxicillin (12,7%) respectively. The choices of ear pain treatment were acetaminophen (26,8%), ibuprofen 29,4% and alternating between ibuprofen and acetaminophen (43,9%). 34,6% of participants recommended topical agents for otalgia. Topical agents were commonly recommended by physicians assistants than specialists and lecturers (p<0.001). 58,4% of pediatricians

had experiences for the parents' usage of variety of herbal and folk remedy such as breast milk olive oil,herbal product for earache of their children.

Conclusions

Our series is one of the big studies for assessing pediatricians' attitudes and management towards AOM and otalgia.Undergoing watchful waiting and administration of immediate antibiotic treatment in certain conditions will help to avoid the medical,economic and social problems according to unnecessary prescribing.Systemic and topical otalgia treatment are well-accepted in Turkey.However pediatricians must be careful for alternating between ibuprofen and acetaminophen in otalgia treatment due to side-effects.

20A. EDUCATION: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-0973

HUMORAL IMMUNITY TO VARICELLA ZOSTER VIRUS 7 YEARS AFTER VARICELLA VACCINATION

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Background

To assess immunogenicity of the varicella vaccine in children 7 years after vaccination.

Methods

In 2007 in Osaka city, 129 nursery school children without history of varicella or receiving varicella vaccine were administered varicella vaccine. Children with primary vaccine failure received a subsequent dose 3 months after vaccination. All had confirmed seroconversion. Seven years later, with informed consent, we collected questionnaires related to varicella until 2014 and measured the gpELISAlog₁₀ and IAHA log₂ titers of varicella- unaffected children.

Results

We obtained questionnaires from 25 children (7–11 years old). Of 15 varicella- unaffected children, 11 children showed antibodies in 2014. The mean gpELISA log₁₀ value of 7 children with one-dose vaccination was 3.34 ± 0.45 (S.E.); that of 4 children with two-dose vaccination was 3.39 ± 1.02 ($p = .09$). The mean IAHAlog₂ value of 11 unaffected children was 3.91 ± 0.84 . Eight of 11 (73%) held ≥ 2 of the considered IAHAlog₂ level for inhibition of varicella development. In 2007, 2.35 ± 0.61 of the mean gpELISA log₁₀ values of 7 children with one-dose vaccination was found to be significantly lower than 3.55 ± 0.20 of that of 4 children with two-dose vaccination ($p = .027$). The mean gpELISA log₁₀ value of 10 children with secondary vaccine failure, who had developed varicella after two-dose vaccination was 2.00 ± 0.06 , which was significantly lower than the 2.79 ± 0.24 of the 15 unaffected children ($p = .022$).

Conclusions

Approximately 30% of children show the lower antibody level for inhibition of varicella development 7 years after varicella vaccination. Two-dose universal varicella vaccination at 6-month-intervals was started from 2014 in Japan. An additional vaccination strategy should be considered.

02A. SCIENCE: ANTIMICROBIAL RESISTANCE

ESP17-0975

USING POINT-OF-CARE C-REACTIVE PROTEIN AND PROCALCITONIN TO TARGET ANTIBIOTIC PRESCRIPTION FOR FEBRILE ILLNESSES IN UNDER-FIVES: EXPERIENCE FROM A CLINICAL TRIAL IN DAR ES SALAAM, TANZANIA.

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Background

Management of febrile illnesses in children at outpatient level in resource-poor settings remains inadequate. Antibiotic overuse is a great challenge. We sought to determine the usefulness and safety of using point-of-care (POCT) C-reactive protein (CRP) and procalcitonin (PCT) in deciding on antibiotic prescription for respiratory infections and fever without source (FWS).

Methods

This is a subgroup analysis including children with non-severe respiratory infections or FWS from a randomized, controlled non-inferiority trial that investigated a novel electronic algorithm (e-POCT) for management of fever among under-fives in Dar es Salaam, Tanzania. For non-severe respiratory infections, antibiotics were given based on the following criteria. Intervention arm: i) respiratory rate (RR) between the 75th and 97th%ile for age and temperature based on a European derivation study and ii) CRP \geq 80mg/L; control arm: current World Health Organization recommendations (RR $>$ 50/min). For FWS, antibiotic prescription was based on the following criteria: CRP \geq 80mg/L or PCT \geq 4ug/L (intervention); positive urine dipstick or positive typhoid POCT (control). All children were followed until clinical cure or death.

Results

1268 (intervention) and 1258 (control) patients were included in this analysis (loss to follow-up 0.4%). The proportion of clinical failure by day 7 was 2.2% in the intervention and 3.8% in the control arm (relative risk [RR] 0.59, 95% confidence interval [CI] 0.37-0.94). There were less severe adverse events in the intervention (0.3%) versus control arm (1.2%), (RR 0.33, 95% CI 0.12-0.90). Antibiotics were prescribed in 6% of children in the intervention versus 32% in the control arm.

Conclusions

In the Dar es Salaam outpatient population, CRP and PCT integrated into a clinical algorithm have the potential to improve management of febrile children with respiratory infections and FWS through improved targeting of antibiotic prescription.

Clinical Trial Registration (Please input N/A if not registered)

NCT02225769

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-0976

CLINICAL CHARACTERISTICS AND THE IMPACT OF VANCOMYCIN-RESISTANCE ON THE OUTCOMES IN ENTEROCOCCAL BACTEREMIA DIAGNOSED IN FEBRILE NEUTROPENIC CHILDREN

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Background

Enterococci are common cause of bacteremia in immunocompromised patients. Although the increase of vancomycin-resistant enterococci (VRE) makes appropriate antibiotic therapy difficult, clinical characteristics of enterococcal bacteremia and the impact of VRE infection on the outcomes have been rarely reported in immunocompromised children.

Methods

Children with underlying hematologic/oncologic disorders, who were diagnosed with enterococcal bacteremia during febrile neutropenia between 2010 and 2016, were enrolled in this study. Medical records of the enrolled children were retrospectively reviewed to evaluate clinical characteristics of enterococcal bacteremia and the impact of VRE infection on the outcomes.

Results

Thirty episodes of enterococcal bacteremia were identified in 26 children. The median age of the patients was 11 years (range: 1-17), and 24 episodes (80.0%) occurred in boys. VRE infection was identified in 11 episodes (36.7%), and the 7-day and 30-day mortalities were 26.7% and 46.7%, respectively. Acute lymphoblastic leukemia (43.3%) and acute myeloid leukemia (30.0%) were most common underlying disorders. Three (10.3%) of 29 patients with underlying malignancies were in complete remission, and palliative and re-induction chemotherapies were performed in 46.7% and 33.3% of episodes, respectively. The first-line antibiotics were appropriate in 42.1% of vancomycin-susceptible enterococci (VSE)-infected patients and none of VRE-infected patients ($P=0.014$). Appropriate antibiotics were administered faster in VSE-infected patients than in VRE-infected patients (1 day vs. 3 days after bacteremia, $P=0.001$). However, the 7-day (27.3% vs. 26.3%, $P=0.919$) and 30-day (45.5% vs. 47.4%, $P=1.000$) mortalities were not significantly different between the two patient groups.

Conclusions

Enterococcal bacteremia still showed high mortality, and 36.7% of them were caused by VRE strains. Most episodes of enterococcal bacteremia occurred in advanced stages of underlying malignancies, and the vancomycin-resistance had no significant impact on the outcomes even in immunocompromised children.

20B. SCIENCE: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-0977

SAFETY AND IMMUNOGENICITY OF A MENINGOCOCCAL RECOMBINANT SEROGROUP B VACCINE (4CMENB) CO-ADMINISTERED WITH ROUTINE VACCINES IN HEALTHY INFANTS IN TAIWAN: A PHASE 3, RANDOMIZED STUDY

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Background

In Taiwan ~50% of meningococcal disease is associated with serogroup B. The safety and immunogenicity of 4CMenB vaccine concomitantly administered with routine vaccines in infants was evaluated.

Methods

In this phase 3, open label, randomized, controlled, multi-centre study, infants were randomized 2:1 to receive 4CMenB together with routine vaccines (4CMenB+Routine group) or routine vaccines alone (Routine group), at 2-4-6 months (combined diphtheria, tetanus, acellular pertussis, inactivated polio, *Haemophilus influenzae* type b; hepatitis B; 13-valent pneumococcal conjugate vaccine) and 12 months of age (measles, mumps, rubella; varicella). Sufficiency of the immune response to 4CMenB+routine vaccines was evaluated at 1 month post-dose 3 and 1 month post-booster, measured by percentage of subjects with human serum bactericidal assay (hSBA) titre $\geq 1:5$ against indicator strains H44/76 (fHbp), 5/99 (NadA) and NZ98/254 (PorA P1.4). Immunogenicity against strain M10713 (NHBA) and reactogenicity and safety were also assessed.

Results

Of 225 enrolled subjects, 146 (4CMenB+Routine) and 73 (Routine) were included in the full analysis set. Sufficiency of the immune response to 4CMenB was demonstrated as lower limits of the 2-sided 95% confidence intervals were 97.2%, 97.2% and 71.4% against H44/76, 5/99 and NZ98/254, respectively, post-dose 3 (above success criterion of $\geq 70\%$); and 95.7%, 94.7% and 88.7% post-booster vaccination (above success criterion of $\geq 75\%$). Geometric mean titres against indicator strains in the 4CMenB+Routine group had waned 6 months post-primary vaccination but robust boosting was observed 1 month post-booster. Serious adverse events were reported for 21 subjects (4CMenB+Routine: 13; Routine: 8); none were considered vaccination-related. No major safety concerns were identified.

Conclusions

Sufficiency of the immune response to 4CMenB concomitantly administered with routine vaccines was demonstrated at 1 month after primary and booster vaccination in infants.

Funding: GlaxoSmithKline Biologicals SA

Clinical Trial Registration (Please input N/A if not registered)

ClinicalTrials.gov NCT02173704

22A. EDUCATION: OTHER

ESP17-0979

PRIMARY IMMUNODEFICIENCIES IN ANDALUSIA - A FIRST SURVEY ON EPIDEMIOLOGY AND CLINICAL DATA

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Background

Primary immunodeficiencies (PID) are a heterogeneous group of conditions. Although international guidelines for its management exist, important variability can be seen between different centres. In order to overcome this dilemma a paediatric infectious diseases and immunodeficiency network (GAIP) was created in Andalusia in 2016. Here, we describe the main characteristics of this patient group in our community with the aim to achieve homogeneous diagnosis and management independently of the centre they are followed-up.

Methods

A voluntary survey was sent to each of the Paediatric Infectious Diseases service of every regional hospital in the community, aiming to include all patients diagnosed with PID in these areas.

Results

Four of the 8 (50%) regional hospitals answered the survey, covering approximately 5 million inhabitants (62%) of the population in the community. Overall, 238 patients are followed-up in those centres. Estimated incidence of PID varied between 1:16000 and 1:44000, being highest in the area covered by a tertiary care hospital with better resources. The diagnosis and its comparison with the European registry (ESID) are shown in the table. Forty-one patients (17,2%) receive immunoglobulin replacement therapy, only 2 (4.8%) of them subcutaneously. Stem-cell transplantation is only available in 2 centres. Only 3 centres include their patients to the national registry.



Conclusions

A broad variability was observed across the different centres within the same state.

Few hospitals include their patients in the national registry, thereby limiting its internal validity.

The implementation of subcutaneous immunoglobulin replacement is extremely low.

Significant differences were found in the diagnosis compared with the European registry.

Further research is needed to improve the diagnosis and achieve a homogeneous assistance of these patients in Andalusia.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0983

BORDETELLA PARAPERTUSSIS VERSUS BORDETELLA PERTUSSIS INFECTION IN CHILDREN: DOES IT REALLY MAKE A DIFFERENCE?

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Background

Whooping cough is a highly contagious community disease mainly affecting infants and is caused by *Bordetella pertussis* or *Bordetella parapertussis*. *B.parapertussis* infection in childhood is poorly recognized and usually is not laboratory confirmed. In the present study we examined the differences in clinical presentation, laboratory findings and clinical course between the two pathogens.

Methods

This is a retrospective case-control study regarding hospitalized children (0-14 years) who were tested positive for *Bordetella pertussis* or *parapertussis* during 2010-2014 at "Aghia Sophia" Children's Hospital, Athens, Greece. Nasopharyngeal samples were tested at the Department of Clinical Microbiology, which hosts the only public laboratory for the molecular diagnosis of pertussis in Greece using multiplex RT-PCR targeting IS481 (*B.pertussis*) and IS1001 (*B.parapertussis*) insertion sequences. Epidemiological, clinical and laboratory data were retrieved and compared between the two groups.

Results

During the study period 920 nasopharyngeal aspirates were tested and 18 children (1.96%) with *B. parapertussis* infection were detected. Two children with *B.pertussis* (38) infection were matched according to the date of detection and used as controls. From the 56 children who were studied, 32 were females (57.1%) with median age 3 months (Range:1-137 months). There was no significant difference between two groups regarding age distribution, sex, duration of clinical symptoms, day care attendance, number of family members, pertussis vaccination doses, antibiotic use, days of hospitalization, and laboratory findings (complete blood count and differential, CRP and lung X-ray findings). A statistically significant difference was found regarding family members with symptoms for *B.pertussis* vs *B.parapertussis* 73.7% vs 31.3% ($P=0.003$) and salbutamol use 81.1% vs 50%, ($P=0.043$) respectively.

Conclusions

B.parapertussis infection presents no major clinical and laboratory differences in comparison to *B.pertussis* infection and shall be suspected in children with compatible symptoms.

05B. EDUCATION: PREGNANCY AND THE NEONATE

ESP17-0984

THE PORTRAIT OF NEONATAL TETANUS IN LUANDA

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Title of Case(s)

THE PORTRAIT OF NEONATAL TETANUS IN LUANDA

Background

Neonatal tetanus remains a major cause of death in developing countries. In 2013 under the WHO Strategic Program, the third major vaccination campaign including DTP3 was held in Angola, with an estimated coverage of 83%. Despite the efforts made in that same year, the second highest specific lethality rate was attributed to tetanus.

Case Presentation Summary

From 2014 to 2016 the main neonatal unit in Luanda reported 79 cases of neonatal tetanus: 15,5 cases yearly until 2015 and 48 cases in 2016. Only 25 case files were analysed due to missed information. In our series, 60% of all mothers were below 20 years of age; all lived in poverty. Only 20% mentioned a close antenatal care program and 44% reported any immunization with the tetanus toxoid. Eighty-four percent of deliveries occurred at home: razor blades and knives were frequently used to cut the umbilical cord (64%) and topical care included salt, palm oil, ashes (68%) as well as fire, tree sap and toothpaste. Most newborns were male (60%). Classic symptoms presented at a median age of 5,72 days; 54% had fever or irritability. Babies were admitted with 8,92 days of life; 64% referred from a poorly specialized healthcare unit (rural clinic or hospital). Routine practice did not include metronidazole or tetanus antitoxin. After 4,7 days of hospital admission 24 babies (96%) had died.

Learning Points/Discussion

Neonatal tetanus mortality remains a public health problem in Angola, despite the efforts of the Ministry of Health towards the WHO Maternal and Neonatal Elimination Initiative. Poverty and social precarity are responsible for an inadequate immunization coverage, unsanitary deliveries and cord stump care. We emphasize the scarce specialized health resources in the country

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0985

PARAINFLUENZA VIRUS TYPE 4 INFECTION IN CHILDREN WITH ACUTE RESPIRATORY TRACT INFECTIONS

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Background

Parainfluenza viruses (PIVs) are the major causes of acute respiratory tract infections (ARTIs) in children. Four types of PIV (PIV 1 to PIV 4) have been identified. Compared with PIV 1-3, infections with PIV 4 are less well characterized. We investigated the epidemiologic and clinical characteristics of PIV 4 infection.

Methods

A retrospective review was performed in pediatric patients (less than 18 years) with ARTIs and documented PIVs from respiratory specimens at Hallym University Dongtan Sacred Heart Hospital from March 2013 to August 2016. PIVs (type 1 to 4) were detected by multiplex polymerase chain reaction (PCR).

Results

During the study period, a total of 4980 children were tested and the positive rate for PIV 1-4 was 11.6% (577/4980). Of 557 PIV infections, 95 (16.6%) were positive for PIV 4, 196 (34.1%) for PIV 1, 67 (11.7%) for PIV 2 and 213 (37.1%) for PIV-3. Three (0.5%) were co-detected with different types of PIVs. The seasonal distribution of PIVs fluctuated. In 2014 and 2015, the highest detection rates of PIV 4 were found in summer (23.2-23.6%). PIV 3 peaked in spring every year. The median age of total patients with PIVs infection was 1.6 years (interquartile range, 0.9-2.4). The median age of patients with PIV 4 infection and with non-PIV 4 infections were 1.7 years and 1.6 years, respectively ($P=0.2018$). PIV 4 and PIV 3 had the highest proportion of pneumonia while PIV 2 had the highest proportion of croup. Among patients with PIV 4 infections, 84 (85.7%) had lower LRIs. The distributions of PIV 4 infections were; pneumonia 51.0%, bronchiolitis 25.5%, bronchitis 7.1% and croup 2.0%.

Conclusions

PIV 4 was an important pathogen in children with acute lower respiratory tract infections.

22A. EDUCATION: OTHER

ESP17-0986

INTRAVENOUS PULSE METHYLPREDNISOLONE VERSUS INTRAVENOUS DEXAMETHASONE THERAPY IN CHILDREN WITH MILD ENCEPHALITIS/ENCEPHALOPATHY WITH A REVERSIBLE SPLENIAL LESION

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Background

There are some case reports of mild encephalitis/encephalopathy with a reversible splenial lesion (MERS) from Asian countries. It has been suggested that MERS has a favorable prognosis. There is no specific treatment, but patients generally treated with intravenous pulse methylprednisolone (IVMP) or intravenous dexamethasone (IVDEX). In this study, we evaluated the outcome of two different treatments. Additionally, we assessed the difference in clinical manifestations between MERS type 1 with an isolated splenium corpus callosum (SCC) lesion, and MERS type 2 with an extensive white matter and/or entire callosal lesions.

Methods

We retrospectively evaluated 25 cases of MERS who admitted to six hospitals in Japan from January 2012 to December 2016.

Results

25 cases in 22 patients were identified with MERS. 24 cases received corticosteroids (IVMP: 14 cases, IVDEX: 9 cases, IVMP after IVDEX: 1 case). Compared with the IVMP group and the IVDEX group, there were no significant differences in the length of stay (10 days vs. 8 days; $p = 0.25$) and the duration of neurological symptoms (3 days vs. 4 days; $p = 0.42$). All patients completely recovered. MERS type 1 was 14 cases, and type 2 was 11 cases in 8 people. There were little differences in the clinical features between type 1 and type 2. The length of stay of type 2 was longer than type 1 (type 1: 7 days vs. type 2:10 days; $p=0.02$). The duration of neurological symptoms was no statistical difference (3 days vs. 5 days; $p = 0.22$).

Conclusions

This study shows that all patients recovered without sequelae regardless of treatments. Our results indicate that IVMP is not always necessary for the treatment of MERS.

04A. EDUCATION: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-0990

CLINICAL CHARACTERISTICS OF LABORATORY-CONFIRMED BORDETELLA PERTUSSIS INFECTION AMONG YOUNG PAKISTANI INFANTS

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Background

Developing countries are thought to bear most of the global pertussis disease burden, but limited epidemiologic data have been reported from low and middle income countries. Prospective surveillance studies using sensitive clinical case definitions are needed to provide more robust estimates of pertussis incidence in these regions.

Methods

From February 2015 to April 2016 we prospectively enrolled infants under 10 weeks of age from four low-income settlements in Karachi, Pakistan. Active surveillance for suspected pertussis disease was conducted until 18 weeks of age using a protocol-defined syndromic case definition through in-person home visits and telephone contact. The syndromic case definition included both “typical” (e.g. whoop, paroxysmal cough, post-tussive emesis) and “atypical” (e.g. fever, apnea, chest indrawing, difficulty feeding, etc.) features of pertussis. We categorized infants as either meeting the syndromic case definition, or meeting the case definition and testing positive for *Bordetella pertussis* by a real-time PCR (rt-PCR) assay.

Results

Of 2,021 infants enrolled in the study, 1,311 (64.9%) infants met the syndromic case definition. The most common symptoms were cough (59.0%), coryza (46.7%), tachypnea (29.2%) and severe chest indrawing (21.1%). Eight (0.6%) of these infants also tested positive for *B. pertussis* by rt-PCR, for an overall incidence of 3.96 PCR-confirmed cases/1,000 infants. No statistically significant difference in clinical features was identified in children who tested positive for *B. pertussis* compared to children who tested negative. Only 15.6% of the infants had received pentavalent 3 vaccine.

Conclusions

We found a moderate burden of pertussis in young infants in Pakistan. We did not find any significant difference in clinical symptoms among infants who had PCR-confirmed pertussis compared to those who tested negative for pertussis.

03D. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0991

SEQUENCING OF THE EUCLIDS COHORT

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Background

The EUCLIDS study is an EU funded consortium, aiming to study life-threatening bacterial infections of childhood across multiple European nations. Children admitted to hospital due to suspected bacterial infection were recruited into the study, totalling over 6,000 recruited patients. From this collection of patients, we selected cases with confirmed meningococcal, pneumococcal, Group A streptococcal and staphylococcal infections for further genetic investigation.

Methods

We have whole-exome sequenced approximately 300 patients from the EUCLIDS cohort. First, we focused our analysis on novel variants that were computationally predicted to have a high impact on protein function. Then, we set out to determine whether certain genes or pathways were overrepresented in our cohort, by calculating the burden of pathogenic variants in cases versus controls from the 1000 Genomes Project. The statistical significance of our findings was evaluated using permutation tests.

Results

Due to the relatively small sample size, traditional rare variant association analysis did not yield statistically significant results. Therefore, for the sporadic cases, we designed a pipeline that aggregates variants at the gene and at the pathway level, thus leveraging prior knowledge to increase the statistical power of our analysis. Preliminary examination did not reveal any novel genes enriched in our cohorts. However, the data revealed previously described primary immunodeficiency (PID) genes among a minority of the patients.

Conclusions

Whole exome sequencing of patients with life-threatening bacterial infections is a powerful approach that allowed us to identify novel mutations in known PID genes. Developing different methods for filtering and prioritizing findings at the gene or pathway level was able to maximize pathogenic variant discovery in this cohort.

Clinical Trial Registration (Please input N/A if not registered)

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-0992

A CASE OF ACUTE INFANTILE HEMORRHAGIC EDEMA DUE TO INFLUENZA VIRUS: H3N2

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Title of Case(s)

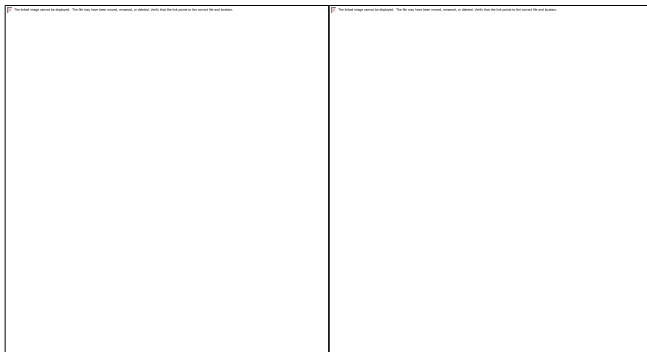
A Case of Acute Infantile Hemorrhagic Edema due to Influenza Virus: H3N2

Background

Acute infantile hemorrhagic edema is a small vessel vasculitis, characterised with fever, edema and annular purpuric rash on face, ear and extremities. Herein we present a case of acute infantile hemorrhagic edema associated with influenza H3N2 in a one year old girl.

Case Presentation Summary

A one year old girl, was consulted with a sudden onset edema on her left hand. She had coryza, cough and a slight fever for 3 days. There was no history of medicine. There was edema on her dorsal side of fingers and her hand. On the second minute of her follow up ,there appeared a 5 mm erythematous maculer rash on her hand and her foot. (figure 1-2), following a purple rash on her auricula on 30rd minute. White blood count was 21890/UL, platelet count: 492400/µl and CRP: 68,5 mg/L. One mg/kg of methyl prednisolone was administrated. Respiratory viral influenza A- H3N2 PCR was positive. According to all these findings, possible diagnosis was infantile hemorrhagic edema. Our patient was hospitalized and oral hidroxisine was given. On her third day, rash and edema regressed.



Learning Points/Discussion

Acute infantile hemorrhagic edema is a rare, immune complex related leucocytoclastic small vessel vasculitis. This disease may be seen between 3- 75 months of age. Classical clinical triad is fever, edema and purpuric annular or target like rash on face, auricula and extremities. Visceral involvement is not common. Generally the disease is limited in 1-3 weeks. Viral and some bacterial infections, medicines and vaccines may cause acute infantile

hemorrhagic edema. To the best of our knowledge, this is the first case of H3N2 related infantile hemorrhagic edema in the literature.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-0993

IMPROVING RECOGNITION AND MANAGEMENT OF BACTERIAL MENINGITIS IN UK YOUNG INFANTS: AN ETOOL TO COMMUNICATE LESSONS FROM RESEARCH

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Background

Bacterial meningitis is a medical emergency. Prompt recognition, appropriate initial management and follow up is essential. Despite this, a UK study undertaken between September 2010 and June 2013 showed that: time from hospital triage to first antibiotic dose was twice the recommended threshold; LP was performed after antibiotics in 59% of cases and half of all cases were treated with empiric antibiotics not in conformity with national guidelines. Notable variations in the management of bacterial meningitis in young UK infants highlights the need for improved recognition and management.

Methods

Meningitis Research Foundation collaborated with the investigators and RCPCH via the BPSU to create an educational package aimed at clinicians, highlighting gaps in recognition and management and promoting best practice. The package consists of an eTool, a downloadable management algorithm and an LP information sheet to help clinicians discuss this procedure with parents. Piloting of the resource amongst trainee paediatricians is underway.

Results

Lessons from research identified delays in recognition and variation in management. The eTool contains three modules specifically tailored to the recognition of clinical features using anonymised case studies from the original research study. Modules on decision making, investigations, management and follow-up address other key issues identified around timely LP, appropriate empiric antibiotic use and follow-up for these infants. Qualitative analysis of the tool will be available in March 2017.

Conclusions

Collaborations between academic paediatricians, patient groups and professional societies can result in bespoke education packages. User understanding and reach can be assessed through ongoing evaluation and monitoring of the eTool. The capacity of an education package to enable continuing professional development, ensures that research findings have a long lasting impact. Ultimately, this may contribute to improved outcomes for these vulnerable infants.

01A. EDUCATION: ANTIMICROBIAL STEWARDSHIP

ESP17-0995

SAFETY AND TOLERABILITY OF NIFUROXAZIDE SUSPENSION IN ACUTE DIARRHEA IN CHILDREN - ANALYSIS OF DATA FROM ADVERSE EVENTS SURVEILLANCE SYSTEM IN POLAND

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Background

Nifuroxazide suspension is a nitrofurantoin-derivative antimicrobial, poorly absorbed from the gastrointestinal tract, not recommended by guidelines but commonly prescribed in children with acute diarrhea in developing countries. Adverse effects of medications are obligatory reported by medical professionals and voluntarily by patients to manufacturers and state monitoring centers in Poland.

Methods

We analyzed spontaneous reports of adverse events of nifuroxazide (Nifuroksazyd Hasco zawiesina doustna®) collected by the manufacturer (Hasco-Lek S.A. Wrocław, Poland) and Regional Monitoring Center in Wrocław (Regionalny Ośrodek Monitorowania Niepożądanych Działań Leków) in period 2007-2016. Systematic literature search within databases (Toxnet, <http://toxnet.nlm.nih.gov>, Cumulative Index to Nursing and Allied Health Literature (CINAHL), <http://www.ebscohost.com/cinahl/>, Proquest, <http://www.proquest.co.uk> FDA and Pubmed, www.ncbi.nlm.nih.gov/pubmed) using key words: "nifuroxazide" AND „toxicity” OR „adverse effect” OR „side effect” OR „interaction” OR „risk” OR „safety” was performed in December 2016. The searching was limited to period from January 2007 to 2016.

Results

Total 3,130,000 units of Nifuroxazide suspension was marketed during analyzed period. Only 4 spontaneous reports: skin reactions in 3 subjects (urticaria, papular rash and unspecified allergic skin reaction) and one case of nausea and vomiting were reported to the manufacturer and none to Monitoring Center in that period. The literature search resulted in only one publication reporting adverse effects: a case report of pancreatitis following nifuroxazide administration. Total of one drug adverse event reaction (*lymphadenopathy*) were reported to FDA during that time period.

Conclusions

Post-marketing surveillance of spontaneous reports is important in drug safety monitoring however adverse effects of medications popular mainly in developing countries may be under-reported. Either nifuroxazide is an extremely safe medication sporadically causing adverse events in children with acute diarrhea or existing passive monitoring system of adverse effects has too low sensitivity and needs improvement.

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-0996

BRUCELLOSIS IN DIFFERENTIAL DIAGNOSIS OF TESTICULAR MASS

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Title of Case(s)

Brucellosis in Differential Diagnosis of Testicular Mass

Background

Brucellosis is still a challenging worldwide and potentially life-threatening multisystem zoonotic disease. Clinical signs and symptoms are quite variable, because all the organs can be affected by the microorganism. The genitourinary system is affected in 2% to 20% of the cases with brucellosis. The most common forms of genital brucellosis are epididymo-orchitis, testicular abscess and atrophy. Herein, we report a 14 year-old adolescent boy admitted with signs of epididymo-orchitis and diagnosed as brucellosis.

Case Presentation Summary

A previously healthy, 14 year old boy admitted with fever and left testicular pain. On physical examination, he had only left testicular mass with induration and tenderness but no sign of lymphadenomegaly or organomegaly. Acute phase proteins were high (erythrocyte sedimentation rate: 78 mm/hr, C-reactive protein level:6 mg/dl), complete blood count and tests for renal and hepatic function were within normal range. Testicular ultrasonography revealed a hypoechoic, completely heterogeneous 32x26x34 mm left intratesticular mass. Concerning testis tumor markers, β human chorionic gonadotropin and α -fetoprotein were negative. Peripheral blood smear and bone marrow examination ruled out malignancy. The viral serology and tuberculin skin test were negative. Brucella Wright agglutination test was positive at a dilution of 1/320. Histological examination revealed nonspecific chronic granulomatous inflammation of testis. The patient received 6 weeks of ripampicin and trimethoprim-sulfamethoxazole treatment. He recovered clinically and the Wright titers were found to be undetectable after 2 months.

Learning Points/Discussion

Brucella epididymo-orchitis must be considered in the differential diagnosis of testicular mass particularly in endemic areas. A careful history, physical examination and serologic test are sufficient for diagnosis in patients having clinical symptoms. The histopathologic examination is not always necessary but can be considered to exclude malignancy.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-0999

INCREASING COVERAGE OF PERTUSSIS VACCINATION DURING PREGNANCY IN FLANDERS, BUT IS THERE MORE THAN MEETS THE EYE?

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Background

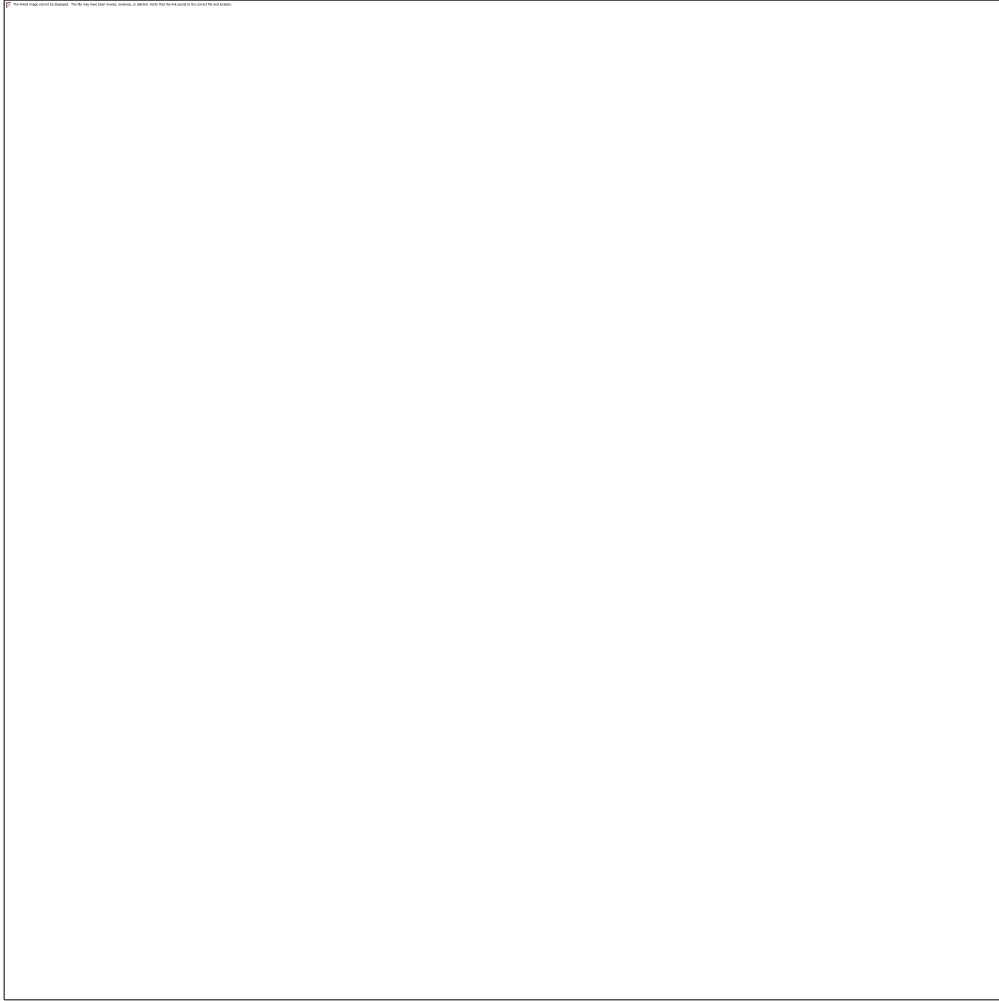
A collation of two studies provides the opportunity to assess trends in acellular pertussis vaccination coverage during pregnancy in Flanders, Belgium. The uptake has been estimated in three cohorts of young mothers, cohorts were selected based on moment of delivery in relation to the implementation of a free-of-charge pertussis-containing vaccine (Table 1). Both surveys, EPI-based (2016) and a multi-centre study (2014-2015), identified predictive factors for non-vaccination.

Methods

Mothers belonging to cohort 1 and 3 were selected through randomized cluster design, mothers of cohort 2 were interviewed in randomly selected hospitals with >800 deliveries per year, all were conducted in Flanders. After consent, a total of 2036 mothers were interviewed at home or at maternity ward. Requested information included socio-demographic characteristics and pertussis vaccination history, documented or by recall.

Results

Estimates of the coverage rate for acellular pertussis vaccination during pregnancy was lowest (57.6%) among mothers who delivered before the recommended vaccine became free-of-charge (cohort 1), increased up to 64.0% (cohort 2) shortly after the campaign, and finally reached 69.3% as measured in the third cohort in 2016. Multiparity was a predictor for non-vaccination in all three cohorts. Other predictors were only observed in one or two cohorts; part-time or unemployment, lower maternal education, lower monthly income (Table 1). In mothers who delivered in hospitals with >800 deliveries per year (cohort 2 and part of cohort 3) coverage rates were similar despite the longer availability of the free-of-charge vaccination.



Conclusions

The coverage of pertussis vaccination in pregnancy in Flanders, Belgium, increases with time. Additional strategies are needed to reach the underserved, by increasing knowledge and awareness in target groups; women with lower socio-economic background, of none-Belgian origin and multipara.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-1002

ENTEROVIRAL MENINGITIS IN CHILDREN

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Background

Enteroviruses (EVs) are the most common cause of aseptic meningitis in children. This study aimed to identify the epidemiological characteristics, clinical features and cerebrospinal fluid (CSF) findings associated with EV meningitis.

Methods

We performed a 5-year retrospective study of 36 children, treated at a tertiary children's hospital, with positive CSF EV polymerase chain reaction (PCR) and negative blood and CSF bacterial cultures.

Results

The median age was 16.5 months (range, 1-192 months). Twenty four (%66) patients were male and 12 (%34) female. Although patients suffering from EV meningitis were encountered throughout the year, most occurred during summer and spring months. Fever, vomiting, headache were the most pronounced symptoms. Pleocytosis with the predominance of lymphocytes was observed in 17 (47%) of specimens and 6 (16%) did not have CSF pleocytosis. The median CSF white cell count was 174 cells/mm³ (range 0-2000). The mean hospital stay was 8.7 days and all of the patients were received empiric antibiotics. All patients had a favorable clinical outcome without complications.

Conclusions

Although EVs generally responsible from benign aseptic meningitis, the clinical presentation may not differentiate from bacterial meningitis. CSF pleocytosis may not be seen especially in young infants.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-1003

PEDIATRIC ANTIMICROBIAL PROPHYLAXIS FOR SURGICAL PROCEDURES AND ATTENDANCE TO THE GUIDELINES : A PROSPECTIVE STUDY

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Background

Surgical site infections (SSIs) are the most common health-care associated infections in surgical patients. Antimicrobial prophylaxis (AP) is an important way to reduce SSI. The goal of this study is to evaluate the perioperative AP in pediatric practice and compliance with the guidelines.

Methods

A prospective study was conducted in Gazi University – Faculty of Medicine, between September 2015- April 2016. Pediatric patients (1 month-18 years) who underwent surgical procedures were included. Perioperative surgical prophylaxis procedures were evaluated.

Results

During the entire study period, 468 children underwent surgery. 434 (92,7 %) received antimicrobial prophylaxis, 34 didn't. The median age was 84 months. The rate of administration of surgical prophylaxis was significantly **lower** and the duration was **shorter** when the procedure was **clean** (p=0,002). If the **duration of procedure** was longer, the rate of administration of prophylaxis was higher (p=0,000).

The number of patients for whom prophylaxis was **not** indicated, was 204, but 182 (89,2%) of these patients **received** surgical prophylaxis. Generally, duration of post operative prophylaxis was **longer** than recommended in **%72,5** of patients,

In our study, cefazolin was the most preferred antibiotic preoperatively (%44,9). The other most common antibiotics choices for AP were; ampicillin sulbactam (23,5). followed by ceftriaxone (%9,8), ceftriaxone+metronidazole (%3,2). With regard to antibiotic choice, %73 were appropriate.

Conclusions

It's important to give the **right antibiotic** with the right **dose** and for a right **period**, as surgical prophylaxis. Hence, it's important to observe and correlate to the guidelines. Therefore we aimed to determine the faults or gaps about adherence to these guidelines in our center.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-1005

SHOULD SUPPLEMENTARY IMMUNIZATION ACTIVITIES IN CHINA TARGET CHILDREN ONLY? A MATHEMATICAL MODELING STUDY

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Background

In order to eliminate measles from China, officials implemented the supplementary immunization activities (SIAs) on top of the routine measles-mumps-rubella vaccines since 2009. Although the measles incidence was reduced by years, most provinces in China have reported a shift of measles cases from children to older groups over the past several years. By using a mathematical model, we assessed the impact of SIAs targeted to different age groups in Hubei province of China.

Methods

An age-stratified Susceptible-Exposed-Infectious-Recovered (SEIR) compartmental model was developed to assess the measles transmission. Who-Acquires-Infection-From-Whom matrix was used to adjust the contact patterns among individuals in different age groups. Effects from population growth, maternal immunity, and waning immunity were parametrized in the model. The model was calibrated using the age-stratified incidence data from 2012 to 2015. SIA scenarios targeting to different age groups with varying SIAs frequency and coverage levels were evaluated through the simulations.

Results

Baseline scenario was fitted and projected that larger epidemics would occur within a 5-year period in Hubei. Results indicated that SIAs should be periodically applied to children 8 months to 5 years of age i.e. a 5-year periodical SIA with coverage >80% was able to reduce the annual incidence rate to less than 1.5/100,000 cases. Compared with SIAs targeting to other age groups, SIAs targeting to young adults 20 to 29 years of age on top of the children group showed a greater drop of the annual incidence i.e. 1.2/100,000 cases.

Conclusions

With an upshift of ages for measles cases due to waning immunity, the study demonstrated the effectiveness of SIAs targeting to young adults in China. Our investigation is able to advise policymakers on scheduling SIAs to appropriate age groups.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-1007

SECOND EPISODE OF TUBERCULOSIS IN A 19-MONTH-OLD CHILD BORN IN A EUROPEAN COUNTRY PROVEN TO BE CAUSED BY RE-INFECTION

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Title of Case(s)

Second episode of tuberculosis in a 19-month-old child born in a European country proven to be caused by re-infection.

Background

Recurrent tuberculosis can be caused by relapse of the primary infection or by re-infection with an exogenous strain. The risk of re-infection is mainly related to tuberculosis infection density and has been associated with human immunodeficiency virus (HIV) infection. Molecular genotyping techniques have enabled to differentiate relapse from re-infection

Case Presentation Summary

A 19-month-old boy presented with a second proven episode of tuberculosis. At the age of 2 months, he was diagnosed with disseminated tuberculosis. Gastric aspirate and bronchial washing cultures identified *Mycobacterium tuberculosis* (*M. tb.*), which was susceptible to all anti-tuberculosis first-line drugs. He was treated for 11-month with close follow-up. Family screening demonstrated that parents were infected by *M. tb.* Isoniazid therapy was prescribed for both. Eight months later, active pulmonary TB disease was diagnosed in both parents and work-up demonstrated lymph node disease with bronchopneumonia in this boy. Polymerase chain reaction (PCR) for *M. tb.* revealed positive in bronchoalveolar lavage aspirate and culture of gastric aspirate and bronchial washing identified *M. tb.* which was susceptible to all anti-tuberculosis first-line drugs. Immunologic investigations revealed normal, Human immunodeficiency virus serology was negative. Assessment of the interleukin-12 and the interferon gamma pathways were normal. *M. tb.* strains isolated from the father, the mother and from child's both episodes were genotyped and established two successive TB diseases in this child caused by different *M. tb.* strains. The first strain having also infected his mother and the second his father.

Learning Points/Discussion

This apparently immunocompetent young child, born in an area with low tuberculosis prevalence presented with an exogenous re-infection confirmed by genotyping techniques. Re-infection shortly after cure might be due to post-disease temporary compromised immune system.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-1008

IS THERE ANY DIFFERENCE IN YOUNGER THAN 15 YEARS TUBERCULOSIS CASES BORN IN OR OUTSIDE CASTILLA Y LEON (SPAIN)?

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Background

Castilla y León (Spain) is a tuberculosis low incidence region. Most of immigrants who live in Castilla y León came from high rates incidence places, such as Eastern Europe and North African countries. Tuberculosis surveillance and control in children is one of the main goals in the WHO 'End TB Strategy'. Knowing the situation in migrant children is basic to plan new and more effective activities in order to improve control

Methods

Tuberculosis cases were extracted from Castilla y León public health registry. Data were collected by mean of a structured questionnaire with epidemiological, clinical and microbiological items. Population was aggregated in groups for analysis: children born in Spain and children born outside (all countries were pooled). Descriptive measures (percentages and incidence rates per 100,000 inhabitants) and statistical differences (95% IC and p value) were calculated

Results

We found 78 cases (3.7 per 100,000), 55 (70.5%) were born in Spain (2.8 per 100.000) and 23 outside (15.3 per 100.000) rate ratio 0.182 (CI 0.112; 0.296 $p < 0.0005$). Cases were more frequent in girls born in Spain (37; 67.3%) and in boys born outside (12; 52.2%). By age group, only in cases younger than 5 years TB was more frequent in children born in Spain (56,3%) than outside (26,1%) $p=0.0283$.

Conclusions

Tuberculosis is more frequent in children born outside Spain, mostly in older ages. Cases born in Spain are less likely to be index cases since the youngest are less transmissible and they used to be related with an adult case. Immigrant teenagers may be infected or ill when they arrive. Migrant tuberculosis screening is not usually conducted but a special surveillance and a reinforcement in studying contacts in these teenagers is needed.

22A. EDUCATION: OTHER

ESP17-1009

ROTAVIRUS INFECTION – STILL A PROBLEM IN ROMANIA?

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Background

Rotavirus is the most frequent cause of acute gastroenteritis in children up to 5 years old, being a significant source of morbidity worldwide. This virus is still impacting clinical practice and is imposing considerable costs on health systems. The aim of our study is to evaluate the epidemiological aspects and the economic impact of Rotavirus infection in an Emergency Hospital for Children from Romania.

Methods

We carried out an observational, retrospective study, which included all children, 0 to 5 years of age, diagnosed with Rotavirus infection in "Grigore Alexandrescu" Emergency Hospital for Children from Bucharest, between January and December 2016. Data were collected regarding age, sex, environment, weight, early symptoms of disease, seasonal patterns, coinfections, hospitalization duration and costs and processed with SPSS Statistics 20.

Results

We found the Rotavirus antigen in the stool of 235 children (99.5% not vaccinated for Rotavirus), 44.4% during late winter. A percentage of 72.8 were admitted for acute gastroenteritis vs. 27.2% for respiratory symptoms. There were 64 cases reported as nosocomial infections. We found coinfections in 7.7% children, with viruses (Adenovirus/Norovirus) or bacteria (Klebsiella). The mean duration of hospitalization was 5.6 days with an average cost of 453 euro/patient. A hospitalization longer than 6 days was positively correlated with loss of appetite as an early symptom ($p < 0.05$) and malnutrition ($p < 0.01$).

Conclusions

Rotavirus remains an important etiological agent in acute gastroenteritis, causing high costs for our medical system. A quarter of the Rotavirus infections reported during 2016, were nosocomial infections. Loss of appetite as an early symptom of gastroenteritis and malnutrition are risk factors for prolonged hospitalization. Rotavirus vaccine should be included in the National Immunization Program in Romania in order to reduce costs

22A. EDUCATION: OTHER

ESP17-1010

INFECTIVE ENDOCARDITIS CAUSED BY GRANULICATELLA ADIACENS IN CHILDREN - A CASE REPORT

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Title of Case(s)

Infective Endocarditis caused by *Granulicatella adiacens*

Background

Granulicatella is a Gram-positive nutritionally variant streptococcus. Despite being fastidious organisms, they are implicated in some clinical infections, including cases of bacteraemia and infective endocarditis (IE). IE is not frequent in children with most cases occurring in the presence of structural heart disease.

Case Presentation Summary

We present a case of a 11-year-old female with Down syndrome, born with an atrioventricular septal defect and Fallot Tetralogy, that underwent corrective surgery with persistence of moderate atrioventricular insufficiency. She was admitted to our hospital with a history of 3 months of intermittent fever episodes associated with malaise.

Laboratorial evaluation revealed anaemia, thrombocytopenia and elevated CRP. Transthoracic echocardiogram was difficult to evaluate, serological tests were negative, chest Xray was normal and transoesophageal echocardiogram had no signs of IE. Blood and bone marrow samples were cultured and vancomycin was empirically started. Gram-positive-cocci were isolated and the organism was identified as *Granulicatella adiacens*. Antibiotic susceptibility tests revealed susceptibility to ampicillin, gentamicin, ceftriaxone and meropenem. Therapy was altered to ceftriaxone and gentamicin.

The patient was discharged after five days and treatment administrations continued at the outpatient clinic for six weeks. Since discharge, the patient has been clinically well with maintenance of sterile blood cultures.

Learning Points/Discussion

Although both echocardiograms were negative for signs of IE the remaining findings raised the possibility, as according to modified Duke criteria, there was the presence of three minor criteria. To the best of our knowledge only very few cases of IE caused by *Granulicatella spp.* in children are reported in the literature. Despite being a rare finding, early detection is crucial for adequate treatment and clinicians should be aware of the possibility of *Granulicatella* bacteraemia and IE in children.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1011

SKIN AND SOFT TISSUE INFECTIONS CAUSED BY COMMUNITY-ACQUIRED METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (CA-MRSA) IN A TERTIARY HOSPITAL IN MADRID (SPAIN)

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Title of Case(s)

Skin and soft tissue infections caused by community-acquired methicillin-resistant *Staphylococcus aureus* (CA-MRSA) in a tertiary hospital in Madrid.

Background

CA-MRSA is an emerging pathogen producing Skin and soft tissue infections (SSTI). There is scant data on the epidemiology and clinical characteristics of CA-MRSA in different populations in Spain. Due to the progressive increase of SSTI in outpatients it is crucial to assess the clinical-epidemiological characteristics of patients diagnosed with CA-MRSA in our area. We report the cases of all children-adolescents with a microbiologically confirmed diagnosis of SSTI caused by CA-MRSA in our hospital between January 2015 and December 2016.

Case Presentation Summary

Ten patients (80% women) were identified. The median age was 2.8 (IQR: 1.8 - 13.3) years. In 90% of cases, patients or their families came from foreign countries (Latin America and Asia). A risk factor was observed in 80%. Nasal and pharyngeal colonization was studied, being positive in 3 patients. In 3 cases, at least 1 cohabitant was colonized. The most common type of lesion was abscess (60%), followed by cellulitis (20%) and pustular rash (20%). 70% of the cases were hospitalized, and surgical drainage was performed in 50%. All cases presented good evolution after specific antibiotic therapy. There were recurrences in 20%. All strains were susceptible to clindamycin and trimethoprim-sulfamethoxazole and showed a similar susceptibility pattern.

Learning Points/Discussion

Our results suggest the need to reconsider empiric antimicrobial treatment of SSTI in children from Latin American origin. In cases of recurrent SSTI, or therapeutic failure with beta-lactam antibiotics; CA-MRSA should be considered a possible etiological agent. It would be necessary to carry out studies in our area on the prevalence of colonization by CA-MRSA in immigrant populations from areas of high prevalence of CA-MRSA.

16A. EDUCATION: PUBLIC HEALTH: MOLECULAR EPIDEMIOLOGY AND OTHER ASPECTS

ESP17-1012

THE ASSOCIATION OF CNR2 GENE POLYMORPHISM IN INPATIENT AND OUTPATIENT CHILDREN WITH ACUTE RESPIRATORY TRACT INFECTION AND COMPARISON OF RSV FREQUENCY IN BOTH GROUPS

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Background

Genetic single nucleotide polymorphism studies are important in showing the likelihood of risk development towards severe infections. We studied the possible role of cannabinoid receptor 2(CNR2) Q63R functional variant in respiratory disease severity and also the frequency distribution of RSV infection in children referred to the Children's Hospital.

Methods

A total of 180 Iranian children under 2 years old, divided into 90 inpatients and 90 outpatients with acute respiratory tract infection during cold season of 2016 at Bahrami Children's Hospital, Tehran, Iran. Genomic DNA was extracted from nasopharyngeal swab using a DNA extraction kit. All samples were genotyped by using a TaqMan assay. Extracted viral RNA was analyzed through conventional nested PCR.

Results

Patients' ages ranged from 1 month to 22 months with a median age of 4.65 month. We found a significant difference in genotypic and allelic distribution of CNR2 Q63R polymorphism between the inpatients and outpatients. Furthermore, the associated risk of developing severe respiratory tract infection following RSV infection increased more than three-fold for QQ homozygous children. 83/180 (46.11 %) of samples were positive for RSV infection. A higher prevalence of RSV was seen in inpatients (54.21%) than in outpatients (45.8%). Males (57.8%) were more affected than females in RSV positive patients. The most common clinical manifestations were runny nose, cough, sneezing, nasal congestion, dyspnea, pneumonia and fever. The highest rates of RSV infection were detected during winter season.

Conclusions

The CNR2 Q63R variation is associated with the risk of hospitalization in children with acute respiratory viral infection. Children caring QQ genotype are more prone to develop severe acute respiratory tract infection. This study also provides much-lacking information on the prevalence of RSV in children less than 2 years old.

02B. EDUCATION: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-1013

GRAM-NEGATIVE ANTIBACTERIAL RESISTANCE PROFILE : A 15-MONTH EVALUATION IN A ROMANIAN TERTIARY REFERRAL CENTRE

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Background

Bacterial infections have become unprecedentedly resistant to antibiotics and are a constant threat to people's health worldwide, causing great concern amongst patients and health care providers.

Methods

Retrospective study (September 2015-December 2016), accumulating 550 Gram negative bacterial strains, isolated from children admitted for infections at a tertiary referral centre in Bucharest, Romania. Retrospective electronic data analysis for a 15 months period was performed. Resistance is reported only for antibiotics tested on at least 50% of the strains.

Results

The most common Gram negative bacteria identified were *E.coli* 37%, enteropathogenic *E. coli* 27.27%, *Pseudomonas* 15.27%.

E. coli strains were highly resistant to ampicilin (58.63%), co-amoxiclav (42.63%) and cotrimoxazole (30.05%). Enteropathogenic *E. coli* strains were resistant to ampicilin (54.42%), co-amoxiclav (35.86%), cotrimoxazole 19.85%. *Pseudomonas* antibiotic resistance was 24.52% to cefepim, 19.69% to meropenem and 17.74% to gentamicin.

Moreover, 52 extended-spectrum beta-lactamase producing strains were detected, amongst which particularly concerning were cotrimoxazole (70,73%), ciprofloxacin (48,83%) and colistimethate (7,14%) resistance.

Conclusions

Gram negative bacteria resistance is growing at an alarming rate, especially to ampicilin (55.98%), co-amoxiclav (40.68%) and cotrimoxazole (26.50%). *Pseudomonas* antibiotic resistance to meropenem is extremely concerning, as it should be mostly used as a second line antibiotic. Therefore, treatment options for Gram negative bacterial infections become restrictive, requiring costly and sometimes toxic alternatives. A closer supervision of the antibiotic usage is necessary to prevent further drug resistance rising and to improve patient health management.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-1014

A 2.5-YEAR GIRL WITH CNS INFECTION DUE TO EPSTEIN-BARR VIRUS

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Title of Case(s)

A 2.5-year old girl with CNS infection due to Epstein-Barr virus

Background

Epstein-Barr virus (EBV) causes infectious mononucleosis (IM) as well as neurologic manifestations including encephalitis, aseptic meningitis, transverse myelitis and Gullain-Barre Syndrome. These manifestations can occur alone or coincidentally with IM. We report a case of CNS infection caused by EBV in a 2.5-year old girl.

Case Presentation Summary

A 2.5-year old girl was admitted to our hospital with drowsiness and inability to walk. Four days prior to admission, she developed fever up to 38.5°C, and had rhinitis without lymphadenitis or hepatosplenomegaly. On admission, she was afebrile but unable to walk. On physical examination, tendon reflexes were non-existent, while the rest of the examination was normal. During hospitalization, she remained in good condition, without any neurological or physical symptoms, apart from gait disturbances, which resolved on the 5th day of hospitalization. Laboratory test results were hemoglobin 9.49 g/dL, white blood cell (WBC) count 8,300/L, sedimentation rate 10mm/h and C-reactive protein 0.63mg/dl. Liver transaminases were normal. Cerebrospinal fluid (CSF) analysis revealed 200/mm³ WBC predominantly lymphocytes, 48mg/dl glucose and 34mg/dl protein. CSF and blood cultures were negative. CSF PCR was positive for EBV-DNA and serum serologic tests were positive for VCA IgM and VCA IgG antibodies. EEG and brain MRI were normal. The child was empirically treated with ceftriaxone and acyclovir initially, both discontinued after receipt of laboratory results. Her symptoms fully resolved on the 6th day of hospitalization, and she was discharged without any sequelae.

Learning Points/Discussion

EBV infection may present with only neurological symptoms. The virus should therefore be considered and sought as the cause of various acute neurologic infections in children. The majority seems to have a benign course with full recovery.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1016

FOLLOW-UP OF PATIENT COLONIZATION WITH METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS IN THE NEONATAL INTENSIVE CARE UNIT AND AFTER DISCHARGE

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Background

Methicillin-resistant *Staphylococcus aureus* (MRSA) nasal colonization has been identified as a risk factor for serious MRSA infection. Nonetheless, complete data are lacking on the colonization dynamics in infants. Our aim of this study is to assess the duration of MRSA colonization and its association with infection among patient in the Neonatal intensive care unit (NICU) and after discharge.

Methods

It was a retrospective study with a follow-up of infants admitted to the NICU in Osaka, Japan, during a 5-year period (2011-2016). Patients colonized with MRSA were monitored with nasopharyngeal cultures every week or month during their length of stay at the NICU. After discharge, we studied nasopharyngeal swabs when they are hospitalized with respiratory infections.

Results

A total of 912 infants were recruited to the study. MRSA were isolated from 73 infants (8%). 30 infants were again admitted to a pediatric ward due to respiratory tract infection after discharge from NICU. We defined them as "follow-up children". 5 infants (17%) among follow-up children were colonized within 48 hours of admission. Mupirocin was administered to the 15 infants. The mean duration of MRSA colonization was 38 weeks (95% confidence interval [CI], 16-60). The median duration of MRSA colonization was 22 weeks (95% CI, 5-36). 8 infants (26.7%) among follow-up children never cleared colonization during the study period. None of them had a serious MRSA infection such as bacteremia.

Conclusions

Our data demonstrate that mean duration of MRSA carriage was 38weeks. The determination of mean time related to patient decolonization may favor the management of applied funds in isolating precautions, patient comfort, contributing to epidemiological surveillance in public health and others.

22A. EDUCATION: OTHER

ESP17-1017

A POST-MORTEM DIAGNOSIS OF NON-BACTERIAL THROMBOTIC ENDOCARDITIS (NBTE) IN A YOUNG PERSON INVESTIGATED FOR PYREXIA OF UNKNOWN ORIGIN (PUO)

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Title of Case(s)

A post-mortem diagnosis of non-bacterial thrombotic endocarditis (NBTE) in a young person investigated for pyrexia of unknown origin (PUO).

Background

NBTE is a syndrome of fibrin-rich, sterile vegetations forming on cardiac valves with a high mortality due to thromboembolic events. We describe our case management and a possible impact on treatment of PUO.

Case Presentation Summary

14-year-old girl with a 3-week history of daily fever. No other symptoms. Afro-Caribbean, sickle cell trait. On examination, well in herself, with a systolic murmur and splenomegaly. She was started on ceftriaxone and flucloxacillin. Investigations revealed anaemia, mild renal and liver dysfunction with normal clotting. CRP 244 mg/L. LDH 1200 U/L, ferritin 55707 mcg/L. Lumbar puncture, 70 WBC/ml. Mantoux/quantiferon: negative. Negative blood and urine cultures, viral PCR, serology and autoimmune screen. Unremarkable chest XR. Abdominal US showed splenomegaly with peripheral infarcts. Echo described a 1,5 cm pericardial effusion. The bone marrow aspirate was negative for hemophagocytic lymphohistiocytosis or malignancy. On day 13th of admission, presented drop in all three blood lines with renal and hepatic failure. Methylprednisolone was started, and she was transferred to paediatric intensive care, where she suffered a cardiorespiratory arrest.

The post-mortem identified NBTE with extensive emboli across multiple organs. No underlying oncological or infectious diagnosis was identified.

Learning Points/Discussion

NBTE is an uncommon condition, associated with numerous diseases (cancer, autoimmune disorders, HIV). Clinical suspicion needs to be high. In cases with continuous pyrexia, excluded oncological or infectious diagnosis, early treatment with steroids should be strongly considered.

20A. SCIENCE: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-1018

VACCINE CONFIDENCE IN 3 DIFFERENT PARENT POPULATIONS IN FLANDERS

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Background

Over the last decade vaccines have been the victim of their own success as parents are increasingly focused on (alleged) side effects of vaccines. The current generation of new parents is not familiar with the severity and complications of vaccine-preventable infectious diseases. This phenomenon, called vaccine hesitancy, has led to lower confidence in the effects of vaccination and an increasing proportion of parents doubting, delaying vaccination or even refusing to have their child vaccinated.

Vaccine confidence of parents of newborns, toddlers and adolescents was measured in Flanders in 2016.

Methods

The survey tool developed by WHO to measure vaccine hesitancy was incorporated into the questionnaire applied in the Flemish 2016 vaccination coverage study using WHO's EPI 2-stage cluster sampling technique. Parents were asked to rate 10 or 12 (in case of vaccination during pregnancy) questions regarding vaccines and vaccination on a 5-point Likert scale (strongly agree, agree, neither agree nor disagree, disagree, strongly disagree). For statistical analysis the data were dichotomized into 2 categories: agree or disagree.

Results

In 3 cohorts of parents of young children (n=746), adolescents (n=1012) and newborns (n=481) over 90% agrees with the statements that vaccines are important, are beneficial and effective for their children and the community. Nevertheless, about 40% of the parents have concerns regarding possible serious side effects of vaccines and 20-25% of the parents thought that vaccines were not necessary if diseases are not common anymore.

Conclusions

Vaccine confidence is high in Flanders, but concerns of parents regarding safety need to be addressed in a proactive way. Attention should also be given to continued immunization.

Clinical Trial Registration (Please input N/A if not registered)

09B. EDUCATION: HOST-PATHOGEN INTERACTION

ESP17-1020

MACROPHAGIC MYOFASCIITIS AFTER STREPTOCOCCAL INFECTION

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Title of Case(s)

Macrophagic Myofasciitis and Streptococcal Infection- is there a a conection...

Background

Macrophagic myofasciitis is a rare muscle disease described primarily as a reaction to aluminium-containing vaccines. We present the first description of a case of this entity associated with a post-streptococcal infection.

Case Presentation Summary

A six years-old boy was admitted with severe myalgia, arthralgia and fever. The pain was symmetrical first in the ankles then knees and in the course of two days also involved shoulders and elbow leaving him unable to walk. The joints were swollen, tender and painful with passive and active movements. He also had rash and red nodular lesions on the anterior face of the legs. There was no history of recent vaccination but he recalled tonsillitis two weeks before. He presented leukocytes 20800/mm³ (86,3% neutrophils), PCR 80.2mg/L. The creatinine phosphokinase level was normal. The investigation showed only elevated antistreptolysin titers (ASLO 1950UI/mL antideoxyribonuclease B 749UI/mL) which normalized after 6 weeks He started flucloxaciline and ibuprofen without improvement. The MRI revealed diffuse myosite of various muscles in the lower limb, tenosinovitis on both feet and arthritis of elbows, knees and ankles. The biopsy of the cutaneous lesions was compatible with leukocytoclastic vasculitis. The muscle biopsy was compatible with macrophagic myofasciitis. Prednisolone was associated with clinical improvement.

Learning Points/Discussion

Macrophagic myofasciitis occurs mainly in adults, has a more chronic course and is apparently related to aluminium exposure. We described a severe myalgia syndrome with diagnosis of macrophagic myofasciitis with serological evidence of recent streptococcal infection. This case shows a possible post-streptococcal immune mechanism for this lesion. As other manifestations of the post-streptococcal syndrome, macrophagic myofasciitis appears to have an immune mechanism of lesion and, as such, could be explained in this context.

22A. EDUCATION: OTHER

ESP17-1021

AGRANULOCYTOSIS ASSOCIATED WITH ANTIBIOTICS IN AN IMMUNOCOMPETENT ADOLESCENT WITH CEREBRAL ABSCESS

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Title of Case(s)

Agranulocytosis associated with antibiotics in an immunocompetent adolescent with cerebral abscess

Background

Neutropenia and agranulocytosis (absence of neutrophils in peripheral blood smear) are potential life-threatening conditions that may be related to drugs. Few data are available on non-chemotherapy drug-induced agranulocytosis in children. Antibiotics, including beta-lactams, are among the most frequent causative agents. High-dose and prolonged treatment might be associated with its development. We report the case of an immunocompetent adolescent diagnosed with cerebral abscess who developed agranulocytosis as a complication of high-dose and prolonged use of antibiotics.

Case Presentation Summary

A 12-year-old girl was admitted to hospital with a diagnosis of frontal abscess secondary to ethmoidal sinusitis. Intravenously (iv) antibiotics were started with vancomycin (60mg/Kg/day), metronidazole (30mg/Kg/day) and cefotaxime (200mg/Kg/day), along with surgical drainage. Baseline and serial blood counts revealed neutrophil, hemoglobin and platelets within the normal limits during the first 3 weeks. On the 27th day of treatment, while the patient was asymptomatic, the blood cell count revealed 1200 leucocytes/ml with 0 neutrophils/ml, and normal hemoglobin, reticulocytes and platelets. Multiplex PCR for respiratory viruses, and serology for parvovirus B19, EBV and CMV were negative. Antibiotics were switched to meropenem along with a 3-day course of G-CSF (5 mcg/Kg/day) with a rapid and sustained recovery in the neutrophil count. The patient completed a 6 week course of i.v. antibiotics with an uneventful outcome.

Learning Points/Discussion

In children treated with prolonged and high-dose antibiotics, monitoring of blood cell counts should be considered since agranulocytosis may be a severe complication. Although other antibiotics, like vancomycin, might have contributed, the use of third-generation cephalosporins seems to have played a major role in the development of agranulocytosis. Withdrawal of the possible associated antibiotics is critical to overcome this unusual drug-induced complication.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1022

OSTEOARTICULAR MULTIFOCAL INFECTION: A CASE REPORT

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Title of Case(s)

Osteoarticular multifocal infection: a case report

Background

Osteoarticular infections with multifocal involvement are exceptional in children, being more frequent in children with immunodeficiency and when methicillin-resistant *Staphylococcus Aureus* is involved, especially those Panton-Valentine leukocidin (PVL) producers.

Recently, several studies have demonstrated the virulence of toxin producer *S.Aureus*, such as PVL which is responsible of more severe infections, multifocal injury, poorer clinical outcome and more complications.

Case Presentation Summary

A 13-year-old boy went to Emergency Room referring fever and right shoulder pain for four days with swelling and functional impotence, without previous trauma.

Blood analysis presented PCR up to 14,5mg/dL without leukocytosis. Shoulder radiography was normal and soft tissue ultrasonography was compatible with clavicle arthritis. Drainage was attempted without success and antibiotherapy was started with endovenous cloxaciline.

On the second day the fever persisted, methicillin susceptible *S.Aureus* (MSSA) was isolated in blood culture and Tc99 gammagraphy showed multifocal involvement (acromioclavicular and escapulothumeral right articulations and left distal tibial epiphysis) suggesting osteomyelitis.

Because of the possibility of toxin-producer MSSA, we added endovenous clindamycin to the treatment. The diagnosis was confirmed by gallium gammagraphy and RM also showed a soft tissue abscess next to the acromioclavicular articulation that needed drainage. On the tenth day, PVL was negative so clindamycin was stopped. He was discharged after 16 days of endovenous treatment, being asymptomatic and with VSG and PCR negative controls. Antibiotherapy with cefuroxime was continued up to six weeks and he was followed in Infectious Consultations with favorable evolution.

Learning Points/Discussion

It is important to assess the presence of associated virulence factors, such as PVL and *MecA* gen in patients with multifocal osteomyelitis.

It is recommended to add clindamycin to the beta-lactam if virulence factors are suspected.

Gallium gammagraphy is useful to find multifocal injury.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-1026

PRELIMINARY RESULTS OF THE FIRST YEAR PROJECT, "EFFECTIVENESS OF PREGNANT PERTUSSIS VACCINATION TO PREVENT WHOOPING COUGH IN CHILDREN

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Background

According to the National recommendations pregnant Tdap vaccination between 27 and 36 gestational weeks is included in the Adults Vaccination Schedule Catalonia and Navarra since 2015.

We aim to estimate the effectiveness of pregnant Tdap vaccination in the third term of pregnancy to prevent whooping cough in children under one year in Catalonia and Navarra.

Methods

Whooping cough cases were identified through the Notifiable Diseases System in the Epidemiology Units of Catalonia and Navarra.

Cases: A child under one year with laboratory-confirmed whooping cough.

Controls: Two controls per case, from the same municipality and health and with the same date of birth (+/- 15 days).

Vaccine used for pregnant immunization: Boostrix®, GSK.

We performed a preliminary unmatched case-control study to estimate the effectiveness of Tdap pregnant vaccination.

VE (%) = (1-OR) x 100, where OR is the ratio between whooping cough cases in vaccinated mothers and in unvaccinated.

Results

During the first year (2016) 71 cases and 176 controls have been included in the study.

49.3% of cases and 54.5% of controls were men.

Mean age of Cases: 97.8 days. Mean age of Controls: 95.2 days

Vaccination status of mothers: 71.8% of cases and 81.3% of controls had their mothers vaccinated during pregnancy.

Vaccinated mothers: In 21.7% of cases and 10.4 of controls, mothers had been vaccinated between 27-36 gestational weeks. Rest of mothers vaccinated between 38-42 gestational weeks. In 76.1% of cases and 85.2% of controls, mother vaccination recommended by a health care worker.

VE to prevent cases in children <1 year: 43% (95%CI: -14%, 71%) .

Conclusions

Although our results did not have enough statistical power, the pregnant Tdap vaccination may be effective to reduce the risk of whooping cough in children < 1 year.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1027

SEROTYPES OF STREPTOCOCCUS PNEUMONIAE RESPONSIBLE OF MENINGITIS IN ALGERIA (2011 TO 2016)

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Background

Evaluation of the serotypes and antibiotic sensitivity rates of *Streptococcus pneumoniae* strains isolated from cerebral spinal fluid, in patients from Algeria (Constantine, Algiers, Blida, Boufarik, Tizi-Ouzou).

Methods

This study focuses on 107 strains of *S. pneumoniae* isolated from cerebrospinal fluid from various Algerian hospitals over a five-year period (2011-2016). Susceptibility testing was recommended according to CLSI recommendation (M100S- 26th edition - 2016). Minimal inhibitory concentration is determined for penicillin, cefotaxime, imipenem, chloramphenicol, levofloxacin, cotrimoxazol and erythromycin, by E-test (BioMérieux) and broth microdilution for betalactams. Determining serotypes: swelling of the capsule and latex agglutination (antisera Staten Serum Institute).

Results

The age distribution of the isolates: 31% and 69% from adult and children patient respectively. Among children, 85% under 5 years of age, and 68% under 2 years of age. The most frequent serotypes: 14 (22.4%), 19F (18%), 23F (9%), 19A (9%) and 6B (8%). The vaccine serotypes represent 85%. M.I.C. ≥ 0.125 mg / ml of penicillin is 75.7% (MIC₅₀ = 0.5mg / ml), and 26.1% (MIC₅₀ = 0.25mg / ml) of cefotaxime. The frequency of resistance in pneumococcal strains to other antibiotics tested was erythromycin 53% and 47.6% for cotrimoxazol. All strains are susceptible to fluoroquinolones and chloramphenicol.

Conclusions

Pneumococcal vaccination has been introduced in the national immunization program in Algeria since April 2016. A surveillance study of invasive infections with *S. pneumoniae* must be done to evaluate the impact of vaccination, and the evolution of non-vaccinating serotypes. The high rate of PSDP, indicates the need to update the national consensus on the management of community meningitis in our country.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1028

PEDIATRIC ACUTE TONSILLOPHARYNGITIS MANAGEMENT AND TREATMENT: REGIONAL GUIDELINES, EMILIA – ROMAGNA ITALY

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Background

Tonsillopharyngitis is a leading cause of pediatric ambulatory care examination, with low clinical complexity index but, in case of bacterial etiology, with possible fearsome complications. Differential diagnosis between viral and bacterial tonsillopharyngitis is challenging, determining high cost impact on healthcare system and usually inappropriate use of antibiotics. The Emilia – Romagna Healthcare Agency published in 2015 regional guidelines for tonsillopharyngitis and their implementation was value in a study involving the family pediatricians of the region.

The aim of the study was to increase appropriate antibiotic prescription and decrease the administration duration.

Methods

Between January and September 2016, 5348 children from Emilia-Romagna were enrolled. The pediatricians receive a kit for rapid antigen detection assay (RAD) of group A beta-hemolytic streptococci with the following diagnostic-therapeutic algorithm:

- Mc Isaac score ≤ 2 no RAD nor antibiotic therapy
- Mc Isaac score = 3 o 4: perform RAD, and antibiotic therapy if positive
- Mc Isaac score = 5 start antibiotic therapy with amoxicillin 50 mg/kg/die bid for 6 days

Results

Antibiotics were prescribed in 2261 children, 2137 with positive RAD and 135 with Mc Isaac score = 5. 82% of children with a Mc Isaac score ≥ 3 received treatment with amoxicillin, 132 children were treated with cephalosporin and 72 with macrolids. The amoxicillin/amoxicillin + clavulanate prescription ratio was 8:1.

Conclusions

Satisfactory results were obtained regarding therapeutic appropriateness, though the amoxicillin/amoxicillin+clavulanate prescription ratio can still be improved. The six days duration treatment resulted efficient and free of complications.

05A. EDUCATION: CONGENITAL DISEASES

ESP17-1029

CONGENITAL CMV INFECTION - LONDON DIAGNOSIS AND TREATMENT AUDIT 2013-2016

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Background

Congenital cytomegalovirus (CMV) is the leading non-genetic cause of congenital abnormalities in the developed world. The UK does not have a screening programme so diagnosis depends on abnormalities detected in-utero or postnatally. Current evidence for treatment is for 6 months with oral valganciclovir and this should be commenced before 28 days. This audit reviewed management according to the "Consensus Guideline for the diagnosis and management of congenital cytomegalovirus infection" across 5 centres in London.

Methods

Clinical data from patients attending 5 hospitals was entered into an Excel spreadsheet. Infants with confirmed congenital CMV, treated before 4 months of age, presenting from December 2013 when treatment with 6 months of oral Valganciclovir became standard practice were included.

Results

39 babies were included: for 28% concerns had been raised in utero and failed new-born hearing screening was the commonest reason for investigation (46%). 74% had the diagnosis suspected before 21 days of age (median day 2, range 1-100 days). Overall, 59% had hearing loss, the only clinical feature in 38%. Growth restriction was present in 23%, and thrombocytopenia in 26%. Only 13% had microcephaly, but 38% had abnormalities on brain MRI.

Diagnostic investigations were completed by 21 days in only 41%, and only 56% started treatment by 28 days. Treatment course varied from 9 days -32 weeks and only 67% completed 24 weeks of valganciclovir. Side effects occurred in 43%, but these were mostly mild and only 15% required a treatment modification or intervention.

Conclusions

In London, early diagnosis and management of congenital CMV infection needs to be improved. Screening strategies require review. A prospective European disease registry will help inform management strategies and monitor clinical outcomes.

02A. SCIENCE: ANTIMICROBIAL RESISTANCE

ESP17-1031

EPIDEMIOLOGICAL FEATURES AND ANTIBIOTIC-RESISTANCE PATTERNS OF HAEMOPHILUS INFLUENZAE ORIGINATING FROM RESPIRATORY TRACT AND VAGINAL SPECIMENS IN PEDIATRIC PATIENTS

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Background

Haemophilus influenzae (*H. influenzae*) is a common pathogen of respiratory tract infections in children, however, as a possible cause of vulvovaginitis in prepubertal girls, its epidemiological features, antibiotic-resistance patterns, and treatment are seldom noted.

Methods

Specimens obtained from patients were inoculated on *Haemophilus* selective medium; and drug-sensitivities tests were determined with disc diffusion method. Cefinase disc was used to detect β -lactamase.

Results

A total of 610 *H. influenzae* strains, 81.6% from respiratory tract and 18.0% from vagina, were identified in the Children's Hospital in 2015. The age of the children with respiratory tract strains were significant younger than those with vaginal strains ($P < 0.001$). The *H. influenzae* isolation rate in May was the highest. The β -lactamase positive rate was 51.5%, and 52.5% were resistant to ampicillin. The susceptibilities rates to cefuroxime, ampicillin/sulbactam, cefotaxime, clarithromycin and sulfamethoxazole-trimethoprim were 72.1%, 95.9%, 96.4%, 81.8%, and 36.4% respectively. Higher resistance to ampicillin, cefuroxime, clarithromycin, and sulfamethoxazole-trimethoprim were found in respiratory tract strains, compared with vaginal strains ($P < 0.05$). All of the patients with *H. influenzae* in the respiratory tract were cured with oral or intravenous β -lactam antibiotics. Of all patients with vaginal strains, 50% were cured with topical ofloxacin gel, and 44.5% were cured with oral β -lactam antibiotics.

Conclusions

The drug-resistance rates of *H. influenzae* isolated from vagina were lower than those from respiratory tract. Topical ofloxacin gel or oral β -lactam antibiotics are effective treatment to eliminate the *H. influenzae* causing infection in vagina.

Clinical Trial Registration (Please input N/A if not registered)

N

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-1032

RECURRENT ANEMIA, A RARE PRESENTATION OF DUAL INFECTION CAUSED BY HYMENOLEPIS NANA AND TRICHURIS THICHIURA: A CASE REPORT

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Title of Case(s)

RECURRENT ANEMIA, A RARE PRESENTATION OF DUAL INFECTION CAUSED BY HYMENOLEPIS NANA AND TRICHURIS THICHIURA : A CASE REPORT

Background

Trichuris trichiura (whipworm) is soil transmitted helminth and the third common worm in human. Hymenolepis nana known as the dwarf tapeworm, is the most common cestode infected to human. Both infections are common in children 4 – 10 years of age, in dry, warm region in developing world. The infection does not require an intermediate host and it can be transmitted directly from human to human by fecal oral route

Case Presentation Summary

A 10 years old girl was referred from district hospital with chief complaint of pallor. The symptoms was started since 3 months prior to the admission. There was history of low grade fever, nausea, and diarrhea but no evidence of weight loss. Patient had experienced of severe anemia in previous hospital and received blood transfusion. There was history of seizure. We found hepatomegaly and splenomegaly. no abnormality in lung, heart and other organ. Laboratory examination showed: anemia Hb: 6.9 g/dL (microcytic and hypochromic). Screening for malignancy and autoimmune disease were negative. Results from stool examinations showed the appearance of trichuris and hymenolepis nana eggs. Patient was improved after treatment of albendazole and praziquantel.

Learning Points/Discussion

Despite no clear presentation of risk factors, patient with history of recurrent anemia should be screened for evidence of helminth infection

02A. SCIENCE: ANTIMICROBIAL RESISTANCE

ESP17-1035

PATTERN OF ANTIMICROBIAL RESISTANCE IN BLOODSTREAM ISOLATES FROM CHINESE NEONATES: A SYSTEMATIC REVIEW

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Background

China has made remarkable progress in reducing under-5 mortality. However, nearly half of under-5 deaths still occur in the neonatal period. Antimicrobial resistance (AMR) is a health threat in China. Very limited information is available on AMR rates in Chinese neonates, with data often published in local languages. Our aims were to (i) review the AMR rates for bloodstream isolates from Chinese neonates and (ii) estimate the likely efficacy of first-line treatment recommendations for neonatal sepsis on selected pathogens.

Methods

Medline, Embase, CKNI, and Wanfang databases were systematically searched for papers published in 2000-2015 combining terms for "China" AND "Neonates" AND "Antimicrobial resistance" AND "Blood Culture". Studies published in English or Chinese reporting data on (i) blood culture isolates (ii) from neonates 0-28 days (iii) with AMR pattern were included.

Results

108 studies were included, of which only 2 were published in English. 87 (80%) were carried out in tertiary and 21 (20%) in secondary care hospitals. Data on 22,043 isolates from 17,053 babies were analysed. Among Gram-positives, 60.5% of *Staphylococcus aureus* (IQR 48.6%-75%) were oxacillin-resistant (MRSA). Among Gram-negatives, the overall median resistance against ampicillin was 100.0% (IQR 85.4%-100%), with median resistance to gentamicin and 3rd-generation cephalosporins of 29.3% (IQR 16.7%-44.8%) and 50.0% (IQR 33.3%-66.7%), respectively.

Conclusions

The amount of data published in local databases is considerable, and this represents the most comprehensive analysis of AMR in neonatal bloodstream infections in China. Extremely high rates of resistance to first-line treatments have been identified. The optimal empiric treatment for neonatal sepsis in high AMR settings is currently unknown. Strategic trials of older antibiotics and regulatory trials of new antibiotics are required to define the best available and affordable treatment, especially in low-middle-income setting.

Systematic Review Registration (Please input N/A if not registered)

N/A

18B. EDUCATION: UPDATE ON TYPHOID

ESP17-1037

TYPHOID FEVER IN THE PEDIATRIC AGE - A PERSONAL EXPERIENCE

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Title of Case(s)

Typhoid fever in Italy

Background

The manifestations of typhoid fever (TF) may range from mild symptoms until the septic state with severe multiorgan complications. Children and adolescents are the most affected.

Case Presentation Summary

We report 3 cases of typhus, in children (5 to 16 years), hospitalized at the Infectious Diseases Unit of Pediatric Hospital of Parma, from May to September 2016.

Patients were 2 Indian males (one of them was back from India). In both cases, first symptoms were gastroenteritis, high fever and arthralgia. Laboratory tests assessed neutrophilic leukocytosis and increase in inflammatory markers. Abdominal ultrasound showed adeno-mesenteritis with thickening of the wall of left colon. Feces and blood culture were positive for *S. Typhi*. Widal test (WT) was positive, with high levels in both cases. Ceftriaxone e.v. was performed for 7 days. Average duration of fever was 4 days and no complications occurred.

One Italian female admitted with acute abdomen along with febrile enteritis. Ultrasound and abdominal CT scan showed multiple enlarged mesenteric lymph nodes with colonic distension. Blood tests showed leukopenia, thrombocytopenia with PCR > 214.5 mg / L and PCT > 5 ng / ml. A widespread edema assessed along with hypoalbuminemia and oliguria. The girl treated with Ceftriaxone, Amikacin and Metronidazole for 5 days, and then replaced by Vancomycin, Meropenem and amikacin for the onset of a septic state with antibiogram resistance. WT was with high levels for *S. Paratyphi B*. Defervescence occurred after 12 days of therapy.

Learning Points/Discussion

TF is unusual in European countries but it should always be considered among differential diagnosis with febrile enteritis when a general evidence of impairment is present. The onset of drug resistance should always be considered in the therapeutic approach to these patients.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1038

EPIDEMIOLOGY OF FEVER WITHOUT SOURCE IN YOUNG CHILDREN IN A FRENCH TERTIARY CARE HOSPITAL

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Background

Fever without source (FWS) is a common reason for consultation in the pediatric emergency department (PED). Data on the prevalence of severe bacterial infections (SBI) and invasive bacterial infections (IBI) post 13-valent pneumococcal conjugate and meningococcal C vaccinations are lacking and are required to adapt the strategies of diagnostic test and probabilistic antibiotic treatment prescriptions. The objective of this survey was to evaluate the actualized epidemiology of SBI and IBI for bacteremia and meningitis as well as the common medical prescriptions for infants with FWS.

Methods

We conducted a prospective cohort study in one French PED between January and December 2016. The SBI and IBI prevalence and diagnostic and therapeutic medical practices were assessed for infants between 6 days and 5 years of age admitted with FWS.

Results

Among the 35 561 infants admitted during the study period, 1070 (3%) infants \leq 5 years old had FWS: 120 (11.2%) infants were diagnosed with a SBI and 11 (1 %) with IBI. Among 359 (33.6%) infants treated with empiric antibiotic treatment, 123 (34%) had a SBI. Using a cutoff value of 20 mg/L for CRP and 0.3 ng/mL for PCT, the sensitivity, specificity, negative predictive value and positive predictive values for IBI were 63.6%, 62.1%, 99.1%, and 2.7% for CRP, and 81.8%, 63.3%, 99.5% and 3.7% for PCT, respectively.

Conclusions

This study reports a low incidence of IBI and a high antibiotic exposure, thus underlying the necessity to assess new algorithms in order to stratify the risk of SBI and IBI and adapt the diagnostic and therapeutic strategies accordingly.

06A. EDUCATION: DIAGNOSIS THROUGH HOST RESPONSE

ESP17-1039

COMPARISON OF SEROLOGICAL ASSAYS USING PNEUMOCOCCAL PROTEINS OR POLYSACCHARIDES FOR THE DETECTION OF ANTIBODY RESPONSES AGAINST STREPTOCOCCUS PNEUMONIAE ANTIGENS IN CHILDREN WITH PNEUMONIA

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Background

To compare the results of serological assays using pneumococcal proteins or polysaccharides for the detection of pneumococcal infection in children with pneumonia.

Methods

Serological assays measured IgG against eight pneumococcal proteins (Ply, CbpA, PspA1, PspA2, PcpA, PhtD, StkP-C, PcsB-N), C-polysaccharide, and 19 pneumococcal capsular polysaccharides (1,2,4,5,6B,7F,8,9V,10A,11A,12F,14,15B,17F,18C,19F,20,23F,33F) in paired serum samples of children aged <5 years-old hospitalized with pneumonia. Pneumococcal infection was also evaluated by blood culture and PCR (*ply*-primer). Cohen's kappa (κ [95%CI]) evaluated agreement between results of serological assays.

Results

Among 183 children, the assay using proteins detected antibody response in 42.1%(77/183) patients and the assay using C-polysaccharide in 15.3%(28/183) patients ($\kappa=0.276$ [0.215–0.337]). In a subgroup of 53 children, the assay using proteins detected response in 60.4%(32/53) patients, the assay using C-polysaccharide in 20.8%(11/53) patients, and the assay using capsular polysaccharides in 47.2%(25/53) patients. κ for agreement between assays using proteins and capsular polysaccharides was -0.007(-0.140–0.126) and between assays using C-polysaccharide and capsular polysaccharides was 0.015(-0.130–0.100). Among 13 patients with invasive pneumococcal disease (positive blood culture or PCR), the sensitivity of the assay using proteins was 92.3%(12/13), of the assay using C-polysaccharide was 30.8%(4/13), and of the assay using capsular polysaccharides was 46.2%(6/13).

Conclusions

Serological assays using pneumococcal proteins are more sensitive for the detection of pneumococcal infection in children with pneumonia than assays using pneumococcal polysaccharides. There is weak agreement among the assays using these antigens. Future epidemiological studies should apply serological assays using pneumococcal proteins to evaluate the frequency of pneumococcal infection in children with pneumonia.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-1040

PERICARDIAL EFFUSION COMPLICATING PARAINFLUENZA 3 RESPIRATORY INFECTION IN AN EXTREMELY PRETERM NEONATE

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Title of Case(s)

Pericardial effusion complicating parainfluenza 3 respiratory infection in an extremely preterm neonate.

Background

Parainfluenza 3 virus is a frequent cause of respiratory infections in pediatrics but is uncommon in neonates, being reported as NICU microepidemics. We report a case of parainfluenza 3 respiratory infection complicated with pericardial effusion in an extremely preterm infant.

Case Presentation Summary

We present the case of a male neonate of 25 weeks of gestation and 720 grams birth weight. The pregnancy was controlled, with no incidence.

At 25 weeks, severe preeclampsia was diagnosed, so urgent cesarean was indicated.

At 29 weeks post-conceptual age, being stable with noninvasive ventilation, sudden clinical deterioration occurred with increased respiratory distress and frequent apnea episodes; requiring intubation and mechanical ventilation. Laboratory tests evidenced lymphocytosis and hypertransaminasemia; blood, urine and CSF culture were negatives. Chest X-ray showed bilateral infiltrates and significant cardiomegaly. Echocardiography revealed diffuse pericardial effusion affecting predominantly right chambers.

Multiplex/PCR in nasopharyngeal swab was positive for parainfluenza 3 virus. Other infectious or drugs causes of pericardial effusion were negatives.

Due to the hemodynamic stability, an expectant attitude was adopted. The patient didn't require anti-inflammatory or diuretic therapy. Echocardiographic controls and chest X ray confirmed reduction of the pericardial effusion until its complete resolution within 5 days.

Learning Points/Discussion

Viral infections are seldom diagnosed in NICU. Lower rate of circulating maternal antibodies in preterm has been suggested as a risk factor.

The main route of transmission is through secretions, so respiratory and contact isolation is essential. Symptoms are mainly respiratory distress, pneumonia or apnea episodes.

Viruses such as parainfluenza 3 should be included in the differential diagnosis, including pericarditis and pericardial effusion. High index of suspicious is necessary for rapid diagnosis and to prevent the unnecessary use of antibiotics.

20C. SCIENCE: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-1042

POPULATION-ADJUSTED EFFECT OF PNEUMOCOCCAL CONJUGATE VACCINES (PCV7, PCV10 AND PCV13) AGAINST INVASIVE PNEUMOCOCCAL DISEASE IN CHILDREN 6 YEARS OF AGE AND YOUNGER IN GERMANY

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Background

Two generations of PCVs have been used in Germany since the general recommendation in 2006, initially PCV7, replaced with PCV13 (mainly) and PCV10 in 2009. Few cases of vaccine-type IPD remain, particularly among children who adhered to the 3+1 schedule. We sought population-level factors that impacted the likelihood of contracting vaccine-type IPD.

Methods

Pneumococcal isolates from children with IPD were serotyped at the GNRCS using the Neufeld-Quellung reaction. Changes in pre-and post-vaccination serotype distribution were calculated with Fisher's exact test. Multivariate Firth's bias-reduced logistic regression was used to show demographically- and regionally- adjusted impact of vaccination.

Results

Comparing pre- and post- PCV7 seasons (2000-2006 vs. 2007-2015), IPD in vaccinated children significantly decreased in all vaccine serotypes, whereas in unvaccinated children IPD decreased in only three vaccine serotypes. In the second-generation PCV seasons (2009-2015), unvaccinated children saw significant increases in the six additional serotypes, while IPD in vaccinated children decreased in all six serotypes. PCV7 serotypes were over eight times more likely in unvaccinated children (OR= 8.572, 95%CI 3.3-24.8), adjusted for age, season, and average household size. PCV13 types were almost four times more likely in unvaccinated children (OR 3.97, 2.0-7.78). Several non-vaccine serotypes had significant correlations with regions, federal states, or demographic variables.

Conclusions

IPD in children in Germany has undergone a sea change in serotype distribution, strongly driven by the introduction of PCVs, despite lackadaisical adherence to the schedule recommendation.

Clinical Trial Registration (Please input N/A if not registered)

20A. SCIENCE: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-1043

CAN HPV COVERAGE RATES OF 90% BE REACHED WITH THE CURRENT VACCINES?

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Background

The human papillomavirus (HPV) causes cervical cancer, which is the 4th most prevalent cancer in women worldwide. Safe and effective vaccines have been developed and implemented in vaccination programs in most Western countries. Since 2010 HPV vaccines have been offered free-of-charge through a school-based system to all girls in the 1st year of secondary school in Flanders.

In 2016 the HPV vaccination coverage was measured in girls (born in 2000) who were vaccinated with a 3-dose scheme 4 years ago.

Methods

Following WHO's EPI 2-stage cluster sampling technique to determine the vaccination coverage, 488 parents of adolescent girls were interviewed at home and vaccination documents were copied after consent was given. Apart from vaccination data a questionnaire on socio-demographics and attitude towards vaccination was taken from the most important caregiver. Vaccination data were checked with the electronic Flemish vaccination registry (Vaccinnet) and in case of missing data, data were requested from the GP, pediatrician or School Health Service.

Results

Vaccination coverage (95%CI) for the 1st, 2nd and 3rd dose was respectively 92.3 (89.7-94.8), 92.2 (89.6-94.8) and 89.5 (86.5-92.4). After adjusting for doses given correctly according to the current 2- or previous 3-dose schedule, coverage for being correctly vaccinated increased to 91%. 89% of the vaccines were given through the school health system. Factors associated with incomplete or non-vaccination were living in a larger city, having a lower family income, having a mother or a father of non-Belgian origin.

Conclusions

The HPV vaccination program of girls seems consolidated in Flanders. However, care should be taken to keep the confidence in this vaccine as different stories on alleged side effects are currently circulating on social media.

Clinical Trial Registration (Please input N/A if not registered)

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1044

IMMUNITY TO HAEMOPHILUS INFLUENZAE TYPE B IN KOREAN ELDERLY: QUANTITATIVE AND QUALITATIVE MEASUREMENTS OF HAEMOPHILUS INFLUENZAE TYPE B ANTIBODIES

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Background

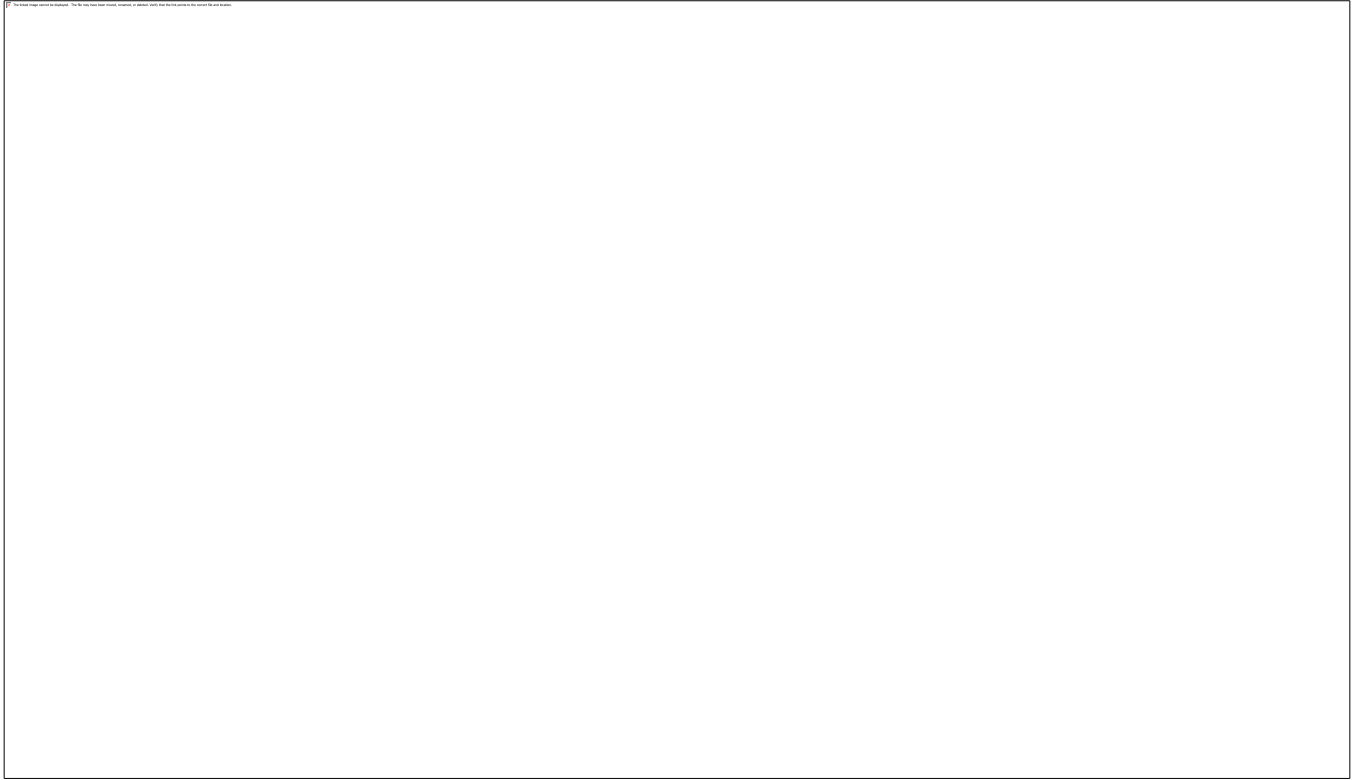
In 2013, *Haemophilus influenzae* type b (Hib) vaccines were included in national immunization program in Korea. In the post-Hib vaccine era, some recent studies reported that invasive Hib disease affects adults, especially the elderly and the immunocompromised, more often than children. To evaluate disease susceptibility, quantitative and qualitative measurement of Hib antibodies in Korean adults aged 20-85 years were carried out in Ewha Center for Vaccine Evaluation and Study.

Methods

Sera from 34 healthy adults (20-50 years of age) and 30 elderly (75-85 years) were obtained. Blood was collected from subjects who did not take antibiotic or systemic corticosteroid agents within two weeks. The serum bactericidal indices (SBIs) for Hib and concentration of anti-polyribosylribitol phosphate (PRP) antibody were measured by serum bactericidal assay (SBA) and enzyme-linked immunosorbent assay (ELISA). Threshold of seropositivity was defined as 0.15 for ELISA and 4 for SBA.

Results

SBIs for Hib and concentration of anti-PRP Ab are shown Figure 1. Geometric mean concentrations of anti-PRP antibody were 0.80 µg/ml (0.18 - 3.61) for young adults and 1.67 µg/ml (0.51 - 5.42) for elderly. Geometric mean SBIs for Hib in each age group were 400 (56 - 2,854) and 417 (102 - 1,837), respectively. Seropositive rates of young adults were 85.3% for ELISA and 91.2% for SBA. Those of elderly were 100% and 96.7%, respectively.



Conclusions

In the era of universal pediatric immunization against Hib, healthy Korean adults have protective immunity against invasive Hib disease. However, low Hib circulation rates due to the vaccine's herd immunity may reduce maintenance of natural anti-Hib immunity in nonvaccinated population. Post-vaccination seroepidemiological monitoring should be continued in this population.

06A. EDUCATION: DIAGNOSIS THROUGH HOST RESPONSE

ESP17-1045

AN AUDIT OF BASIC BIO-MARKERS IN PEDIATRIC COMMUNITY ACQUIRED LOWER RESPIRATORY TRACT INFECTIONS(CA - LRTI),HOSPITALIZED AT A SMALL SETUP IN RURAL INDIA.

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Background

“LRTI” is spectrum of respiratory infections below the level of larynx, encompassing clinical syndromes- Pneumonia, Bronchiolitis, Bronchitis, Laryngotracheobronchitis.

LRTI is a common and leading problem of child health across the globe.

Pneumonia needs precise diagnosis for antibiotic treatment..

Precise diagnosis & differentiation of pneumonia is a priority but practical difficulty. Basic biomarkers-leukocyte counts,CRP are frequently done in LRTI but lack evidence support. Role of biomarkers to guide antibiotic therapy of CA-LRTI needs evaluation.**Methods**

Retrospective audit of total 278 CA-LRTI cases of 0-18 years age, hospitalized at a rural pediatric primary care hospital in INDIA during three years -01/04/2011 to 31/03/2014.

Leukocyte data- ABX Pentra 60,fully automated five part differential cell counter

CRP (POCT)- manual,semi quantitative slide agglutination assay,
single cutoff =12mg/L
simple,rapid(2min),low cost~0.2GBP/0.3\$

Simple descriptive statistical analysis of results using SPSS(version 17.0)

Results

- 1) No statistically significant association between leukocyte parameters (TWBC,ANC,BCC) and pneumonia was observed in this study.
- 2) A statistically significant association between positive CRP POCT test and pneumonia was found with a p value of .010, 80.6 specificity and 76.9% Positive Predictive Value.
- 3) A statistically significant association between positive CRP POCT test and pneumonia than in non-pneumonia CA-LRTI was found by univariate analysis, with a p value of .015 and Odd's Ratio of 2 (95% CI 1.098-3,642).

Conclusions

- 1) Leukocyte parameters are not helpful in diagnosis & differentiation of CA-LRTI
- 2) C-Reactive Protein Test done in a low cost, simple and rapid “Point Of Care Test” format showed significant association with pneumonia diagnosis and differentiation in CA-LRTI.
- 3) Low sensitivity(32.4) & negative Predictive Value (37.5%)

makes CRP POCT unsuitable candidate biomarker for primary care screening and test guided antibiotic therapy of pneumonia.
4) CRP POCT may be considered in secondary care for the diagnosis of pneumonia

09A. EDUCATION: IMMUNE DYSREGULATION- FROM BED TO BENCH AND BACK TO BED

ESP17-1047

PROFILE AND PREDICTORS OF OUTCOME IN PATIENTS WITH HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS ADMITTED TO A PEDIATRIC INTENSIVE CARE UNIT (PICU)

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Background

Hemophagocytic lymphohistiocytosis (HLH) is an uncommon but a potentially life-threatening condition. We intend to describe the clinical and laboratory presentation and to determine the predictors of outcome in children with HLH.

Methods

A retrospective descriptive study was carried out of fourteen children diagnosed with HLH between 2013 and 2016. The criteria for diagnosis were those proposed by the Histiocyte Society. When indicated, immunochemotherapy was prescribed according to the HLH94 and HLH2004 protocols of the Histiocyte Society.

Results

The patients' ages at diagnosis ranged from one month to fourteen years. Clinical presentations included fever (100%), tachypnea (85.7%), tachycardia (92.8%), hepato-splenomegaly (85.7%), lymphadenopathy (21.4%), and altered consciousness (21.4%). Laboratory findings revealed thrombocytopenia in 100%, hyperferritinemia in 92.8%, elevated serum lactate dehydrogenase levels in 71.4%, anemia in 85.7%, and leukopenia in 92.8% of the patients. Bone marrow hemophagocytosis was detected in all patients. In ten cases, infectious diseases triggered the syndrome. In two cases, associated with enteric fever, remission was achieved after treatment of the underlying infection. Two patients, who had Epstein-Barr-related hemophagocytic lymphohistiocytosis, required treatment with immunochemotherapy. They are alive and in remission; two patients had symptoms of juvenile rheumatoid arthritis and one had SLE and another, who was suspected of having primary HLH, died. Two deaths (14.3%) occurred in the cohort; the other boy who died was having HLH secondary to tuberculosis. In multivariate analysis, fever not subsiding within 3 days of diagnosing HLH ($p=0.02$), and occurrence of disseminated intravascular coagulation as a complication ($p=0.009$) were found to be statistically significant indicators of mortality in patients with HLH.

Conclusions

HLH has a multifaceted presentation with nonspecific signs and symptoms. In secondary forms, remission may be achieved by treating the underlying disease.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1048

BRAIN ABSCESSES IN CHILDREN: A SINGLE CENTER EXPERIENCE

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Background

Brain abscess is a rare disease in childhood requiring prompt medical and/or surgical treatment. Unfortunately, there is no consensus on the optimal approach for its diagnosis and treatment.

Methods

Between December 2010 and 2016, 126 patients were treated for central nervous system infections. The medical records of all children (0–18 years old) with a discharge diagnosis of “brain abscess” were analyzed with regard to the demographics, presenting signs and symptoms, predisposing factors, imaging, microbiological results, treatments, and short-term outcomes.

Results

The most common presenting symptoms were nausea, fever, and vomiting. Three of the patients received antimicrobial therapy, while both surgical and antimicrobial therapy was administered in 10 (77%) patients. The antibiotic therapy lasted for at least 6 weeks. One (8%) patient underwent craniotomy and nine (69%) had burr hole aspirations. The most common localization was the frontal lobe (31%). Magnetic resonance imaging (MRI) revealed contrast enhancement and perilesional edema in all of the patients, a midline shift in 11 (84%), diffusion restriction in nine (69%), and partial diffusion restriction in one (8%). The survival rate was 92%, and long-term neurological sequelae affected 31% of the patients. Overall, the children in this series exhibited good outcomes in terms of survival and the lack of recurrence.

Conclusions

Brain abscess is a serious condition that needs aggressive treatment. Successful treatment of brain abscess requires a high suspicion, which can have subtle presentations particularly in children younger than 1-year old age. Empiric treatment choices require knowledge of common pathogens and local resistance. The most preceding infections have been still upper-respiratory infections despite better treatment strategies of sinus and otogenic infections.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1049

YEAR 2016 SURVEILLANCE DATA ANALYSIS OF CEREBRO-SPINAL MENINGITIS (CSM) CASES IN KEBBI, NORTH- WESTERN NIGERIA

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Background

Meningitis is a vaccine preventable disease associated with high mortality and morbidity, especially in developing countries like Nigeria. The integrated disease surveillance and response (IDSR) in Nigeria classify Meningitis as one of the epidemic prone diseases in the country. We aim to describe the outcome of CSM reported cases in Kebbi State for the year 2016.

Methods

We conducted a descriptive cross-sectional study by abstracting and reviewing CSM surveillance data from the state IDSR data base for the year 2016. A suspected case of CSM was defined as: any person with sudden onset of fever (>38.5°C rectal or 38°C axillary) and one of the following signs: neck stiffness, altered consciousness or other meningeal signs. Data was checked for accuracy and completeness. Analysis was done using Epi info 7.1.

Results

A total of 96 suspected cases of CSM were reported in 2016. Median age was 12±8.7(SD) with a range of 0.3-57yrs. Males constitute 56(58.3%) of the reported cases. Age group of 10-14 years were the most affected 36(37.5%). Thirty-four (34) cases, had their samples taken of which 18(52.9%) were positive for *Neisseria Meningitidis* Serotype C. Eighteen (18) of the total cases died during the reporting period, given a case fatality rate of 13.5%. Two (2.0%) cases had a single dose of vaccine, while 98% were unvaccinated.

Conclusions

Children within the age group of 10-14 years were more at risk. Majority of the reported cases were unvaccinated. Not all case had lab. confirmation. We recommend further improvement in surveillance and vaccination activities in the state.

02B. SCIENCE: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-1051

POPULATION PHARMACOKINETICS OF TEICOPLANIN IN PRETERM AND TERM NEONATES WITH LATE-ONSET SEPSIS

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Background

Neonatal late-onset sepsis (LOS) still remains a significant cause of morbidity and mortality and requires appropriate empiric antimicrobial therapy. Gram-positive cocci constitute the most frequent causes of LOS. Little is known about the pharmacokinetics (PK) of teicoplanin, a glycopeptide commonly prescribed for LOS. We aimed to develop a population pharmacokinetic model in preterm/term neonates in order to evaluate currently recommended dosing regimen and safety.

Methods

By using D-Optimal design approach, a sparse PK study was designed and implemented in 60 neonates with post-menstrual age (PMA) of 26-43 wks. After parental informed consent, four blood samples per neonate were collected. Dosing regimen was 16 mg/kg loading dose followed by 8 mg/kg once daily administered as 30-min infusion. An ultra-high pressure liquid chromatography tandem mass spectrometry method was developed and validated for the quantification of teicoplanin concentrations. Using the NONMEM software (version 7.3) with FOCEI method, first, a basic model was determined by trying out different compartmental structural models and error models. Then, statistically significant covariates were screened. Final PK model was validated using nonparametric bootstrapping and visual predictive check.

Results

The final model was a two-compartment model with proportional error parametrized as clearance (CL), central volume (V1), inter-compartmental clearance (Q) and peripheral volume (V2). The covariate model on CL

was L/h and on V1 was L, while other population parameters took values Q=0.256L/h and V2=0.473L. Inter-individual variability on CL, V1 and V2 was found 37%, 50% and 48%, respectively, while correlation between CL and V1 was 0.932.

Conclusions

A population pharmacokinetic model for teicoplanin in neonates was developed which takes into consideration PMA and weight that can be used to determine dosing regimens in neonates.

Clinical Trial Registration (Please input N/A if not registered)

N/A

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-1052

A PROSPECTIVE EVALUATION OF RISK FACTORS AND OUTCOMES OF CARBAPENEM-RESISTANT GRAM-NEGATIVE INFECTIONS VERSUS CARBAPENEM-SENSITIVE GRAM-NEGATIVE INFECTIONS IN A CHILDRENS HOSPITAL

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Background

Carbapenem –resistant Gram-negative (CRGN) infections have been increasing in recent years and associated with significant morbidity, mortality and healthcare costs. The aim of this study was to evaluate the epidemiologic and clinical risk characteristics, risk factors and outcome of CRGN infections and to compare with carbapenem-sensitive Gram-negative (CSGN) infections in children.

Methods

All newly diagnosed CRGN infections in hospitalized children under 18-year old were prospectively recorded and all patients infected with CSGN pathogen in the same unit within 5 days of diagnosis were included in control group between 1st April 2014 and 31th December 2014.

Results

Twenty-seven patients with CRGN infections and 28 patients with CSGN infections were enrolled in this study. Of the 27 patients in case-group, ventilator-associated pneumonia was the most common type of infection, while bloodstream infection was in control-group. Prior exposure to carbapenems (Relative risk [RR], 11.368; 95% Confidence interval [CI], 1.311-98.589), glycopeptides (RR, 7.714; 95% CI, 0.861-69.099), prolonged hospitalization (RR, 5.100; 95% CI, 1.601-16.242) were found to be independent risk factors for acquiring CRGN infections. Septic shock was significantly more frequent in CRGN group when compared with CSGN group (RR, 9.450; 95% CI, 1.075-83.065). The in-hospital mortality was higher in CRGN group (RR, 7.647; 95% CI, 1.488-39.290).

Conclusions

Prior carbapenem exposure and prolonged hospitalization are the most important risk factors for CRGN infections in our hospital. This study demonstrated as previous reports that nosocomial infections especially multi-drug resistant infections enhance the morbidity, mortality and healthcare costs and also our results emphasize the importance of the predicting CRGN bacterial infections and rapid initiation of appropriate antibiotic therapy to reduce morbidity and mortality. Other implications were the importance of antibiotic stewardship programs and strict adherence to infection-control programs.

08C. EDUCATION: HIV/AIDS

ESP17-1053

GLOBAL DEVELOPMENTAL REGRESSION IN A 2-YEAR-OLD BOY WITH CONGENITALLY ACQUIRED HUMAN IMMUNODEFICIENCY VIRUS INFECTION AND EPSTEIN -BARR CO-INFECTION

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Title of Case(s)

Global developmental regression in a 2-year-old boy with congenitally acquired Human Immunodeficiency Virus infection and Epstein-Barr co-infection

Background

Nowadays due to screening methods, antiretroviral prophylaxis and treatment, the mother-to-child transmission of Human Immunodeficiency Virus (HIV) has decreased significantly. The incidence of HIV-encephalopathy among untreated infants and children is high and is characterized by impaired brain growth and inability to achieve or retain previously acquired developmental milestones.

Case Presentation Summary

A 2-year-old boy was referred to Infectious Diseases Unit due to progressive loss of developmental milestones (motor, mental and language). His parents mentioned recurrent febrile infections, persistent stomatitis during the past 3 months. Upon examination the boy had dermatitis, oral candidiasis, generalized lymphadenopathy, hepatosplenomegaly, gait disturbance.

Laboratory exams revealed anaemia, increased transaminases and immunoglobulin G. Epstein-Barr virus (EBV) was detected in the serum (IgM+) and the cerebrospinal fluid (CSF) (EBV DNA), revealing EBV meningoencephalitis and the child was treated with ganciclovir. Magnetic resonance imaging of the brain showed findings of possible progressive multifocal leukoencephalopathy.

Further investigation revealed HIV infection (HIV viral load >10⁶ copies/ml, CD4+ T-lymphocyte count: 184 cells/μl). Treatment with lamivudine, zidovudine and lopinavir/ritonavir was initiated. EBV DNA in CSF was negative after a 4-week treatment with ganciclovir. Examination of his parents showed HIV infection of the mother, revealing possible mother-to-child transmission. After one year of antiretroviral therapy, the child demonstrated improvement in neurological function.

Learning Points/Discussion

The isolation of EBV in the CSF of children with signs of encephalitis and especially in those with a history of unexplained fevers, persistent candidiasis, recurrent invasive infections may suggest HIV infection. Antiviral therapy may decrease the quantitative EBV PCR in the CSF, but timely diagnostic testing and prompt initiation of highly active antiretroviral therapy may lead to better prognosis.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-1054

ONE YEAR OF CATHETER-RELATED INFECTION IN A PEDIATRIC UNIVERSITY HOSPITAL: A PROSPECTIVE STUDY

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Background

Central venous catheter (CVC) contribute to a better comfort for the treatment of hospitalized children who required prolonged intravenous treatment or multiple blood samples but they expose to risk of severe infection. They are few data concerning specific paediatric epidemiology and risk factor of catheter-related bloodstream infection (CRBI). The main objective of this study was to measure the incidence-rate of CRBI in our paediatric university hospital, then subsequently, to characterize the CRBI and identify risk factors.

Methods

We conducted an epidemiological prospective monocentric study including all the CVC, except Porth-a-Caths and arterial catheters, placed in children, from birth to 18 years old of age, from April 2015 to March 2016 in the pediatric university hospital of Nantes. Our main outcome was the incidence rate of CRBI defined according to French guidelines and separating infections without bloodstream infection (CRI) and CRBI. We analysed association between infection and potential risk factors with univariate and multivariate analysis by Cox model.

Results

We included 793 CVC with 60CRBI and 4 CRI. The incidence rate was 4.6/1000 catheter-day and was maximal in neonatal intensive care unit (13.7/1000 catheter-day). Coagulase-negative staphylococci were responsible of 85.9% of CRBI. In multivariate analysis, CRBI was most frequent in children hospitalized for prematurity, orthopaedic pathology, traumatology, respiratory or infectious pathology and in children with invasive ventilation. CRBI's risk decreased with the age of placement.

Conclusions

The incidence rate of CRBI in children hospitalised in Nantes university Hospital seemed higher than that found in literature. This high rate may be partly due to the difficulty of having an accurate diagnosis in neonates.

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-1055

TRENDS AND RESISTANCE PATTERNS OF GRAM-NEGATIVE BACTERAEMIA IN CHILDREN ADMITTED TO BRISTOL ROYAL HOSPITAL FOR CHILDREN (2007-2015)

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Background

Gram negative bacteraemia is a frequent source of sepsis with high morbidity and mortality. Awareness of resistance patterns to betalactam antibiotics and carbapenems are essential to guide effective empirical therapy.

Aims: This was a surveillance study to determine the incidence of Gram negative bacteraemia in children over a 6-year period and to assess antimicrobial resistance patterns.

Methods

We included all Gram negative blood cultures (BC) from children aged >3 months and <18 years isolated at Bristol Royal Hospital for Children 2007-2011 and 2015. We then analysed the sensitivity data with a primary focus on sensitivities to piperacillin-tazobactam, ceftazidime and meropenem.

Results

A total of 2383 positive BC were reported. Of these, 1830 were Gram positive, and 456 were Gram negative bacteria.

Gram negative resistance to piperacillin-tazobactam has ranged between 12.5% and 15.6% during the study period; it was 13% in 2015. Ceftazidime resistance over our study period has spanned a greater range from 16.3 to 28.6%. This was 17.7% in 2015. The number of Gram negative organisms tested for meropenem sensitivity remains low; maximum resistance was found in 2010 when 4/27 Gram negative organisms were resistant to meropenem.

Conclusions

This study demonstrates the incidence of Gram negative bacteraemias in our centre and highlights that approximately 1 in 7 Gram negative bacteraemias are caused by organisms resistant to piperacillin-tazobactam and over 50% of these were also resistant to Ceftazidime. Piperacillin-tazobactam is our hospital's first-line empiric antibiotic for hospital-acquired pneumonia and neutropenic sepsis. It reinforces the need for continuous bacterial surveillance and antibiotic stewardship.

01C. SCIENCE: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-1056

SERRATIA MARCESCENS: "SUCCESSFUL STORY OF AN OUTBREAK CONTROL AT TAWAM HOSPITAL NEONATAL INTENSIVE CARE UNIT"

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Background

Serratia marcescens was described first in 1819 and thought to be a non-pathogen until the latter half of the 20th century. It is now known to cause pneumonia, urinary tract infections, conjunctivitis, septicemia and meningitis, particularly in high risk settings. It is known to colonize the respiratory and urinary tracts of adults; and the gastrointestinal tract of neonates who are known to remain colonized for long periods despite antibiotic treatment. We are here to describe an outbreak that took place in our Neonatal Intensive Care Unit (NICU) and discuss the control measures adopted to successfully contain it.

Methods

After three babies developed serious infections due to *Serratia marcescens* a containment plan was implemented which included:

1. Screening all the babies in the unit by obtaining rectal and eye swabs.
2. Cohorting all infected babies in one room with cohorting of medical and paramedical staff.
3. Extensive environmental sampling and hand sampling of the staff
4. Disinfection of patient care items and frequently touched surfaces
5. Meticulous hand hygiene was reinforced and Secret Shopper audits were implemented to monitor all the above.
6. Cohorting was discontinued only after having negative swabs which were checked every two weeks.

Results

The outbreak was well controlled without closing the Unit. All environmental cultures were negative which suggest that the source of the infection was one of the index cases through vertical transmission from his mother most probably with further nosocomial spreading to the other cases.

Conclusions

The early detection of colonized or infected patients and the prompt implementation of infection control measures are significant factors in the control of bacterial spread. Reports from different part of the world on *serratia* outbreaks have enriched the literature and added to our experience in controlling such serious outbreak.

Clinical Trial Registration (Please input N/A if not registered)

N/A

20B. EDUCATION: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-1059

SAFETY OF VACCINATION OF PATIENTS WITH EPIDERMOLYSIS BULLOSA.

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Title of Case(s)

Safety of vaccination of patients with epidermolysis bullosa.

Background

Congenital epidermolysis bullosa - a group of rare hereditary skin diseases caused by mutations of several genes responsible for the synthesis of structural proteins of the skin. This disease characterized by a tendency to blistering on the skin and mucosa. Heavy widespread lesion of the skin contributes to significant losses of protein, macro- and micronutrients through the wound surface and, in addition, is the gateway of infection. The special danger for these patients is chicken pox, against which it is necessary to conduct preventive immunization. However, vaccination of children with epidermolysis bullosa, in Russia hampered across the country in connection with the rare occurrence of this disease and the fear of pediatricians and parents before the vaccination.

Case Presentation Summary

30 patients with epidermolysis bullosa age from 1 to 14 years were vaccinated of chickenpox vaccine and various types of other vaccines simultaneously in National Scientific and Practical Center of Children Health during 2015-2016. The safety of vaccination (local and system reactions) was assess for 21 days. Features immunization with live attenuated vaccines are deeply subcutaneous or intramuscular administration.

Only varicella vaccination were received 9 children, and 21 children were vaccinated both the varicella vaccine in combination with other pediatric vaccines (PCV13, DTaP-IPV-HepB-Hib, MMR). In children, only vaccinated against chicken pox, there were no vaccine-related reactions. In 3 children who received simultaneously the varicella vaccine and the hexavaccine noted moderate local reactions: redness at the injection site hexavaccine and fever for 1-2 days after vaccination. We did not observe the aggravation of the main disease.

Learning Points/Discussion

Children with Epidermolysis Bullosa especially need for vaccination against varicella. The vaccination of patients with epidermolysis bullosa is safe.

01A. EDUCATION: ANTIMICROBIAL STEWARDSHIP

ESP17-1064

EPIDEMIOLOGY OF CLOSTRIDIUM DIFFICILE INFECTION AT CHILDREN'S HOSPITAL, AFFILIATE OF VILNIUS UNIVERSITY HOSPITAL SANTARISKIU KLINIKOS IN 2001-2016

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Background

The consumption of antibiotics affects the normal intestinal flora, interferes with its balance, resulting in multiplication of *C.difficile* bacteria. The aim of the study – to determine *Clostridium difficile* infection (CDI) frequency rate and to identify an association of CDI with antibacterial treatment, at our hospital during 2001-2016.

Methods

211 case-records of hospitalised patients, and diagnosed with CDI during 2001-2016, were investigated retrospectively. In all cases *C.difficile* toxins A and B were confirmed by ELISA.

Results

Average length of the hospital stay were - 45 days. Most frequently before CDI antibiotics were given for treatment of patients with fractures, spinal injury, congenital intestinal malformations, tumours, intestinal infections, digestive system diseases. In 45 cases (21%) prior diagnosing CDI, one antibacterial drug was prescribed, duration of treatment – 2-10 days. In 122 (58%) cases, antibacterial therapy of 2 to 7 different antibiotics was prescribed, treatment duration - from 2 to 30 days. In 23 (11%) cases no antimicrobial treatment was prescribed, and in 21 cases (10%) no data about antibacterial treatment was retrievable. In 54% of all CDI cases were nosocomial infection. The most commonly administered antibiotics prior CDI was diagnosed were second and third generation cephalosporins (38%), sulfamethoxazole/trimethoprim - 22%, gentamicin - 10%, penicillins - 7%. Most frequently prescribed antibacterial drug or combination of drugs against CDI were metronidazole (72%), vancomycin (10%). CDI related enterocolitis presented a small part of bacterial diarrhoeas, of confirmed aetiology ranging from 0.2 to 2.0%.

Conclusions

Long average hospital stay (45 bed-days) of patients with CDI is led by a complicated course of the main disease or its complications. Main antibacterial drugs prescribed, prior diagnosing CDI – cephalosporins, aminoglycosides and penicillin group antibiotics.

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-1065

TIBOLA IN CHILDREN FROM LOWER SILESIA: A CASE SERIES

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Title of Case(s)

TIBOLA IN CHILDREN FROM LOWER SILESIA: A CASE SERIES

Background

Tick-borne lymphadenopathy (TIBOLA) is caused by either *Rickettsia slovaca* or *R. raoultii*. Causative agents are transmitted by Dermacentor ticks. This disease occurs mainly in south-east Europe. TIBOLA is characterized by the eschar on the scalp and enlarged cervical lymph nodes in the absence of a rash. It develops in the area of the tick bite; the incubation period is approximately 9 days. Typically TIBOLA develops during colder months and it affects mainly children and women. Treatment of choice is 10 day course of doxycycline. Azithromycin, clarithromycin or ciprofloxacin are considered as an alternative treatment. So far, there have been only two described cases of TIBOLA in Poland.

Case Presentation Summary

Three children (1 boy and 2 girls) were admitted to the pediatric ward in Wrocław because of scalp eschar and neck lymphadenopathy. Two patients were admitted in July 2016 and one in May 2016. Median age was 6 years. All 3 patients had reported a history of tick bite in the scalp area. The clinical presentation was similar in all cases – none of the patients had fever or rash. Laboratory tests showed no abnormalities; in all cases CRP was negative. Two patients were successfully treated with oral doxycycline and one with azithromycin. A significant improvement was noticed after a week of treatment. In all cases rickettsiosis was confirmed by positive serology.

Learning Points/Discussion

Tick-borne rickettsioses should be considered as a cause of ulceroglandular syndrome.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-1066

REDUCTION OF INVASIVE DISEASE IN CHILDREN TWO DECADES AFTER THE INTRODUCTION OF HAEMOPHILUS INFLUENZAE TYPE B CONJUGATE VACCINATION IN APULIA REGION, ITALY

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Background

Haemophilus influenzae type b (Hib) conjugate vaccination, consisting of 2p+1 doses at 3, 5, and 11 months of age, was introduced in the Italy's infant immunization schedule in 1999 and included in the hexavalent vaccines since 2001 (vaccination coverage of 83.4% in 2002, >90% by 2005, and >95% by 2011). In Apulia region (about 4,000,000 inhabitants), vaccination coverage for 3 doses reached 75% in 2001, >90% by 2002, and >95% by 2007. This study aimed at estimating the decline in incidence of hospitalized *Haemophilus influenzae* invasive disease cases in children aged <5 years in Apulia, by calculating the attributable benefit (A_{ieB}) and the prevented fraction (P_{edF}) of Hib universal routine vaccination (URV).

Methods

We considered annual age-specific hospitalization rates (<1 year, 1-4 years) during 1996-2014 as a proxy for incidence. The A_{ieB} was calculated as the reduction in incidence of *Haemophilus influenzae* invasive disease among vaccinated children attributable to the introduction of Hib vaccination and the P_{edF} as the proportion of hypothetical total cases that were prevented by the introduction of URV.

Results

Estimated incidence decreased from 11.5 (95%CI= 1.4-21.6) per 100,000 in 1996-1998 to 6 (95%CI= -1.4-13.3; A_{ieB} = - 5.5 per 100,000; P_{edF} = 48.2%) in 1999-2000 and to 1 (95%CI= -2.2-4.1; A_{ieB} = -10.5; P_{edF} = 91.6%) in 2001-2014 among infants, remained stable from 2.4 (95%CI= 0.1-4.7) in 1996-1998 to 2.4 (95%CI= 0-4.7; A_{ieB} = 0; P_{edF} = 2%) in 1999-2000 and dropped to 0.1 (95%CI= -0.4-0.7; A_{ieB} = -2.3; P_{edF} = 94.3%) in 2001-2014 among 1-4-year-olds.

Conclusions

The proportion of cases <5 years presumably prevented by the introduction of Hib universal vaccination amounted to more than nine in ten cases as a result of the increased vaccine coverage with the wide use of the hexavalent combination vaccines.

08C. EDUCATION: HIV/AIDS

ESP17-1067

PREVALENCE AND CHARACTERISTICS OF GROUP B STREPTOCOCCUS COLONIZATION IN HIV-INFECTED PREGNANT WOMEN IN BELGIUM

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Background

Maternal GBS colonization during pregnancy is the main risk factor for both early-onset and late-onset GBS diseases. High incidence of GBS sepsis has been reported in HIV-exposed but uninfected (HEU) infants in both developed and developing countries, particularly late-onset diseases. We aimed at determining the prevalence, the characteristics and the risk factors of GBS carriage in HIV-infected and HIV uninfected pregnant women (PW).

Methods

Between 1/01/2011 and 31/12/2013, HIV-infected (n=132) and uninfected (n=123) PW had recto-vaginal swabs for GBS detection performed at 35-37 weeks of gestation and at delivery. Demographic, obstetrical and medical data related to HIV-infection were prospectively collected. Serotyping of GBS strains was performed on a limited number of randomly selected samples (26 from HIV-infected and 13 from uninfected PW).

Results

The overall prevalence of GBS carriage was not statistically different between HIV-infected and uninfected PW (31% vs 24,4% respectively). Age, nadir CD4 cell count, CD4 cell count at delivery and detectable viral load at delivery were not associated with GBS carriage rate in HIV-infected PW. A distinct pattern of GBS serotype was found in HIV-infected PW who were predominantly colonized by serotype III (12/26) while HIV-uninfected PW were mostly colonized by serotype Ia (8/13) (p<0,05).

Conclusions

As previously reported in other countries, HIV-infected PW do not have significantly higher rate of GBS colonization. However, our results suggest that HIV-infected PW are more likely to be colonized with serotype III strains, that is the main serotype associated with late-onset neonatal sepsis. Ongoing research aims at characterizing the clonal features of the isolated strains.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1070

EPIDEMIC VIRUS MENINGITIS IN CHANIA CITY , EPIDEMIOLOGIC FEATURES

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Background

An outbreak of enteroviral aseptic meningitis emerged in Chania in a period of two months the last semester of 2016 including 9 children. In five out of the nine cases stool samples had positive PCR for enterovirus and the virulent serotype A type 71 (EVA71), was isolated in three out of five stool samples. The epidemiological situation of EV meningitis in children, the incidence of virulent serotypes and the clinical presentation are studied.

Methods

All nine children were hospitalized for symptoms associated with neuroinfection with mild clinical features. Blood cultures, samples from cerebrospinal fluid and stool samples were obtained from all children. The samples were tested with cultures and PCR method. The epidemiologic features and all clinical symptoms were described. All children were hospitalized for about 7 days.

Results

The patients' age range was 2,5month to 6,5 years old , there were more boys than girls. Six of the nine children were living in the same area of Chania. The most common symptoms were headache, fever and stiff neck. there were negative results in all blood and cerebrospinal fluid. In five out of the nine cases stool samples had positive PCR for enterovirus. The most frequently (33,3%) detected agent was EVA 71 (virulent serotype) was found. All 9 children recovered without complications.

Conclusions

The differential diagnosis of neuroinfections , should definitely include enterovirus , although most infections are benign aseptic meningitis. Enterovirus was not isolated in cerebrospinal fluid of children. The isolation of the agent with the available methods remains an issue. The clinical presentation did not vary between the children who isolated the EV71 in the stool sample and those who did not. There is an increasing incidence of enterovirus infection in Chania.

20B. EDUCATION: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-1071

CHARACTERISTICS OF ROTAVIRUS VACCINES - AN OVERVIEW

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Background and Objective

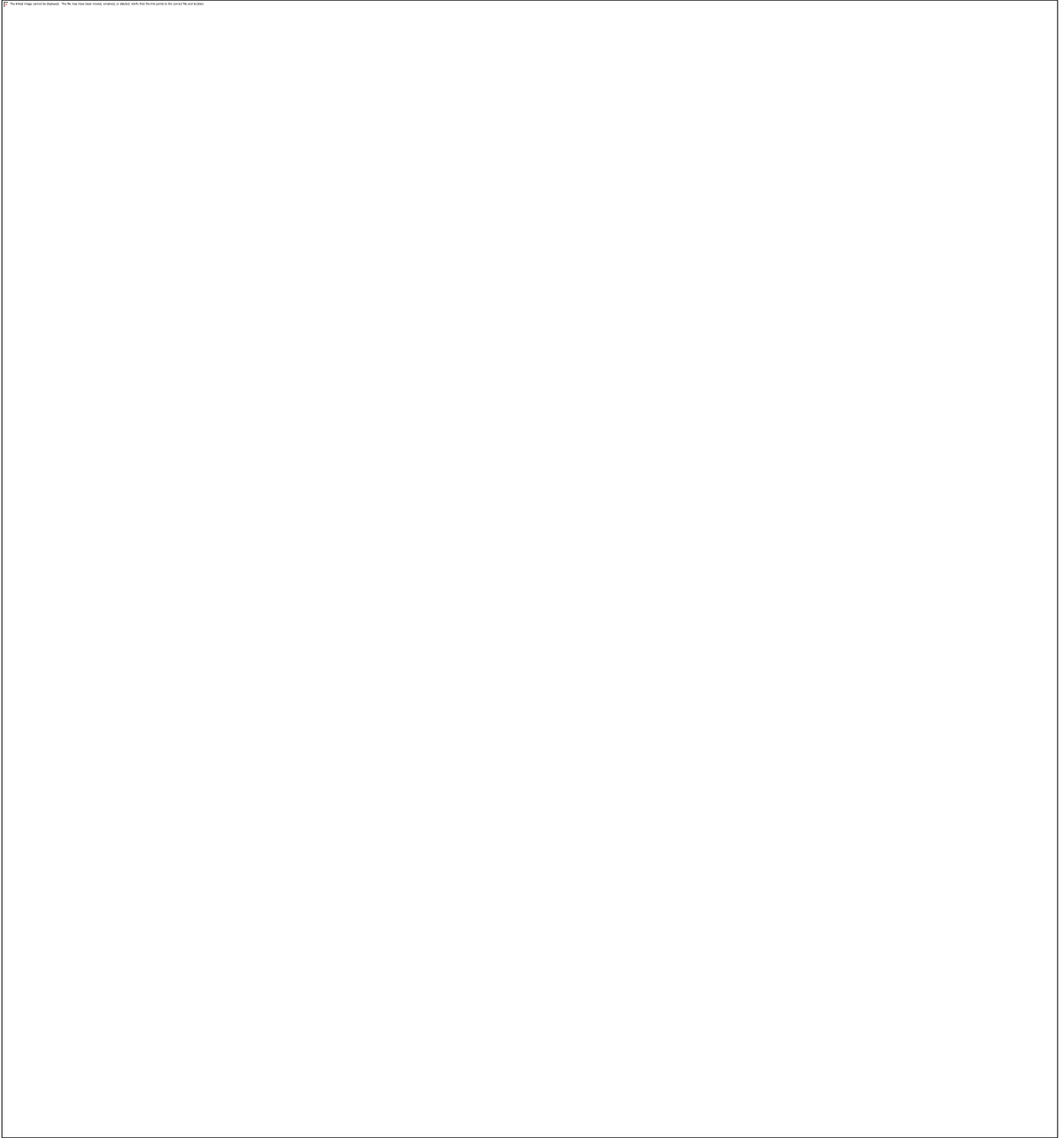
Currently, two rotavirus vaccines, HRV (human rotavirus vaccine, GSK) and RV5 (bovine-human reassortant rotavirus vaccine, Merck), are globally established. New rotavirus vaccines are also being launched or in late-stage development. This literature review describes the different rotavirus vaccine concepts for established and newer vaccines in terms of strain selection, attenuation, inactivation, or inclusion of reassortants, which could affect their real-life vaccine effectiveness and impact.

Methods

A literature search using PubMed was conducted for articles describing launched, Phase-II/Phase-III development or under regulatory review rotavirus vaccines: HRV, RV5, RV4, 116E (human-bovine rotavirus vaccine, Bharat Biotech), M1 (human rotavirus vaccine, POLYVAC), LLR (human-lamb rotavirus vaccine, Lanzhou Institute of Biological Products), BRV-PV (bovine-human reassortant rotavirus vaccine, Serum Institute of India), and RV3-BB (human neonatal rotavirus vaccine, Bio Farma). Articles describing vaccine design, effectiveness and safety were included.

Learning Points Discussion

- Numerous new and promising rotavirus vaccines are in the later stage of clinical development or the early stages of product launch (Table).
- The new rotavirus vaccines and established HRV and RV5 vaccines utilise different concepts such as live-attenuated compared to asymptomatic rotaviral strains, human-bovine or human-lamb reassortant strains compared to human live-attenuated rotavirus strains, and 2 versus 3 infant doses, with or without a neonatal dose.
- This review compares and contrasts the growing evidence of the established and new rotavirus vaccines.



Funding: GlaxoSmithKline Biologicals SA

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1072

IMPORTED MALARIA: ARE THE CURRENT PREVENTION AND CONTROL STRATEGIES ENOUGH?

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Title of Case(s)

IMPORTED MALARIA: ARE THE CURRENT PREVENTION AND CONTROL STRATEGIES ENOUGH?

Background

Malaria has become a common parasitic disease diagnosed in the returned traveler to Spain. Mortality in travelers might be around 2-3%, the delay in the diagnosis and treatment being one of the main factors associated with poor prognosis. The current campaigns lead most children to not taking protective measures during their visit to endemic countries.

Case Presentation Summary

A retrospective review of the patients admitted with malaria in our hospital over the last 9 years was performed. The following features were analysed: age, gender, origin of the family and the patient, country and date of trip, attendance to pre-trip consultation, presence or lack of chemoprophylaxis administration, clinical features, associated diseases, type of plasmodium and parasitaemia, treatment and outcome. Among this patients 28 were paediatrics. The average age was 9.5 years, women/men ratio was 12/16. All of them were part of an immigrant family. Hindustan was the destination in 18 cases and Africa in 9 cases. Only 2 patients attended the pre-trip consultation and thus received prophylaxis. Fever of unknown origin in patients coming from an endemic area was the major rationale to undergo blood analysis. Plasmodium falciparum was identified in 10 cases, with only 1 case with parasitaemia higher than 5% requiring intensive care admission with good evolution. Plasmodium vivax was the pathogen identified in the remaining 18 cases, all having good outcomes.

Learning Points/Discussion

To analyse at which step our campaigns are failing since most children do not take chemoprophylaxis during their trips or do not even go to pre-trip consultation. To maintain a high level of awareness among clinicians in those patients coming from endemic areas in order to improve prognosis.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1074

CHILDHOOD VACCINATION ACHIEVEMENTS IN FLANDERS FROM 2005 TO 2016

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Background

The 2016 EPI-based survey of recommended vaccine uptake in infancy and at school age in Flanders was the fourth in a series started in 2005. Each survey assessed coverage and predictive factors for incomplete vaccination in toddlers and adolescents. The similar study design allows for evaluation of trends over a decennium.

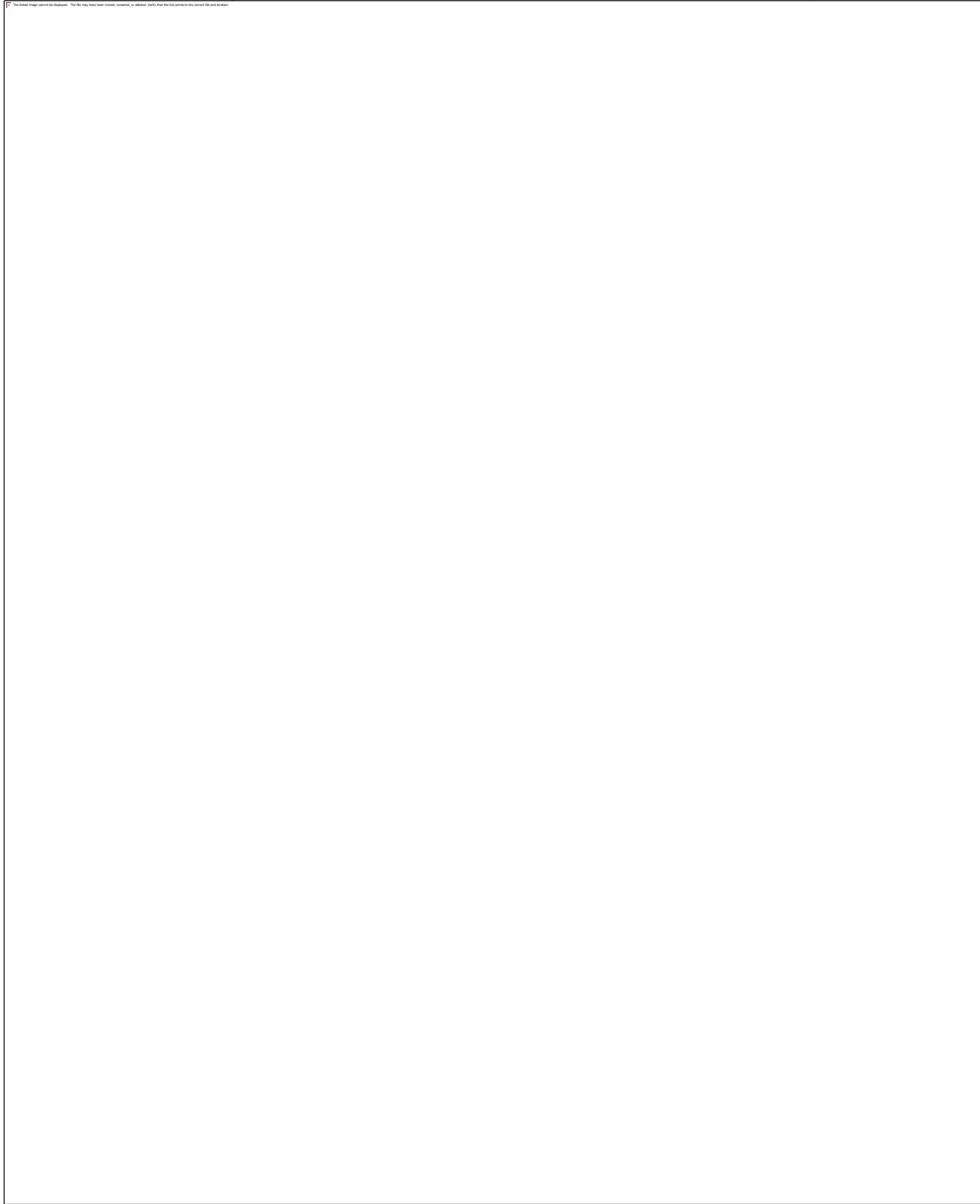
Methods

Cross-sectional EPI-surveys in 2005, 2008, 2012 and 2016 approached parents from toddlers (18-24 months) and adolescents (secondary school) for interview at home, to retrieve socio-demographic characteristics and documented vaccination history. In a second step, vaccination data missing at home were updated from the electronic Flemish vaccine-registry (Vaccinnet) and from medical files. Logistic regression analysis identified risk factors for incomplete vaccination.

Results

Full schedule coverage rates in infancy were stable at 93-96% for the vaccines implemented before 2005, and the newly introduced pneumococcal and rotavirus vaccines quickly achieved similar levels in 2012 which were sustained in 2016. At school age, coverage of childhood boosters and MMR2 was slightly lower at 87-93%, and increases over the years. Similarly as in infants, a high coverage was quickly achieved for newly introduced human papilloma virus vaccine (90% third dose). Infants vaccinated outside well baby clinics or who changed vaccinators, living in large families, or with poor socio-economic status as well as adolescents with delayed

school career or foreign ethnicity more often lacked vaccine doses, repeatedly in the different surveys.



Conclusions

High coverage has been achieved for vaccines recommended at different childhood ages in Flanders, but characteristics of underserved children are also quite stable over the past decennium and require new strategies.

Clinical Trial Registration (Please input N/A if not registered)

N/A

22A. EDUCATION: OTHER

ESP17-1076

URINARY TRACT INFECTION IN CHILDREN: DIAGNOSIS, TREATMENT, IMAGING – CRITICAL COMPARISON OF CURRENT GUIDELINES

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Background and Objective

Urinary tract infection is a common bacterial infection of childhood, yet the proper approach to this problem is still a matter of controversy. The objective of this work was to critically compare current guidelines for the diagnosis and management of urinary tract infections in children.

Methods

We included in analysis guidelines of American Academy of Pediatrics, National Institute for Health and Care Excellence (NICE), Italian Society of Pediatric Nephrology, Canadian Pediatric Society, Polish Society of Pediatric Nephrology and European Association of Urology/European Society for Pediatric Urology. Recommendations have been compared, taking into consideration results of recent research.

Learning Points Discussion

1. There is still lack of sufficient data to formulate coherent, indubitable guidelines on urinary tract infection management in children, with imaging tests remaining the main area of controversy.
2. We formulated our own proposal for urinary tract infection management in children, grading recommendations with GRADE system:
 - a) We recommend to perform urine tests both in children with typical UTI symptoms, and children with unexplained fever(1A)
 - b) Urine tests should be performed before administration of antimicrobials. In toilet-trained children clean voided midstream urine sample is a method of choice for diagnosing UTI while catheterisation is a preferred invasive method of urine sampling in infants and small children(1B)
 - c) Children with positive urine culture and negative results of urinalysis, without symptoms, are regarded as having asymptomatic bacteriuria(1B)
 - d) The diagnosis of UTI depends on the method of urine collection and define significant bacteriuria as: $>10^4$ CFU/mL in clean voided urine with symptoms; $\geq 10^3$ CFU/mL by catheterisation (1D)
 - e) parenteral treatment is warranted only for children who are severely ill or unable to retain oral intake(1A)
 - f) Parenteral antibiotic should be switched to oral as soon as clinical improvement is achieved(1C)

04A. EDUCATION: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-1077

A TIME-TREND ANALYSIS ON MORBIDITY AND MORTALITY OF PERTUSSIS DISEASE IN CHILDREN

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Background

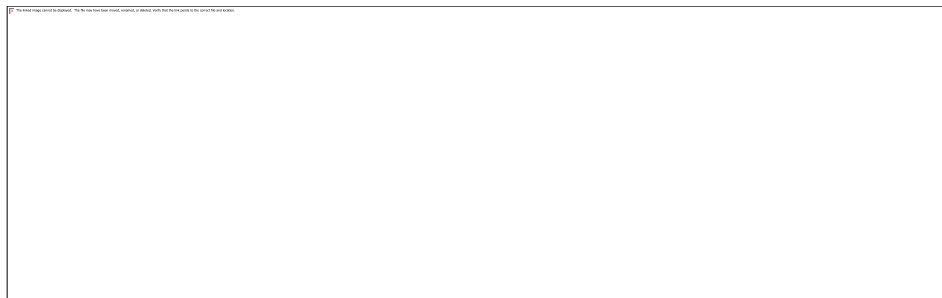
Pertussis is a pediatric disease with 16 million cases including 195,000 deaths in 2008 worldwide. Infants ≤ 12 months (m) are very vulnerable, especially those < 6 m who did not complete their primary pertussis vaccination. Maternal vaccination was shown to be effective in protecting this population. Following a local outbreak of pertussis reported in 2012, the National Committee on Immunisation Practices recommended in 2013 vaccinating all pregnant women with a dose of Tetanus Diphtheria Acellular Pertussis (Tdap) vaccine in Bogotá (Colombia's capital). This study describes pertussis-related morbidity and mortality trends in children, before and after introduction of Tdap vaccination program in pregnant women in Bogotá.

Methods

Databases from the Colombian Ministry of Health National Immunization Program, the National Public Health Surveillance System and the National Administrative Department of Statistics were examined from 2005 to 2015 for Bogotá. Pertussis-associated confirmed cases and deaths, vaccination coverage (VC), and population estimates were collected in infants ≤ 12 m. Time-trend analyses for disease outcomes, VC for pregnant women, and primary VC for infants ≤ 12 m were explored.

Results

A total of 1102 pertussis cases and 26 deaths were identified from 2011-2015 in infants ≤ 12 m (2005-2010 results pending). Table shows a 79% (95%CI:76-83) and 100% reduction in pertussis incidence and mortality, respectively, in the post- vs pre-vaccination period in infants ≤ 12 m. Yearly maternal VC with Tdap vaccine of 90% was reported for Bogotá for 2013-2015.



Conclusions

A dramatic trend for reduction in pertussis-related cases and deaths in infants ≤ 12 m was observed following Tdap vaccination implementation in pregnant women within Bogotá. A regression analysis will be performed to further explore trends and determine contribution of this maternal vaccination program on declining morbidity and mortality rates in infants.

GlaxoSmithKline Biologicals SA funded this study (NCT02569879).

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-1079

RISK FACTORS FOR MULTIDRUG-RESISTANT BACTERIA (MRB) IN A PAEDIATRIC MEDICAL WARD FROM A PORTUGUESE CHILDREN'S HOSPITAL

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Background

The rising incidence of MRB is an emerging global concern also in paediatrics. Identification of risk factors is crucial to successfully prevent these infections. Aims: To identify the most frequent MRB causing infection and associated risk factors.

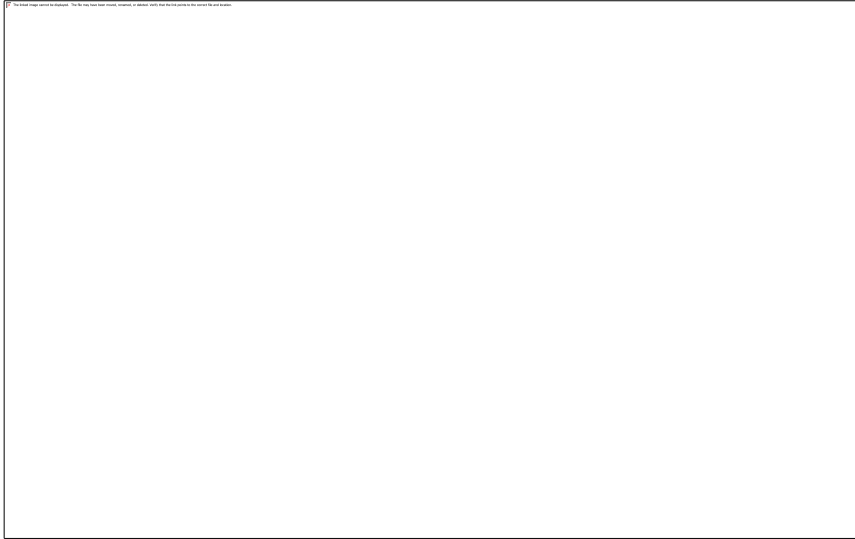
Methods

Retrospective study of medical records of children admitted to a paediatric medical ward in a tertiary hospital in Portugal, with MRB from different biological samples, aged >29 days - <18Y who fulfilled CDC definition of infection, from 2011-2015. MRB had *in vitro* resistance to ≥ 3 antimicrobial class drugs. The study group was compared with a control group (similar age, sex and admission period) with no MRB infection. Duplicate isolates were excluded.

Results

102 MRB infections were identified on 40 children, 60% male, median age 2Y. Most frequent pathogens were *S. aureus* (30%) (91% MRSA), *P. aeruginosa* (21%), *K. pneumoniae* (15%) (100% ESBL+) and *E. coli* (12%) (31% ESBL+). Respiratory infection was the most frequent (37%), followed by UTI (20%) and peri-gastrostomy infection (16%). The main isolation products were respiratory secretions (37%) and skin/soft tissue exudates (34%). 80% had received antimicrobials during the last 30 days and 71% underwent surgery the last year. From those children with respiratory infections, 78% had been under mechanical ventilation (68% non-invasive and 32% invasive). 80% of children having UTI had previous urinary catheter. All patients had chronic disease, mainly neuromuscular diseases (13%), cystic fibrosis (10%) and cerebral palsy (10%). Comparison between the groups

showed differences for all the studied risk factors ($p < 0,05$) (Table 1).



Conclusions

MRSA and *P. aeruginosa* were the most frequently MRB. All patients had chronic disease. Patients who underwent antimicrobial therapy, surgery, mechanical ventilation or had gastrostomy or central venous/urinary catheters had higher incidence of those infections.

20C. SCIENCE: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-1082

INTRAMUSCULAR QUADRIVALENT INFLUENZA VACCINE IS EFFICACIOUS IN NAIVE CHILDREN AGED 6 TO 35 MONTHS: A LARGE-SCALE, PLACEBO-CONTROLLED TRIAL

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Background

To address the problem of mismatches between circulating and vaccine B strains, trivalent influenza vaccines (IIV3), containing a single B-lineage strain, are being replaced by quadrivalent vaccines (IIV4) containing B strains from both lineages.

The primary objective of this study was to demonstrate clinical efficacy of an IIV4, for the prevention of at least one of the following in children aged 6 to 35 months: laboratory-confirmed influenza illness caused by any circulating influenza strains (A or B) or caused by strains similar to those contained in the vaccine

Methods

A randomized, placebo-controlled clinical efficacy trial was pursued in 4 continents during 4 distinct influenza seasons between March 2014 and September 2016. More than 5,500 children 6-35 months of age, who had never received influenza vaccine, were randomized 1:1 to receive two doses (0.5mL) of IIV4 or placebo (NaCl 0.9%) 28 days apart. They were followed for influenza-like illness (fever $\geq 38^{\circ}\text{C}$ which lasted at least for 24 hours concurrently with at least one of the following: cough, nasal congestion, rhinorrhea, pharyngitis, otitis, vomiting or diarrhea) from 14 days post last vaccination to the end of the influenza season. A nasopharyngeal (NP) swab was taken for confirmation of influenza by viral culture and RT-PCR. In case of laboratory-confirmed influenza, strain identification utilizing Sanger sequencing was conducted to determine if the virus detected was similar to those contained in the vaccine formulation for the respective season.

Results

Preliminary analysis has shown that in this naïve population, a satisfactory efficacy of IIV4 over placebo was achieved against strains similar to the vaccine strains and against any circulating strains.

Conclusions

Intramuscular quadrivalent Influenza vaccine is efficacious in naïve Children Aged 6 to 35 Months.

Clinical Trial Registration (Please input N/A if not registered)

EudraCT #: 2013-001231-51

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-1084

BRUCELLOSIS AS A CAUSE OF SECONDARY HEMOPHAGOCYtic SYNDROME

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Title of Case(s)

Brucellosis as a cause of secondary hemophagocytic syndrome

Background

Brucella is small, nonmotile, gram negative coccobacilli that is transmitted to humans by contact from infected animals or derived food products like unpasteurized milk. Brucella may involve any organ or tissue in the body and various degrees of hematological manifestations can be seen during the course of brucellosis. Herein, we present a case of brucellosis presenting with signs of secondary hemophagocytic syndrome to emphasize the hematologic complications of the disease.

Case Presentation Summary

A previously healthy 14 year old girl admitted with fever, fatigue, weight loss, night sweating and arthralgia. In physical examination, she was pale and had splenomegaly. The complete blood count revealed anemia, leukopenia and thrombocytopenia (Hb: 9,6 g/dL, neutrophil: 2200/mm³, lymphocyte: 700/mm³, platelet: 118000/mm³). Biochemical analysis revealed alanine amino transferase of 263 U/L, aspartate aminotransferase of 178 U/L, gamma glutamyl transferase 196 U/L, ferritin of 993 ng/mL, fibrinogen of 466 mg/dL. C-reactive protein of 2 mg/dL, erythrocyte sedimentation rate of 11 mm/hour with coagulation tests normal. Bone marrow aspiration showed hemophagocytosis, the blood smear also confirmed with no atypical cell. The patient received intravenous immunoglobuline (IVIg) with a dose of 1 g/kg/day for two days due to secondary hemophagocytic syndrome. Serological tests performed for Epstein-Barr virus, Cytomegalovirus, Herpes simplex virus, Salmonella and Tuberculosis were all negative. The Rose-Bengal test was positive. Coombs anti-Brucella test titer was 1:160. In detailed medical history, she had a history of consumption of nonpasteurized milk. Rifampicine and doxycyclin treatment was initiated. Complete clinical and laboratory remission was achieved after six weeks of therapy.

Learning Points/Discussion

Brucellosis produces a variety of non-specific laboratory and hematologic abnormalities and must be considered in differential diagnosis of secondary hemophagocytic syndrome in especially endemic areas.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-1086

IMPLEMENTATION OF ZERO RESISTANCE PROJECT IN A NEONATAL INTENSIVE AND INTERMEDIATE CARE UNIT

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Background

Infections caused by multidrug-resistant organisms (MDRO) are a growing problem in high-risk units, such as neonatal intensive care units. Antibiotic stewardship, active surveillance cultures and the application of transmission based precautions in colonized or infected patients are key strategies to control these infections. These measures are included in the "Zero Resistance Project" applied since 2014 by adult ICUs in Spain. In December 2015, an adaptation of the Zero Resistance Project was implemented in the neonatal intensive and intermediate care units of Vall d'Hebron Hospital.

The aim of this study is to describe the incidence of MDRO colonization detected by an active surveillance program in the neonatal intensive and intermediate care units of a Spanish tertiary hospital during 2016.

Methods

All patients presenting risk factors for MDRO colonization or infection were screened on admission to the neonatal intensive and intermediate care units. Additionally, all patients admitted for at least 2 weeks in these units were screened for MDRO colonization every two weeks. The screening was performed using rectal or other body site swabs as appropriate. All patients with confirmed or suspected colonization with MDRO were placed under contact precautions, and those with confirmed colonization were excluded from further screening.

Results

230 patients were screened, obtaining a total of 464 samples, of which 407 were from rectal swabs. Multidrug-resistant *Klebsiella pneumoniae* was the most frequently isolated microorganism (51 colonized patients; 3.48 colonizations/1000 patient-days), followed by *Enterobacter* genus MDROs (42 patients colonized; 2.86 colonizations/1000 patient-days) and multidrug-resistant *Escherichia coli* (20 patients colonized; 1.36 colonizations/1000 patient-days). Four patients were colonized with MRSA (0.27 colonizations/1000 patient-days).

Conclusions

Klebsiella pneumoniae is the main responsible for colonization with MDROs in the neonatal intensive and intermediate care unit of our hospital.

09B. EDUCATION: HOST-PATHOGEN INTERACTION

ESP17-1087

ACTINOMYCOSIS AND VASCULITIS, SHEER COINCIDENCE

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Title of Case(s)

Actinomycosis and vasculitis, sheer coincidence

Background

Takayasu Arteritis (TA) is a granulomatous systemic vasculitis that mainly involves the aorta and its large branches. Its etiology is unknown, however, several triggering factors have been reported in literature, including infectious agents, mainly mycobacterium tuberculosis. Genetic susceptibility and inflammatory diseases are also reported to play a role in disease pathogenesis.

Case Presentation Summary

We present here a thirteen years old girl who had a challenging diagnostic course of TA. She presented initially with a febrile illness, unilateral headaches, and a clinical picture of posttraumatic left mandibular osteitis. The biopsy confirmed the presence of Actinomyces, which was treated with intravenous and oral antibiotics for one year. Due to the persistence of a left submandibular induration and the appearance of pulsatile carotid on clinical exam, vascular ultrasound and magnetic resonance angiography were realized. Left common carotid arteritis, diffuse sub-diaphragmatic aortitis, supra and sub renal aneurysms, and stenosis of right and left common iliac arteries were evident on these exams. Treatment with corticotherapy was initiated followed by adding of methotrexate and infliximab in response to cortico dependence and the progression of vascular stenosis.

Learning Points/Discussion

Actinomyces are gram-positive, non-acid fast, anaerobic to microaerobic filamentous organisms that cause chronic granulomatous disease. They are commensals of the oropharynx, gastrointestinal and genitourinary tracts. Actinomycosis is characterized by wide spectrum of clinical presentations including constitutional symptoms. The co-occurrence of TA and actinomycosis has never been reported. We suggest that there might be an etiologic association between Actinomyces and Takayasu arteritis.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1088

RESPIRATORY VIRAL INFECTIONS AND COINFECTIONS

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Background

The aim of the study was to describe the epidemiological and clinical outcome of infections caused by different respiratory viruses (RVs) and by RV coinfection in children with lower respiratory virus infection (LRVI).

Methods

We performed a retrospective study that carried out in a tertiary hospital in Madrid. The information was collected from all patients (< 16 years) with respiratory symptoms seen at ER with LRVI from December 2013 until July 2016. Nasopharyngeal swabs were processed for rapid antigen detection test (RADT) for RSV and Influenza A/B or detection of 17 RVs Multiplex-PCR.

Results

The study enrolled 603 patients (53% male), diagnosis was established in 56%. Median age of 12 months (IQR 3 months-3 years); 2,5% were admitted in PICU, 22% in general ward with 4 days of median stay (IQR 2-5)

Respiratory symptoms in 80%, oxygen needed in 42%, chest X-Ray was performed in 36% and 45% had infiltrates; 25% received antibiotics.

Diagnosis was obtained by RADT (64%) and Multiplex-PCR (36%). Among these children, one RV was found in 64%, 31% were coinfecting by 2 RV and 5% by 3 RV. Rhinovirus was the most prevalent (18,7%), followed by bocavirus (14,5%).

Rhinovirus was the most prevalent found in coinfections (25%) followed by bocavirus (18%). Rhinovirus/RSV-A was the combination mostly found (12%).

Coinfected children were younger (< 1 year 60% vs. 30%, p 0.04), had greater leukocytosis (p < 0.01) and neutrophilia (p < 0.01). CRP, procalcitonin, use of antibiotics and chest X-ray infiltrates were also higher in coinfection but without statistical significance.

Conclusions

A high proportion of children with respiratory symptoms have viral coinfection. Based on these findings, we concluded that children with viral coinfection were younger and had greater leukocytosis and neutrophilia.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-1089

CHANGING TRENDS IN BLOOD STREAM INFECTIONS IN PEDIATRIC PATIENTS AT A TERTIARY CARE CANCER CENTRE

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Background

In children with malignancy receiving conventional anticancer chemotherapy, bloodstream infections (BSI) caused by bacterial pathogens represent nearly half of all nosocomial infections (NI) in which a pathogen can be isolated. *Enterobacteriaceae* including extended spectrum β -lactamases (ESBLs) and metallo beta lactamase (MBLs) Vancomycin resistant *Enterococcus* (VRE), methicillin resistant *Staphylococcus aureus* (MRSA) have emerged as significant pathogens in recent times.

Methods

All the blood samples that were received in the department during the study period and flashed positive on automated blood culture system, were processed on MacConkey's agar and 5% sheep blood agar as per standard microbiological methods. Identification of the organisms and antimicrobial susceptibility testing was performed as per CLSI guidelines.

Results

In 1980, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa* were the common isolates whereas in 1990, *Pseudomonas aeruginosa* and *Staphylococcus aureus* were the common isolates. In 2000, *Pseudomonas aeruginosa* and *E.coli* were the common isolates whereas in 2016, the common isolates were *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*. In 2016, amikacin and gentamicin were the most sensitive antimicrobial followed by piperacillin-tazobactam and cefoperazone-sulbactam combinations. Carbapenem resistance which was not seen prior to 2000, was highest in 2016 in *Acinetobacter* spp followed by *Klebsiella pneumoniae*, *E.coli* and *Pseudomonas aeruginosa*.

Conclusions

BSIs are a major cause of morbidity and mortality in children with malignancies. There has been a change in trend in antimicrobial susceptibility pattern over last three decades. The rapidly increasing resistance in Gram-negative isolates combined with an exhausting pipeline of active antibiotics highlights a very grim picture for the future. The most important need of the hour is to create awareness and establish robust infection control and antibiotic stewardship program.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1090

TRENDS IN HOSPITAL ADMISSIONS DUE TO VARICELLA INFECTION IN IRISH PUBLIC HOSPITALS: 2005-2015

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Background

We sought to evaluate trends in hospital admissions in Ireland for patients with any listed diagnosis of varicella infection, retrospectively, using the Hospital In-Patient Enquiry System (HIPE).

Methods

HIPE was evaluated from 57 Irish public hospitals from 2005 to 2015 for patients admitted with any listed diagnosis of Varicella. Data recorded included principle diagnosis, average length of stay, age distribution, secondary diagnoses, and principle procedure. Statistical analysis was carried out using Prism 6 software. Trends were examined using logistic regression analysis.

Results

There were 2487 admissions with a principal diagnosis of primary varicella infection from 2005 to 2015 inclusive (average 226/year). The total number of admissions did not significantly increase from 2005-2015 ($p=0.16$). Of those, 81% were in the <18 year age group and 19% were in the >18 year age group. Only admissions in the 5-9 year age group increased significantly over the study period ($p=0.006$). Of the total population 2.5% ($n=62$) required ICU admission with an average length of stay of 26 days versus 4 days in the non-ICU population.

The most common secondary diagnoses included cellulitis ($n=246$, 24.6%), volume depletion ($n=194$, 19%) and streptococcal infection ($n=145$, 14.5%). The number of admissions due to streptococcal infection and cellulitis significantly increased over the study period with $r^2=0.59$ ($p=0.005$) and $r^2=0.84$ ($p<0.0001$) respectively.

Conclusions

Varicella represents a significant burden on Irish healthcare with on average 226 admissions per year. 2.5% of patients require ICU admission and have a protracted clinical course with an average length of stay of 26 days. In this study the total number of varicella related hospital admissions did not significantly increase from 2005-2015 however there was a significant increase in secondary complicating diagnoses including cellulitis and streptococcal infection.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1091

WHOOPIING COUGH: 5 YEARS CASE SERIES IN A PEDIATRIC UNIT OF A LEVEL II HOSPITAL

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Background

Pertussis (whooping cough) is a respiratory tract infection and a public health problem worldwide as it is an important cause of morbidity and mortality in infants younger than 2 years. In Portugal, despite a high vaccination coverage (93-98%) the incidence in infants less than 1 year old increased in a cyclic pattern since 2005.

Methods

Retrospective observational descriptive review of medical records of patients diagnosed with pertussis admitted between January 2012 and December 2016 to the pediatric unit of Hospital de Cascais (level II hospital). Epidemiology, clinical presentation, family and personal background, laboratory findings and outcome were assessed.

Results

21 cases, 47.6% female, aged between 17 days and 9.6 months (median 2 months). Duration of hospitalization ranged from 5 to 34 days (mean 12.88). Ten infants had carried out anti-DTaP vaccine (one dose). In 17 cases (80.9%) there was close contact with people with cough. Cough was present in all cases, averaging 11 days before admission. In 6 cases (28.6%) there was inspiratory whoop. In 57% cyanosis was associated with cough. In 52.3% posttussive vomiting was present. In 90.5% there was no fever before or during hospitalization. Lymphocytosis was found in 47.6% and thrombocytosis in 28.5%. Eight infants (38%) had complications (apnoea, hypoxemia and bradypnea) and 4 needed intensive care. The antibiotic therapy was macrolides in all cases. All were confirmed by PCR assays.

Conclusions

Coughing is a common reason to seek emergency care and whooping cough cannot be forgotten in children with incomplete vaccination scheme. We observed an increasing incidence of pertussis cases in the 5 years analysed. In Portugal, the introduction of anti-pertussis vaccine in pregnant women in 2017 may change this tendency.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1092

PULMONARY TUBERCULOSIS IN A PATIENT WITH JUVENILE IDIOPATHIC ARHRITIS ON BIOLOGIC TREATMENT

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Title of Case(s)

Pulmonary Tuberculosis In A Patient With Juvenile Idiopathic Arthritis On Biologic Treatment

Background

Juvenile idiopathic arthritis (JIA) is an idiopathic, heterogen, chronic inflammatory arthritis of childhood period. The proinflammatory cytokines such as TNF-alfa, interleukin 1(IL-1) and IL-6 are the responsible cytokines in the etiopathogenesis of JIA. In recent years, biologic agents against to these cytokines became a treatment of choice in patients with refractory JIA. However, suppressive effects of these drugs can lead to increase in various infectious diseases and tuberculosis. Herein, we report a patient developing pulmonary tuberculosis during on Etanercept (TNF-alfa inhibitor) due to active and refractory JIA.

Case Presentation Summary

17 year old patient with the diagnosis of JIA admitted with purulent cough and night sweating. One year ago, Etanercept (TNF-alfa inhibitor) treatment had been started after ruling out tuberculosis with tuberculin skin test and chest X-ray. In physical examination she had bilateral diffuse crackles and active arthritis in right knee and left hand. The inflammatory markers were high, the chest X-ray revealed mediastinal enlargement and infiltration in the right lung. Tree-in bud sign and multiple lymphadenopathies in right paratracheal, subcarinal, hilar regions were demonstrated in the computed tomography. The tuberculin skin test was in 20 mm diameter and Quantiferon TB Gold test was positive. *Mycobacterium tuberculosis* was isolated in sputum. The patient was diagnosed as active pulmonary tuberculosis and antituberculosis treatment was initiated .

Learning Points/Discussion

Biologic agents are effective agents in the treatment of active and refractory inflammatory arthritis, but opportunistic infections and tuberculosis can develop during these therapy. The patients must be evaluated for tuberculosis with tuberculin skin test and X-ray before and during the course of biologic treatment agents in the countries with high tuberculous incidence.

02B. SCIENCE: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-1093

POPULATION PHARMACOKINETICS AND INDIVIDUALISED THERAPY OF TEICOPLANIN IN CHILDREN

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Background

A high and unexplained pharmacokinetic (PK) variability has been described in hospitalised children and adults for many antimicrobials, such as teicoplanin. The optimal therapy with teicoplanin requires an individualised dosing and therapeutic drug monitoring (TDM) approach to achieve adequate drug exposures across childhood and improve the clinical outcomes.

Methods

We developed a non-parametric population model fitted to PK data from neonates, infants and children recruited to a prospective PK open-label study (EudraCT: 2012-005738-12). We then implemented it in the BestDose multiple-model Bayesian adaptive control algorithm to show its clinical utility in order to predict the required dosages to achieve teicoplanin optimal targets (15 mg/L and 30 mg/L) by day 3. We performed individual simulations in a neonate and a child from the original population, which provided early first dosing interval concentration time-data, regardless of steady state.

Results

An allometric model that linked weight to clearance and volume of distribution (K_e and V) and incorporating renal function as a power function of eGFR (PNA/creatinine for infants < 3 months), best described the data. The median population PK parameters were as follows: $K_e = 0.03 * (wt/70)^{-0.25} * \text{Renal} \text{ (h}^{-1}\text{)}$; $V = 19.5 * (wt/70) \text{ (L)}$, being $\text{Renal} = \text{eGFR}^{0.07} \text{ (ml/min/1.73m}^2\text{)}$ or $\text{PNA/creatinine (mmol/L)}$. Increased teicoplanin dosages and alternative administration techniques (extended infusions and/or fractionated multiple dosing) were required in order to achieve the targets in a safe manner in all simulated cases.

Conclusions

The software was able to predict accurately individual measured concentrations and the required dosages and administration techniques to achieve the desired target concentrations early in therapy. Prospective evaluation is now needed in order to ensure that this teicoplanin individualised therapy approach is applicable in the clinical setting.

Clinical Trial Registration (Please input N/A if not registered)

EudraCT: 2012-005738-12

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-1094

ROTAVIRUS VACCINE AND CHILDHOOD SEIZURES IN A LOW VACCINE COVERAGE SETTING

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Background

An association is reported between rotavirus (RV) vaccination and lower rates of childhood seizures (CS) or febrile seizures in children up to 2 years following vaccination. We evaluated trends in rates of CS in Portugal, a country where both RV vaccines have been used in the private market since 2006 with an estimated coverage rising from 16 to 44% between 2007 and 2014. In our case control study in this population both vaccines very effectively prevented RV acute gastroenteritis (AG) in recipients. However, annual RVAG epidemics continue to occur with no obvious reduction underlining the need for high vaccine coverage and resulting indirect effects for effective RVAG prevention.

Methods

Using hospital ICD-9-CM codes we retrospectively analysed annual rates of visits to Coimbra Children's Hospital Emergency Service (ES) for all CS, before (2000-2006) and after (2007-2014) RV vaccine use began. The numbers of CS visits each year in 0, 1, 2 and 3 year olds were indexed against the size of the relevant local birth cohort. A Poisson regression analysis correcting for age, year, birth population and vaccine availability was performed.

Results

Over the study period 3701 children aged $\leq 3Y$ with CS attended the ES. The annual hospitalisation rates before and after vaccine introduction for all CS (both febrile & afebrile) did not change for any of the age groups ($<1Y$ P= 0.28; 1Y P= 0.71; 2Y P= 0.18, 3Y P=0.60). Similarly, no decrease in febrile convulsions rates was seen ($<1Y$ P = 0.40; 1Y P=0.66; 2Y P=0.44; 3Y P=0.66).

Conclusions

Like RVAG, RV vaccine use at low coverage is not associated with obvious reductions in rates of CS. A case control study is therefore being performed.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-1095

THE DANGER OF SNUFFLES - CASE SERIES OF 4 INFANTS WITH INVASIVE PARECHOVIRUS INFECTION

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Title of Case(s)

The danger of snuffles

Background

Newborn infants that have older siblings are frequently exposed to common viruses. In most cases, this is inconsequential. However, some viruses whilst only causing very mild infection in older children, can cause devastating disease in the newborn. Parechovirus has been recently identified as a possible pathogen causing sepsis-like symptoms in the young infant.

Case Presentation Summary

We are presenting a case series of 4 infants, all under 6 weeks of life, presenting to a small regional paediatric unit between August 2016 and January 2017. They all had older siblings in crèche and presented with severe sepsis-like symptoms. 3 of them were persistently febrile, two developed encephalitis, one developed seizures requiring Anti Epileptic Drugs (AED) and had an abnormal MRI. One developed hepatitis. One required respiratory support. One had to be transferred to a tertiary intensive care unit. All of them received at least 48h of antibiotics and 5 days of Acyclovir pending results of blood and CSF cultures and PCRs. One received IVIG. All of them recovered from the acute phase, however developmental outcome needs to be followed up.

Learning Points/Discussion

This case series reports 4 geographically unrelated cases of Parechovirus. While Parechovirus might have been an important causative agent in the past it was not routinely tested for, and its real incidence is unknown. Education in smaller regional units is necessary to ensure parechovirus is included in the differential diagnosis and work up of an unwell neonate with normal inflammatory markers and CSF findings. Appropriate and standardized follow up guidelines also need to be developed, so that these infants, at an increased risk of developmental complications are not missed.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-1096

CLINICAL CHARACTERISTICS AND ANTIMICROBIAL RESISTANCE OF CARBAPENEM-RESISTANT ACINETOBACTER BAUMANNII INFECTIONS IN CHILDREN

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Background

This study aimed to summarize the clinical characteristics and antimicrobial resistance of carbapenem-resistant *Acinetobacter baumannii* (CRAB) infections in children, identify its risk factors and to raise the level of diagnosis and treatment of this disease.

Methods

The data of clinical and antimicrobial susceptibility of 54 cases of CRAB seen between January 1, 2014 and December 31, 2016 were analyzed retrospectively.

Results

Fifty-four cases of CRAB infections were identified, 31 were male. The ages ranged from 1 day to 14 years (median age 54 days), among whom 24 (44.4%) were aged < or = 28 days; 47 cases (87%) were diagnosed as hospital-acquired pneumonia (HAP), 6 cases (11.1%) had urinary tract infection and one (1.8%) had wound infection. The common primary diseases of the cases were early onset neonatal sepsis (44.4%), followed by community acquired pneumonia (42.6%) and UTI (11.1%). Before the isolation of CRAB, all patients had stayed in ICUs, 47 cases (87%) had received tracheal intubation and mechanical ventilation, the ventilation time was 2 - 249 days (median: 12 days). Carbapenem was used in 45 cases (83.3%) previously, 9 (16.7%) had received beta-lactam/beta-lactamase inhibitor combinations. Thirty-five cases (64.8%) were cured, and rest (35.2%) died. All strains showed multidrug-resistance (MDR), of which 8 strains (14.8%) were pandrug-resistant (PDR). In multivariate analysis, tracheal intubation and mechanical ventilation for more than 10 days (OR = 6.366) and previous use of carbapenems (OR = 7.084) were independent risk factors for CRAB infections.

Conclusions

Nosocomial infections in children due to CRAB infections mainly cause HAP. Prolonged tracheal intubation and mechanical ventilation for more than 10 days and previous carbapenems therapy were independent risk factors for CRAB infections. CRAB showed MDR or even PDR to the common antimicrobials.

22A. EDUCATION: OTHER

ESP17-1097

COVERAGE RATES AND DELAYS OF IMMUNIZATIONS IN CHILDREN IN PRIMARY HEALTH CARE IN WARSAW

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Background

The Polish national Immunization Program consists of two parts: universal obligatory immunizations founded by the state and less popular voluntary vaccination paid by guardians of immunized children. Obligatory vaccinations substantially reduced the burden of infectious diseases in Poland, yet their effectiveness depends largely on high coverage of vaccinated population. The aim of the audit was assessment of the coverage, compliance and reasons for delay of obligatory vaccinations in children under 3.

Methods

Medical records of 2391 children aged 0-3 years born in 2009-2013, Poland were retrospectively analyzed in one randomly selected primary care setting in Warsaw.

Results

Overall immunization rate was high ranging from 90 to 95%. Delays in schedule were found in 26.2% (95% CI 24.4-27.9%) children on average in the analyzed period and the proportion of delays was stable. The main reasons for delays were: unspecified neurologic disorders, acute respiratory infections and parents' refusal.

Year	Number of children 0- 3	Number of children behind the schedule	Percentage with 95% confidence interval
2009	454	110	24.2 (20.3-28.2)
2010	520	124	23.8 (20.2-27.5)
2011	472	146	30.9 (26.8-35.1)
2012	430	116	27.0 (22.8-31.2)
2013	515	130	25.2 (21.5-29.0)
2009- 2013	2391	626	24.4(24.4-27.9)

Conclusions

Overall rates of obligatory vaccinations remains satisfactory high in Warsaw, but some problems need prompt counteractions:

1. Long-term neurologic contraindications to vaccinations are overused and education of pediatricians and neurologists in this area is necessary.
3. Emerging problem is parental refusal. Public health authorities should address to Polish society information campaign to reassure parents about the safety and benefits of universal vaccination program.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1098

DOES MENINGOCOCCAL GROUP B VACCINE AFFECT PICU ADMISSIONS? THE SOUTH EAST SCOTLAND PERSPECTIVE

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Background

Invasive meningococcal disease (IMD) is a leading infectious cause of death and morbidity in early childhood. The meningococcal B vaccine was introduced into the UK infant routine immunisation schedule in September 2015. Its impact on the number of patients requiring paediatric intensive care unit (PICU) is unknown. This survey aimed to determine if the introduction of the meningococcal B vaccine has affected PICU admission rates and patient management, and whether there has been any serotype replacement.

Methods

Data on all patients admitted to a single PICU in South-East Scotland with a confirmed diagnosis of IMD between January 2010 and January 2017 were reviewed. Comparison was made between the 68 months before and 16 months after introduction of the meningococcal B vaccine. A pre-designed proforma was used for data collection including patient demographics, PICU management and meningococcal serotypes.

Results

27 cases (15 girls, 12 boys, median age 17 months (range 0-96 months)) were included in the study. The IMD admission rates before and after introduction of the vaccine were 0.34 and 0.25 cases per month respectively ($p = \text{NS}$). Patients admitted after vaccine introduction had significantly longer PICU stay ($p < 0.01$) and ventilation days ($p = 0.02$). In the post-vaccine study period none of the patients admitted had received the meningococcal B vaccine. Meningococcus W was identified for the first time in 2 cases within the post-vaccine period.

Conclusions

Meningococcal group B vaccine has not yet significantly reduced the PICU admission rates for IMD, but there were no patients admitted who had received or were eligible for the vaccine. We have noted a change in serotypes identified. These findings warrant further investigations in a larger cohort.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-1100

COMPARISON OF THERMOMETERS IN ALL ASPECTS: A PROSPECTIVE STUDY

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Background

Fever is one of the leading causes of hospital admissions for children. There are many ways to measure body temperature; but optimal method and the anatomic site is still controversial. We aimed to evaluate the performance of new methods of measuring body temperature, compare the accuracy, sensitivity and specificity of these methods.

Methods

The body temperature of the patients who were hospitalized as inpatient treatment and applied to emergency room as outpatient have been measured between November 1, 2014 and February 28, 2015 in Gazi University Medical Hospital Department of Pediatrics.

Mercury and digital thermometers were placed at axilla and waited for 8 minutes. The temperature was noted down at the 3rd, 5th ve 8th minute. Also tympanic, temporal artery and non-contact skin temperature were measured.

	Specificity(%)	Sensitivity(%)	Positive Predictivity(%)	Negative Predictivity(%)
Digital axillary thermometer	98	85	98	82
Temporal Artery Thermometer	94	93	94	88
Non-contact Thermometer	100	69	100	93
Tympanic Thermometer	98	87	98	92

Results

There was no significant difference between the measurement methods over 12 years of age, under 12 years of age the difference between the measurement methods was significant. The mean and the median of 8th minute value of mercury, digital, non-contact and temporal artery thermometers, were compared and it's found that values of temporal artery values are significantly higher than the other methods .

When we define fever as axillary value > 38° C, the specificity, sensitivity, positive and negative predictive values of measurement methods are shown in table 2.

Conclusions

In previous studies, the methods for measuring temperature had some restrictions related to the age groups and diseases. Thus, we aimed to compare more measurement methods in a wider spectrum of age.

03A. EDUCATION: GROUP A STREPTOCOCCUS

ESP17-1101

MANDIBULAR OSTEOMYELITIS : BEWARE OF TOOTH DECAY

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Title of Case(s)

Mandibular Osteomyelitis : Beware of Tooth Decay

Background

The *Streptococcus anginosus* group comprises three species of bacteria composed of *Streptococcus intermedius*, *Streptococcus constellatus* ve *Streptococcus anginosus*. This group is as a member of oropharyngeal flora responsible from abscess formation. However, osteomyelitis due to the S anginosus group is uncommonly reported. Herein, we report a case of osteomyelitis of mandible caused by *Streptococcus anginosus* in a previously healthy patient following tooth decay.

Case Presentation Summary

A previously healthy 10 year old boy admitted with fever and enduration of the left side of neck and submandibular region. He had a painful hard mass and skin redness over left submandibular region accompaying multipl micro-lymphadenopathies. He had tooth decay of left molar tooth eventhough he had no toothache. His inflammatory markers were increased. (WBC: 16200/mm³, neutrophil: 13600, lymphocyte: 2200, erythrocyte sedimentation rate: 79 mm/hour ve C-reactive protein: 6.67 mg/dl). Ultrasonography revealed an abscess 4x1,5cm in diameter and magnetic resonans imagination demonstrated osteomyelitis of mandible. Surgical drainage and curettage of the lesion was performed and empirically intravenous cephalosporin treatment was started. The culture of the purulent material yielded *Streptococcus anginosus*, histopathological examination of material demonstrated inflammation with necrosis. The echocardiography was normal. The immunoglobulin levels, the lymphocyte profiles and the nitroblue tetrazolium test were all in normal ranges for age. Primary immunodeficiencies were excluded. The patient subsequently improved, after four weeks of antibiotherapy, the inflammatory markers decreased normal levels, and he was discharged without any complication

Learning Points/Discussion

This case report demonstrated that *Streptococcus anginosus* can lead to osteomyelitis of mandible and maxilla by extention of oral infections even in previously healthy subjects. A tooth decay can be the causative agent.

03A. SCIENCE: GROUP A STREPTOCOCCUS

ESP17-1102

GAS-LIGHTING AIN'T JUST FOR POLITICIANS: THE INCREASE OF PAEDIATRIC INVASIVE GROUP A STREPTOCOCCAL INFECTION IN NEWCASTLE UK 2003-2015

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Background

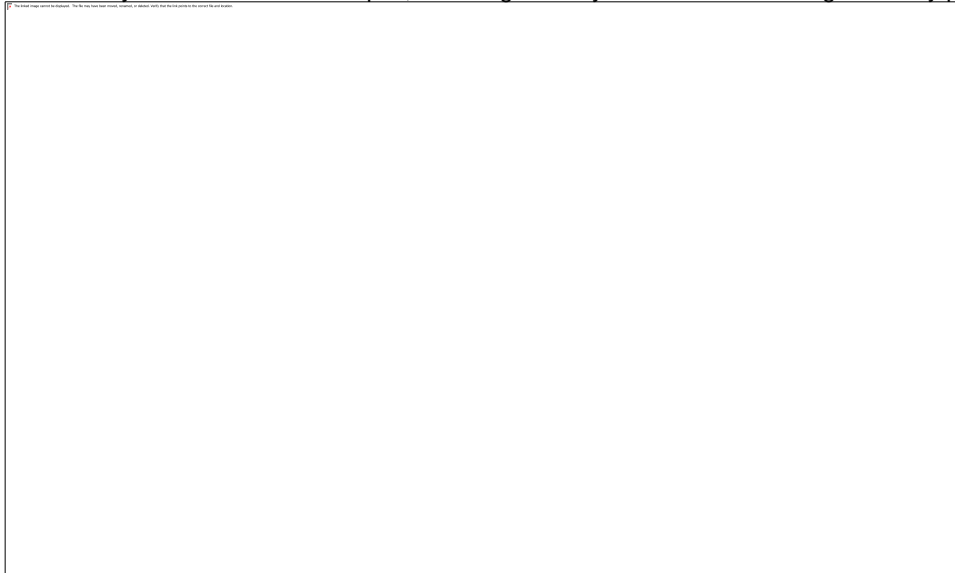
The resurgence of severe group A Streptococcal (GAS) infection in the developed world has been observed over the last few decades. We noticed a particular surge in our hospital trust over the last 5 years and sought to quantify and qualify these cases.

Methods

Samples positive for GAS were identified using the microbiology database for Newcastle Hospitals. These were limited to those cultured from normally sterile sites in patients less than 18 years old at the time of sampling. Results were verified against the EUCLIDS database of severe bacterial infection. Notes were studied to identify patient demographics, predisposing factors, presenting features, clinical syndrome, degree of sepsis, treatments, details of PICU admission, morbidity and mortality.

Results

72 samples were identified, with four duplicates from two patients. No additional cases with proven invasive GAS were identified from EUCLIDS. Samples were from blood (34), pus (25) or pleural fluid (12), with one CSF sample. Pus came from abscesses (12), joints (6), peritoneal fluid (3), muscle (3) and bone (1). Cases clustered towards the later years, with a peak of 12 cases in 2013, 5 of whom required PICU (see Figure 1). Patients' ages ranged from 0-213 months with a mean age of 71 months. Factors predisposing to GAS were identified in 48 cases; most commonly coryzal illness (24, 34%) or wounds/conditions causing breaks in the skin (12, 17%), but also notably 6 cases with chicken pox, including the only child who died during the study period.



Conclusions

Paediatric invasive GAS infections in Newcastle UK appear to be increasing, as do PICU admissions due to them. We need to increase knowledge and confidence with clindamycin and IVIG, and revisit the thorny issue of varicella vaccination.

Clinical Trial Registration (Please input N/A if not registered)

N/A

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-1103

MANAGEMENT OF RECURRENT RESPIRATORY PAPILOMATOSIS: A NON-RESOLVED CHALLENGE

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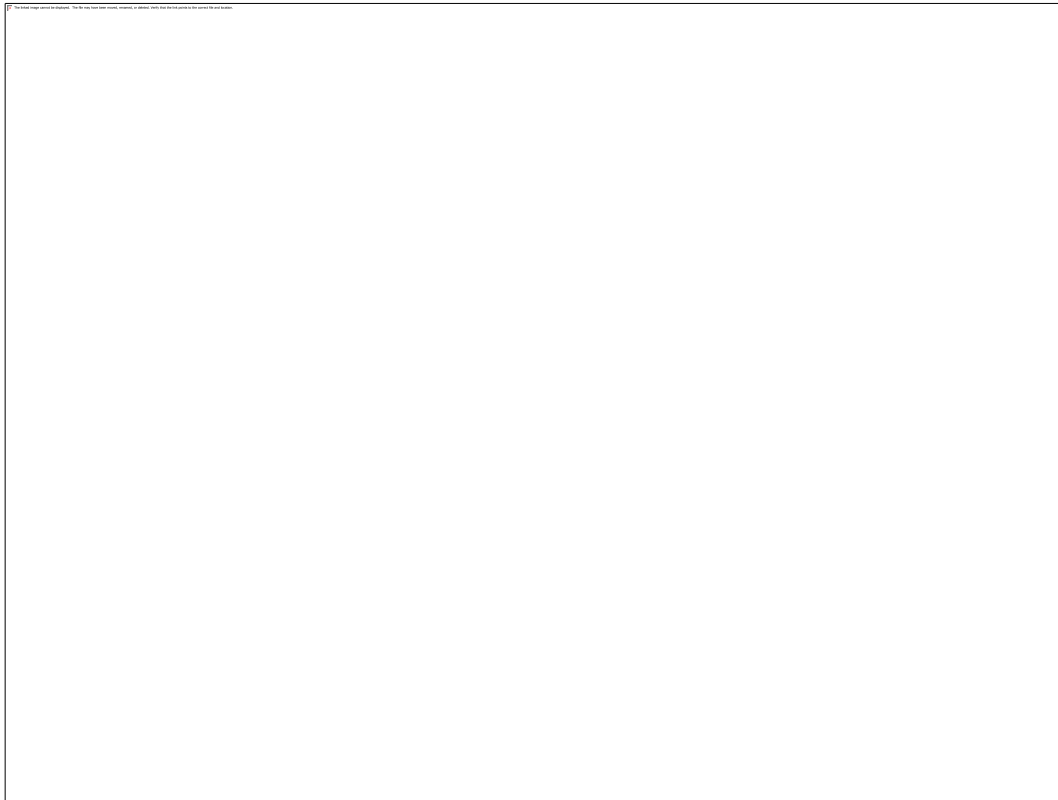
Title of Case(s)

Management of recurrent respiratory papillomatosis: a non-resolved challenge

Background

Recurrent respiratory papillomatosis (RRP) is rare but associated with high morbidity (multiples surgeries and hospital visits) and important emotional impact. Whilst no curative treatment exists, recurrent surgery remains paramount in its management. Adjuvant therapy is often ineffective. We present two cases with an aggressive clinical course despite using different adjuvant therapies.

Case Presentation Summary



Case 1. Girl, born preterm (26/40) via normal vaginal delivery (NVD) to a mother with vaginal warts requiring intubation and ventilation post-partum. Aged 9 months she presented with severe respiratory distress and was diagnosed with

RRP (HPV 6). She received 2 doses of quadrivalent HPV vaccination and underwent 2 surgical procedures within 3 months. IFN-a (100.000 IU/kg 3-times weekly) was started with good clinical response (Figure 1).

Case 2. Female, born at term to a mother diagnosed with genital warts at 30 weeks of gestation via NVD. Aged 18 months she was diagnosed with RRP (HPV 11) due to persistent respiratory symptoms. She received systemic and intralesional cidofovir for 1 and 2 years, respectively, with poor clinical response. Cidofovir was stopped and she was given 2 doses of quadrivalent HPV vaccination with good clinical effect. IFN-a therapy was also started and resulted in a reduction of surgical interventions (Figure 1).

However, 3 years after initiation of IFN-a treatment both children suffered from disseminated RRP. Treatment with inhaled and intralesional cidofovir, revaccination and increased doses of INF-a are planned.

The non-sustained clinical response to IFN-a and vaccination may suggest a cellular immunological defect in our patients with results pending.

Learning Points/Discussion

Management of RRP remains challenging. An international RRP network is needed in order to optimize the knowledge and management of this patient group.

22A. EDUCATION: OTHER

ESP17-1104

MENINGITIS DUE TO NEISSERIA MENINGITIDIS SEROGROUP W: A CASE REPORT

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Title of Case(s)

- Meningitis due to Neisseria meningitidis serogroup W

Background

- *Neisseria meningitidis* is a leading causative agent for bacterial meningitis and septicemia. Meningococcal vaccines are not routinely used for children in Turkey. From around 2000 onwards, serogroup Men W started to be a most common serogroup in some countries like Turkey.

Case Presentation Summary

An 8-year old boy presented to pediatric emergency care unit with the complaints of confusion, sudden abnormal involuntary contractions of the muscles and temporary cessation of breath. He was lethargic and has neck stiffness; other system physical examinations were normal. Laboratory examination revealed white blood cells 31.500/mm³ (65% neutrophil), hemoglobin 13.4 g/dL and platelet count 525.000/mm³. Patient was clinically diagnosed as meningoencephalitis and intravenous cefotaxime and acyclovir started. CT scan of head shows cerebral edema and hypertonic saline solution used. Because of the general status of the patient and also have cerebral edema, lumbar puncture have not been performed at the admission. After 24 hour in PICU, patient clinical condition improved and transferred to pediatric infectious disease unit. At the 36 hours of admission, lumbar puncture have been performed and the CSF finding showed normal protein and glucose levels, CSF gram staining was negative. Despite of CSF culture was negative, PCR evaluation of CSF samples showed *N. meningitidis* serogroup W. The patient treated with cefotaxime for seven days. Chemoprophylaxis was given to family members and also conjugated quadrivalent meningococcal vaccine has been given to twin pair of our case.

Learning Points/Discussion

Serogroup W is the main cause of bacterial meningitis in Turkey and for suspected case; PCR is an important diagnostic tool. Routine surveillance for meningitis cases confirmed with PCR, will be helpful to maintain strategy to further meningococcal immunization program.

03A. EDUCATION: GROUP A STREPTOCOCCUS

ESP17-1105

INFANT WITH SHOCK AND ERYTHEMATOUS RASH

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Title of Case(s)

INFANT WITH SHOCK AND ERYTHEMATOUS RASH

Background

Streptococcus Pyogenes, gram positive aerobic coccus, causes variety of clinical illnesses, from pharyngitis and soft skin tissue infection, to pneumonia or bacteraemia. Streptococcal toxic shock syndrome(TSS) is a rare and severe invasive infection that has been increasing frequency among the past decades.

Case Presentation Summary

Infant, woman, 7 months old, healthy and correctly vaccinated with fever up to 38.4°C from 48 hours ago, cough and nasal discharge. She presents bad general condition, low reactivity, periferic hypoperfusion and respiratory distress. She associates a diffuse erythematous, "sandpaper" eruption, "strawberry" tongue, exudative tonsillopharyngitis, abdominal distension and hepatomegaly. Blood analysis shows leukopenia, C-reactive protein 63ng/ml , procalcitonin 123mgr/L. ChestX-Ray shows important occupation of right lung and significant pleural effusion. Rapid diagnostic test for group A streptococcus is positive. Because of clinical suspicion of TSS empirical intravenous antibiotics are initiated (Cefotaxime, Clindamycin and Cloxacilin) in addition to fluids. She presents hypoxemia, tachycardia and hypotension, so she is admitted in the Pediatric Intensive Care Unit. Previous to thoracocentesis and central venous catheterization she is intubated and connected to mechanical ventilation. Chest tube is inserted and drains 190 cc of purulent discharge. She needs vasoactive drugs. Among the next hours/days respiratory and hemodynamic support can be decreased. Group A streptococcus sensitive to Clindamycin grows up in pleural fluid and pharyngeal exudates cultures, antibiotics were adjusted. Blood culture is negative. She stays 23 days at hospital with favourable progression without sequelae.

Learning Points/Discussion

StreptococcalTSS is a critical illness, with high mortality (30-70%). It is very important an early suspicion when shock, fever and typical rash are associated. Early detection improves prognosis. Treatment is based in antibiotics and fluids, Clindamycin must be associated as suppressor of toxin synthesis.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1106

ACQUIRED TORTICOLLIS DUE TO PRIMARY PYOMYOSITIS OF THE PARASPINAL MUSCLES IN AN 11-YEAR OLD BOY

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Title of Case(s)

Acquired torticollis due to primary pyomyositis of the paraspinal muscles in an 11-year-old boy

Background

Torticollis is tilting and rotation of the cervical spine in opposite directions. Causes can be congenital or acquired. Primary pyomyositis is a rare subacute deep bacterial infection of skeletal muscles that typically affects individuals under 20 years of age from tropical countries. We report the first detailed case of acquired torticollis due to primary pyomyositis in an immunocompetent boy.

Case Presentation Summary

A previously well 11-year-old boy presented with a 3-week history of left-sided torticollis, intermittent fever and rigors. There was no history of trauma. He was referred to the tertiary neurology department for further investigation.

Investigations:

CRP 203 mg/L, WCC 12.6x10⁹/L, neutrophils 9.0x10⁹/L

IgG, IgM, IgA- within normal range

Urine & throat culture: No growth

Blood culture: *Streptococcus constellatus* - sensitive to ceftriaxone

C-spine X-ray: Nil abnormal.

Day 1 – Neurology, ENT, ophthalmology and neurosurgical review – aetiology unclear

MRI (figure 1) day 2: Hyperintensity within the left paraspinal muscles at the level of C1–C3 suggesting pyomyositis

Differential diagnosis:

Primary pyomyositis

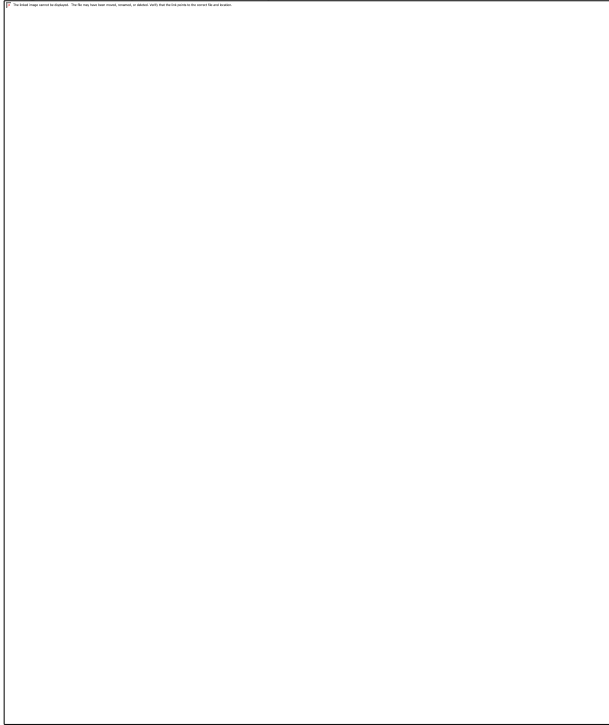
Focal myositis

Grisel's syndrome: non-traumatic subluxation of the atlantoaxial joint due to infection or inflammation in the ENT tissues

Mastoiditis

Lemierre's syndrome: thrombophlebitis of the internal jugular vein as a complication of bacterial sore throat

Figure 1: Hyperintensity within the left paraspinal muscles at the level of C1–C3 suggesting pyomyositis



Treatment:

IV ceftriaxone 2 grams OD and 150 mg clindamycin QDS for 2 weeks, followed by 4 weeks of oral coamoxiclav 250/125 mg TDS.

Physiotherapy three times a day for 3 weeks.

Outcome

Complete resolution of torticollis at 3 weeks and follow-up MRI normal.

Learning Points/Discussion

- Primary pyomyositis can present as acquired torticollis.
- Streptococcus constellatus is a rare cause of pyomyositis.
- Contrast-enhanced MRI scan best identifies an underlying abscess formation and best differentiates it from focal myositis (focal inflammation only). In equivocal cases, fine-needle biopsy will confirm the diagnosis.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-1107

SUCCESSFUL MANAGEMENT OF PULMONARY ZYGOMYCOSIS IN A PATIENT UNDER CONTINUED TREATMENT OF ACUTE LYMPHOBLASTIC LEUKAEMIA

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Title of Case(s)

-

Background

Zygomycetes cause acute angioinvasive infections and have mortality rates > 60%, depending on underlying condition.

Case Presentation Summary

A 5 year old patient with acute lymphoblastic leukaemia (ALL) under treatment according to AIEOP-BFM-ALL 2009 protocol developed suspected pulmonary mycosis. After stop of ALL treatment and initiation of antimycotic treatment with liposomal Amphotericin B (AmBisome) and Voriconazole the patient was transferred to our clinic. After admission, thoracoscopic biopsy was performed. Specimens showed fungal hyphae, fungal PCR (ITS/5,8S-PCR) and sequencing revealed *Actinomyces elegans* representing proven invasive zygomycosis according to EORTC criteria. Therefore, Voriconazole was switched to Posaconazole (15 mg/kg/d, target drug levels of 0.5-5 mg/l) and dosage of AmBisome was increased to 10 mg/kg. After 4 weeks without ALL treatment, an interval therapy with Methotrexate and 6-Mercaptopurine was administered for another month. Under continued antimycotic treatment with AmBisome, we reinitiated therapy according to the AIEOP-BFM-ALL 2009 protocol, completed block IIb and started maintenance therapy. Pulmonary zygomycosis was monitored every 2-6 months by thoracic MRI (avoiding radiation of CT) with additional intermittent thoracic CT and PET-CT scans. In long term, AmBisome dosages were reduced, and intervals were extended to every 3rd day due to practicability and to reduce possible side effects during myelodepressive chemotherapy. ALL-treatment was terminated 22 months after diagnosis (2 months earlier than required) in order to improve immune-system. Since flow-cytometry showed continuously diminished B- and T-cell fractions, AmBisome was given for another 7 months post ALL-treatment. Recent thoracic CT indicate further improvement with primarily signs of tissue scarring.

Learning Points/Discussion

Despite invasive pulmonary zygomycosis, ALL treatment has to be continued under intensive antimycotic therapy in order to control these two potentially lethal diseases. Thoracic imaging and immune monitoring help in guiding treatment decisions.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1108

AETIOLOGY OF PEDIATRIC BLOODSTREAM INFECTIONS IN HEALTHY CHILDREN IN A TERTIARY HOSPITAL IN MADRID, SPAIN

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Background

Following the introduction of the 13-valent vaccine against pneumococcus, the incidence of bacteremia has decreased significantly, with a change in the most frequent etiologic agents. The aim of our study is to describe the etiology of bacteremias in the last 6 years and to confirm if its incidence has remained stable in this period.

Methods

We retrospectively reviewed 105 true-positive blood cultures from healthy children up to 17 years of age at tertiary paediatric hospital in Madrid, Spain, using data from medical records from December 2010 to December 2016.

Results

The overall incidence rate of bloodstream infections in the study period was 3.16/100000, remaining stable in recent years.

	Frequency	Percentage	Incidence Rates	Total Population
2011	10	9.5	1.71/10000	58408
2012	17	16.2	3.25/10000	52240
2013	20	19	3.74/10000	53342
2014	19	18.1	3.60/10000	52690
2015	19	18.1	3.40/10000	55791
2016	20	19.0	3.37/10000	59295
Total	105	100	3.16/10000	331766

Median age was 11.86 (IQR 2.67-11.86) months, 57.1% were males, the majority of the enrolled patients were completely vaccinated (84.8%). The most common species isolated were *E. coli* (21%), followed by *S. pneumoniae* (18.1%) and *S. aureus* (12.4%), with similar rates along the study period. 83.8% of the patients required hospitalization, 15.9% (14) were transferred to ICU. Children with *E. coli* bacteraemia had significantly more leukocytes and higher PCR and procalcitonin. Eighty-five percent of *E. coli* bacteremia occurred in children diagnosed with urinary tract infection.

Conclusions

These results confirm that bloodstream infections remain a frequent cause of disease in children. In the last years, a change of etiological burden has been described coinciding with the introduction of 13 valent anti-pneumococcal vaccination.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-1109

EVALUATION OF ANTENATAL VACCINATION PROGRAM AGAINST PERTUSSIS IN CASTILLA Y LEON (SPAIN), 2016

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Background

Public Health Department of Castilla y León Government implemented in late 2015 the 'Antenatal vaccination program against pertussis', in order to reduce morbidity and mortality in young infants due to pertussis disease in an increasing incidence setting. Tetanus, diphtheria and acellular pertussis (Tdap) vaccine was recommended to all pregnant women, preferably from 28th and 32nd pregnancy week and no later than 38th week. The aim of is study is to evaluate the Program results.

Methods

Data were collected by linking several public health information systems including vaccination (REVA), newborns (RENA), pharmacovigilance (SEFV-H) and epidemiological surveillance (SIVE). Evaluation indicators were calculated to explore activity, coverage (≥ 15 days until delivery), epidemiological impact (children born in 2015 vs 2016), adverse events related to vaccination and acceptability.

Results

During 2016, between 1,162 and 1,322 Tdap vaccines were monthly administered. Mean coverage by children's birth month was 85.7% and ranged from 77.5% (January) to 90.2% (March). Annual rate of confirmed pertussis cases decreased in all ages but more outstanding in children younger than 3 months (Table) and hospitalization among cases was lower but no statistically significant (68.2% vs 50.0%, $p=0.46$). Two adverse events, both including preterm delivery, and 7 rejections were registered.

Conclusions

Indicators confirmed the success of this Program in terms of acceptability and impact, which should be attributed to the multidisciplinary approach in its implementation (including public health professionals, pediatricians, gynecologists and midwives), although efforts must be done to sustain awareness. Appropriate registries are essential to perform an accurate evaluation.

22A. EDUCATION: OTHER

ESP17-1110

PYOGENIC LIVER ABSCESS IN A HEALTHY BOY

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Title of Case(s)

Pyogenic Liver Abscess In A Healthy Boy

Background

Pyogenic liver abscesses are the most common type of intraabdominal abscess. Although liver abscesses are very uncommon in children, they are potentially life-threatening condition with mortality as high as 19%. They usually result from leakage of intraabdominal bowel contents via the portal circulation or may result from arterial hematogenous spread of systemic infection. Diabetes mellitus, underlying hepatobiliary disease, liver transplantation, history of malignancy and advanced age are risk factors. Herein, we report liver abscess due to *Escherichia coli* in a child with no risk factor.

Case Presentation Summary

A five year old boy admitted with fever, abdominal pain, malasia, nausea and vomiting. He was healthy previously. There were no known disease in family history. He was dehydrated, pale and had a mildly tender hepatomegaly 3 cm below the costal margin. The inflammatory markers were increased. (Leucocyte: 23200/mm³, neutrophil: 19300, lymphocyte: 1800, erythrocyte sedimentation rate: 90 mm/hour ve C-reactive protein: 15 mg/dl). Liver enzymes were normal. The ultrasonography revealed a 42x27x28.5 mm hypodense mass in posterior aspect of right hepatic lobe which was verified by computed tomography. Empirical intravenous antibiotics composed of ceftriaxone and metronidazole was started. Ultrasonography gated fine needle biopsy was performed. The culture of the purulent material yielded *Escherichia coli*. The blood culture, viral serology, tests for brucella, salmonella were negative. Tuberculosis and abscess due to amoeba was excluded. The immunoglobulin levels, the lymphocyte profiles and the nitroblue tetrazolium test were all normal. After 6 weeks of antibiotherapy MR imaging demonstrated complete resolution of the abscess.

Learning Points/Discussion

In conclusion, the liver abscess must be kept in mind in patients with fever, and abdominal pain, imaging techniques must be performed timely.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1118

THE STUDY OF EPIDEMIOLOGICAL DATA OF VARICELLA AND ITS COMPLICATIONS IN CHILDREN ADMITTED IN UNIVERSITY HOSPITAL CENTER, TIRANE, ALBANIA

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Background

Varicella zoster (chickenpox) infection is a common and benign disease of childhood. The predominance of uncomplicated cases in children tends to overshadow the morbidity associated with severe cases and the resultant hospitalization, even death may occur in healthy children. The serious problem of varicella is reduced after introduced of the vaccine against varicella. **The aims of this study were:** to show epidemiological data, risk factors and complications of varicella in the Albanian children.

Methods

This was a retrospective study. In this study were included 222 children aged 0 to 14 years old, admitted in University Hospital Center, Tirane, Albania, during January 2009 to December 2016. For which patients was seen the record and were epidemiological data: sex, age, origin, length of hospitalization, risk factors and complications.

Results

Among all chickenpox cases, 222 required hospitalization, and 64 (94, 1%) patients developed complications. The mean length of hospitalization was 5.4 days. Age-group most affected was 1-5 years old with 154 (69, 4%), 29 (13, 06%) occurred in infants less than one year of age. 138(62, 2%) were male and there were no difference for origin. We observed this complications : bacterial over infections: 46 cases or 20,72%(skin and soft tissue infectious caused by *S.aureus* and *S. pyogenes*) neurological complications : 14(6,3%)(cerebellitis, encephalitis, status epilepticus, neuritis). 30 (13,5%) varicella pneumonia, 1 hepatitis, 1 hemolytic anemia. Acyclovir was used in 84 cases or 37.8 %.(mainly complicated). We observed risk factors in 11 cases or (4,96%) as: 8 cases with leukemia, 2 cases Epilepsia, 1 case with Visceral Leishmaniasis

Conclusions

Varicella still remains a frequent infection of childhood, which often is followed by serious complications. The results of this study can contribute to evaluating the options for varicella vaccination.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-1119

HAVE THE IMMUNIZATION COVERAGE TARGETS AMONG INFANTS BEEN AFFECTED BY THE INTRODUCTION OF ADDITIONAL VACCINES IN ITALY?

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Background

In the last decade, Italy's Immunization Plan has progressively included new vaccines. Before the recent overall decreasing trends in vaccination coverage (VC) became a public health issue, some experts argued that adding new vaccinations in the childhood routine immunization schedule could hamper the attainment of coverage target goals. We aimed at assessing if the introduction of universal pneumococcal conjugate (PCV) and varicella vaccinations has worsened coverage for DTPa-HBV-IPV-Hib and measles-mumps-rubella vaccines.

Methods

We compared vaccination coverage in periods 2000-2007 and 2008-2012 between eight regions that implemented PCVs since 2006 (group A: Apulia, Basilicata, Emilia-Romagna, Liguria, Trento, Sicily, Aosta, Veneto) and the remaining 13 (group B: Abruzzo, Calabria, Campania, Friuli-Venezia-Giulia, Lazio, Lombardy, Marche, Molise, Bolzano, Piedmont, Sardinia, Tuscany, Umbria) and between eight regions that introduced varicella vaccine before 2012 (group C: Apulia, Basilicata, Calabria, Friuli-Venezia-Giulia, Sardinia, Sicily, Tuscany, Veneto) and the remaining 13 (group D: Abruzzo, Campania, Emilia-Romagna, Lazio, Liguria, Lombardy, Marche, Molise, Bolzano, Trento, Piedmont, Umbria, Aosta).

Results

Comparing the 2000-2007 to the 2008-2012 period: DT-DTaP VC was 97% and 96.6% in group A versus 95.8% and 96.2% in group B; coverage for IPV was 97.3% and 96.6% in group A and remained stable at 95.9% in group B; HBV VC was 96.1% and 96.2% in group A versus 95.3% and 95.7% in group B; Hib VC increased from 86.4% to 96% in group A versus 86.5% and 94.7% in group B; MMR VC was 84.7% and 90% in group A versus 82.6% and 89.9% in group B; coverage for MMR vaccine increased from 85.4% to 90.7% in group C and from 82.1% to 89.5% in group D.

Conclusions

Regions that piloted additional vaccinations showed higher coverage levels and overall smaller decreasing trends.

22A. EDUCATION: OTHER

ESP17-1121

COMMUNITY-ACQUIRED METHICILIN-RESISTANT STAPHYLOCOCCUS AUREUS: WHEN TO SUSPECT

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Title of Case(s)

Community-acquired methicilin-resistant *Staphylococcus aureus*: when to suspect

Background

Community-acquired methicillin-resistant *Staphylococcus aureus* (CA-MRSA) has emerged as a prominent pathogen particularly in the paediatric population. The incidence in Spain has also increased. We have reviewed the epidemiological characteristics, treatment, evolution, and the study of family contacts after diagnosis of CA-MRSA infection.

Case Presentation Summary

There were 45 paediatric patients diagnosed with CA-MRSA from September 2011 to December 2016 in our hospital. 20 cases were female and 25 male. The median age was 69 months. 18 patients were from South America. 5 patients had previously presented recurrent abscesses without prior MRSA screening. All the patients reviewed had skin and soft tissue involvement. 24 patients needed a debridement and 14 were admitted to the hospital with endovenous antibiotic. Initially 27 patients were treated with cephalosporins, 12 with Augmentin and 6 with Clindamycin or Trimethoprim/sulfamethoxazole. 20 of them having clinical improvement. After isolating MRSA 15 patients were switched antibiotics. Carrier study was only performed on 19 patients, being positive in 4 of them who received topic treatment with Mupirocin. In addition, a contact study was carried out on 10 patients, half being positive.

Learning Points/Discussion

MRSA infections are on the rise. It is important to take into consideration, especially in those patients with a family or personal history of repetitive abscesses. We noticed a predominance of patients with South American ancestry. It should be noted that in our series, the majority of patients presented favorable evolution despite receiving antibiotics resistant to CA-MRSA and without presenting complications.

01A. SCIENCE: ANTIMICROBIAL STEWARDSHIP

ESP17-1123

WE MAKE EFFORT TO TAKE THE SECOND SET OF BLOOD CULTURE IN NEONATES.

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Background

It is well known that more volume of blood increase the rate of positive blood cultures. However, frequency of blood culture is controversial in neonate. We have recommended routine sampling of two sets of blood culture in neonatal intensive care unit (NICU) as the most appropriate sampling technique since 2009. Therefore, we studied the effectiveness of the second set of blood culture for the neonates admitted in NICU retrospectively.

Methods

During the period Apr.2012 to Mar. 2014, blood cultures were taken for neonates suspected sepsis and assigned to either the one set group (67 cases) or the two sets group (55 cases) at Juntendo university hospital in Japan. We investigated the rate of positive culture per sets and the selection of antibiotics after the result of blood cultures, retrospectively.

Results

Regarding the subject backgrounds, the gestational age/bodyweight/sex(male) of the subjects in the one set group and the two sets group were 37weeks vs 32 weeks/ 2291g vs 1348g/ 66% vs 60%, respectively. No statistically significant differences were observed in the ratio of the positive blood culture (16.4% vs 27.2%, $P=0.18$).The ratio of the de-escalation of antibiotics, the two sets group was significant higher than one set group (14.0%vs37.3%, $P<0.05$).

Conclusions

The second set of blood culture was helpful to deescalate antibiotics in neonates.

Clinical Trial Registration (Please input N/A if not registered)

N/A

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1124

INVASIVE INFECTIONS SECONDARY TO COMMUNITY-ACQUIRED STAPHYLOCOCCUS AUREUS

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Background

S. aureus is a leading cause of bacteremia and other invasive diseases in children, both community-acquired (CA-SA) and hospital-acquired. This bacteria has several virulence factors that can contribute to its pathogenicity.

Aim: To determine possible factors associated with a greater severity of the infection, such as the presence of Panton-Valentine Leukocidin or resistance to methicillin (MRSA).

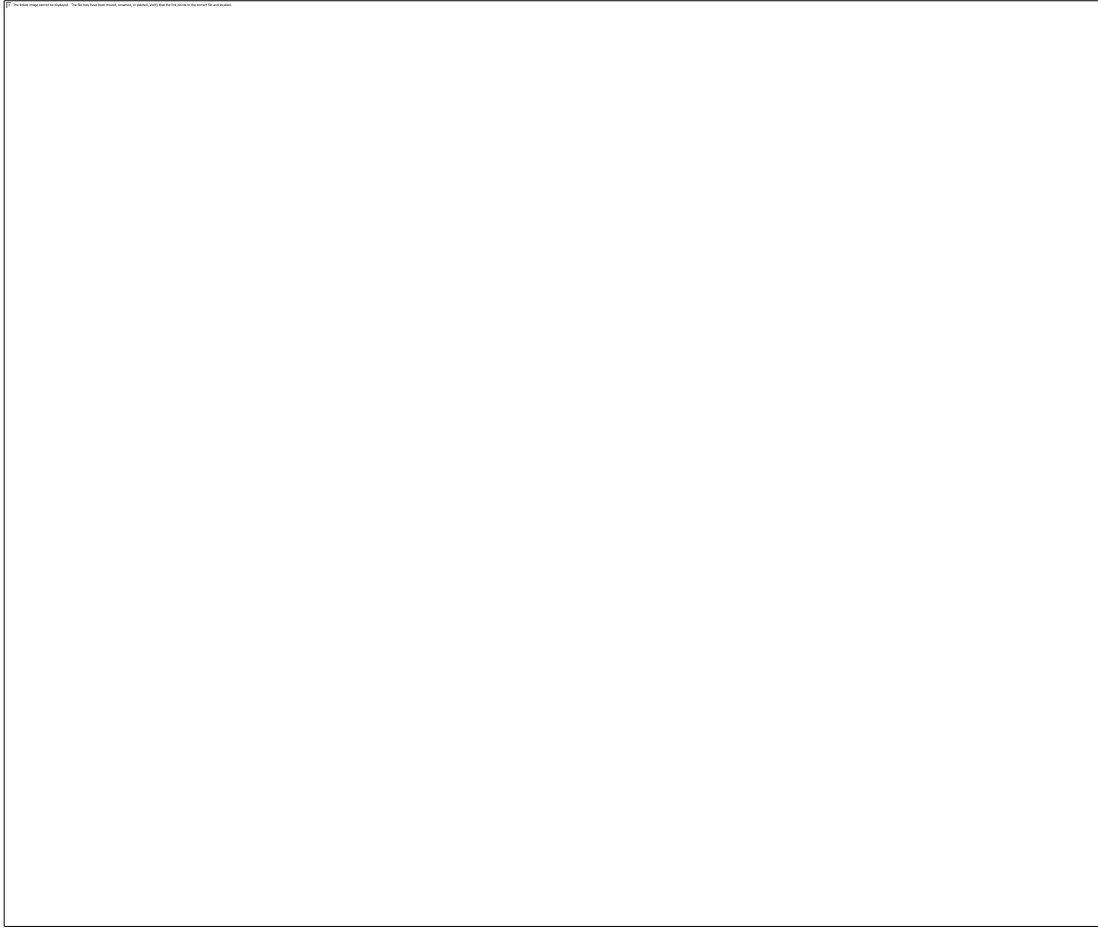
Methods

Retrospective, multicentric study of invasive CA-SA of patients <18 years old from 2 hospitals of Madrid between January 2007-December 2016. Demographic, clinical and microbiological data were analyzed.

Results

Of the 170 bacteremias caused by *S. aureus* evaluated, 56 CA-SA(32.9%) were evaluated. The incidence rate of bacteraemia was similar between both periods: 5.88 cases/100.000 pediatric emergencies (2007-2011) vs 4.69 (2012-2016) (p=0.21). Median age was 36.5 months (IQR:3-116.5); 67.9% male. The most common clinical syndrome was bone and joint infection (44.7%) followed by primary bacteremia (30.4%). Children with primary bacteremia were younger (4 vs 66 months; p=0.001), with lower CRP (2.9 vs 7.4 mg/dl; p=0.008).[J1] MRSA was observed in 8.9% of the cases, with 60% of the analyzed strains (3/5) being PVL-positive. Patients with MRSA needed more often surgical procedures (aOR:11.69-95CI%:1.19-114.3) and more days of hospitalization (23 vs 9; p=0.029).

Eight patients (14.3%) had severe infections (five patients admitted to PICU, two had prolonged sequelae and one died). No differences between severe and non-severe cases were observed (table 1).



Conclusions

The incidence of bacteraemia due to *S. aureus* has remained stable over time. Children with primary bacteremia, although younger, did not have a worse outcome. MRSA isolation remained infrequent among children, but may be associated with more surgical procedures and longer hospital stay.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-1127

A NEW NOSOCOMIAL OUTBREAK OF MULTI-RESISTANT ESBL-POSITIVE *KLEBSIELLA SPP.* IN AN MSF (MEDECINS SANS FRONTIERES) NEONATAL CARE UNIT (NICU) IN PORT-AU-PRINCE, HAITI, MAY-DECEMBER 2016

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Background

MSF provides emergency obstetric and neonatal care in Port-au-Prince, Haiti. Between May and December 2016 the neonatal service of CRUO (Centre de Référence d'Urgences Obstétricales) has faced an outbreak of multi-resistant ESBL-positive *Klebsiella spp.*. We report on the epidemiological and microbiological characteristics of this new outbreak and the clinical and infection control strategies implemented to limit its magnitude and impact.

Methods

Cases were defined as neonates presenting with signs of sepsis and treated with hospital-specific 2nd line treatment. Anal-rectal swabs and blood cultures were taken for each case and cultured for bacteria isolation and antibiotic susceptibility testing. A line list for all sepsis cases collected information about case characteristics, clinical information, swabs/blood cultures and treatment with antibiotics. Various infection control measures were implemented.

Results

Between May and December 2016, 223 suspected cases of septicemia were reported; 33 (14.7%) were culturally confirmed cases of *Klebsiella spp.* and 75 (33.6%) were colonized. An increase in the septicemia rate resulted in a mortality rate of 25% in our NICU (58% were due to sepsis). By multidisciplinary approach, infection control strategies included increased disinfection surveillance, removal of sinks, increased space and modification of the admission criteria with prevention of overcrowding. The extent of these measures has led to lower colonization rates and a significant decrease of the overall neonatal mortality rate (25% to 5,5%).

Conclusions

MSF is facing new challenges by implementing highly specialized medical care for vulnerable groups of patients in low resource settings. In Haiti, access to high quality laboratory and expert support enabled us to develop a multi-sectoral response to the outbreak. This successful experience shows that a comprehensive approach against nosocomial transmission of multi-resistant bacteria can be beneficial in a humanitarian context.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1131

ORBITAL CELLULITIS DEVELOPING AFTER PARANASAL SINUSITIS AND COMPLICATED BY SUBDURAL EMPHYEMA

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Title of Case(s)

Orbital Cellulitis Developing After Paranasal Sinusitis, Complicated By Subdural Emphyema

Background

Orbital cellulitis is a potentially life-threatening condition caused by infection of the soft tissues posterior to the orbital septum. Orbital cellulitis is often the result of local spread of infection from sinusitis because of the neighbourhood of thin bony septum called lamina papyracea. In case of delayed diagnosis and treatment orbital cellulitis can be complicated by subdural empyema, cerebral abscess, and cerebral venous thrombosis which are associated high morbidity and mortality. Herein, we present a patient with orbital cellulitis in association with pansinusitis complicated by subdural empyema.

Case Presentation Summary

A previously healthy, 13 year old admitted with fever, lethargy, vomiting, erythema, edema of right eye. He had the history of cough, headache for ten days. On physical examination, he had proptosis and restricted extraocular movement of the eye that was concerning for orbital cellulitis. In laboratory, the inflammatory markers were increased (Leucocyte: 18200/mm³ (neutrophil: 15600, lymphocyte: 2600), erythrocyte sedimentation rate was 67 mm/hour and C- reactive protein: 8.5 mg/dl). Magnetic resonance imaging revealed pansinusitis with orbital cellulitis and revealed subdural empyema in the right frontal region. The patient was started on intravenous broad spectrum antibiotics composed of vancomycin, ceftriaxone, metronidazole and surgical evacuation was performed. The immunoglobulin levels, the lymphocyte subsets and the nitroblue tetrazolium test were all normal. After six weeks of antibiotherapy, the inflammatory markers were negative and the patient had complete recovery with no neurologic deficit.

Learning Points/Discussion

Subdural empyema, defined as collection of pyogenic bacterial fluid in the subdual space, usually develops secondary to aduscent structures. Early diagnosis and multidiciplinary treatment can decrease potential morbidity and mortality associated with these serious conditions.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1133

HOW VISCERAL AND OCULAR TOXOCARIASIS CAN MIMIC CANCER IN CHILDREN

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Title of Case(s)

HOW VISCERAL AND OCULAR TOXOCARIASIS CAN MIMIC CANCER IN CHILDREN

Background

Toxocariasis is a zoonotic helminthiasis caused by *Toxocara canis* and *cati*. Once contracted, the larvae hatches in the gastrointestinal tract, crosses the intestinal wall and travels through the bloodstream to other organs. The lesions induced may be confused with solid tumors or metastases. We illustrate toxocariasis mimicking malignancies in three children.

Case Presentation Summary

Case 1: 2 year-old male with stage IV, high-risk neuroblastoma and no evidence of disease as he initiated maintenance therapy. Soon after, he had bilateral leg pain, refusal to walk and respiratory symptoms. Bilateral pulmonary nodules were not consistent with metastases. He had leukocytosis, eosinophilia, and positive *Toxocara* serology. Nodules decreased after antihelminthic treatment.

Case 2: 11 year-old male, previously healthy, had acute abdominal pain. A right renal mass, liver and lung lesions were found. Following nephrectomy, pathology confirmed stage II favorable histology Wilms tumor. Liver lesion was described as eosinophilic abscess and lung lesions as granulomas. Exposure to dogs. *Toxocara* serology was positive.

Case 3: 4 year-old male had leukocoria and strabismus in the left eye. The funduscopy evaluation identified a dense hypervascular exudate, not typical of intraocular retinoblastoma. Bloodwork confirmed eosinophilia and positive *Toxocara* serology. Exposure to puppies. Despite antihelminthic therapy, blind eye was enucleated because pain and neovascular glaucoma. Pathology confirmed granulomatous inflammation with eosinophilic abscess.

Learning Points/Discussion

- Ocular toxocariasis is important in the differential for intraocular mass, which may result in blindness.

- For new hepatic and pulmonary lesions in children with known malignancy, morphologic and histopathologic characteristics, rate of lesion growth, and other organ involvement should be considered before assuming malignant etiology.

- Treating affected pets and encouraging hand hygiene is critical to controlling disease.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-1136

COMMON CONDITION WITH VARIED PRESENTATION-CASE REPORT

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Title of Case(s)

COMMON CONDITION WITH VARIED PRESENTATION

Background

Infectious mononucleosis can present with acute symptoms of exudative tonsillitis and marked cervical lymphadenopathy to more vague symptoms of fatigue and malaise. Majority of acute IMN are subclinical or require only supportive care. Some can have severe or life threatening complications. Arrival at correct diagnosis can be complicated by the timing of patients presentation, since sensitivities and specificities of various diagnostic tests changes as illnesses evolves.

Case Presentation Summary

A 15 year old girl presented with high grade fever of 10 days with hyperpigmented rashes, constant abdominal pain. She developed generalised pruritic erythematous maculopapular rashes spreading centrifugally involving palms and soles on 3rd day of fever following Amoxycillin intake on day 1 for exudative tonsillitis. Anemia, jaundice, ascites, generalised tender lymphadenopathy with hepatosplenomegaly and left upper quadrant tenderness followed on 7th day with progressive hyperpigmentation of rashes. She was on dapsone therapy prior to rash development for small vessel leukocytoclastic vasculitis for 20 days. Investigations revealed lymphocytosis with atypical lymphocytes in peripheral smear. Hemolysis and hepatitis were evident. USG abdomen and ECHO showed serositis involving pleura, peritoneum, pericardium. Multiple splenic hypoechoic shadows (microabscess/subcapsular hemorrhage) was present in USG Abdomen. EBV VCA IgM and IgG were positive. Axillary lymph node biopsy and immunohistochemistry was suggestive of atypical T cell lymphoproliferation due to dapsone hypersensitivity/primary EBV infection in adolescents but this may simulate angioimmunoblastic lymphoma. However she recovered with oral steroids over a period of 4 weeks with exfoliation of skin.

Learning Points/Discussion

IMN should be suspected in adolescents with primary EBV infection. Laboratory tests that support EBV associated IMN include absolute and atypical lymphocytosis and positive IgM against VCA is a definitive diagnosis, by enlarge recover with symptomatic management. They can present with varied manifestations mimicking lymphoma, dapsone hypersensitivity syndrome, DRESS. A high index of suspicion is required as the management differs for the IMN mimics.

02B. SCIENCE: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-1137

POPULATION PHARMACOKINETICS OF FLUCLOXACILLIN IN HOSPITALISED CHILDREN AND NEONATES

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Background

Improved understanding of developmental pharmacology helps to advance paediatric antibiotic dose optimization strategies. This analysis used interim data from NAPPA, a multicentre antibiotic pharmacokinetic (PK) study, to evaluate the population pharmacokinetics of flucloxacillin in hospitalised children and neonates.

Methods

Participants were recruited at nine hospitals with informed consent. Flucloxacillin dosing was as per standard care. Study blood samples were obtained with routine samples or at recommended times, frozen, and analysed retrospectively using ultra-high performance liquid chromatography with tandem mass spectrometry. For PK analysis, non-linear mixed effects modelling (NONMEM®) was used. Covariate testing was undertaken after allometric weight scaling (AS) and a postmenstrual-age (PMA) driven maturation function (MF) on clearance were included *a priori*. The first order conditional estimation method with interaction was used to obtain the objective function value (OFV). The study protocol had Research Ethics Committee approval.

Results

Data were available from 73 NAPPA participants on flucloxacillin (median postnatal age 50 days, range 1 day-15.7 years). The most common treatment indications were suspected sepsis (41%), skin/soft tissue infection (25%) and surgical prophylaxis (14%). A two compartment model provided the best fit to the data. After AS and the PMA-driven MF were included, no other covariates tested were significant. The final parameter estimates were: 10.8 L/h/70kg for clearance and 12.7 L/70kg for volume of distribution; 14.1 L/h/70kg for inter-compartmental clearance and 9.6 L/70kg for peripheral volume. MF parameter estimates were: 2.3 for the Hill coefficient and 41.3 weeks PMA for maturation half-time. The final OFV was 1082.5.

Conclusions

Paediatric flucloxacillin PK data fitted a two compartment model with AS and a sigmoidal PMA-driven MF. Future work will include model-based simulations to identify the optimum flucloxacillin paediatric dosing strategies.

Clinical Trial Registration (Please input N/A if not registered)

EudraCT 2013-002366-40; ClinicalTrials.gov NCT01975493

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-1138

ACTIVE VERSUS PASSIVE TB CASE FINDING: LESSONS FROM A DEDICATED CHILDHOOD TB CLINIC IN WEST AFRICA

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Background

Tuberculosis (TB) in children is usually a sentinel event and most TB disease is attributable to an adult infectious case in the household. However, many children with suspected TB also present at child health centers rather than via National TB Program pathways. We examined the differences in diagnostic yield between these two referral routes at our dedicated child TB clinic at the MRC Unit in The Gambia.

Methods

We evaluated symptomatic and/or Tuberculin skin test positive household child (<15 yrs) contacts of adults with sputum smear positive TB identified through contact tracing and symptomatic children referred via sensitized governmental child health clinics without known contacts. Clinical examination, chest x ray and sputum examination (smear, GeneXpert and culture) were performed. Clinical and epidemiological characteristics were compared among all the children.

Results

Of 1531 children examined, 1353 (88.4%) were referred following contact tracing and 178 (11.6%) from collaborating health centers. Altogether, 109 TB cases were diagnosed, 35 (32.1%) of which were bacteriologically confirmed. The children referred from health centers were significantly younger (median age 5.3 (2.4 – 8) vs 7 (3.4 – 10), had at least 3 times the odds of TB diagnosis (OR 3.4 (95%CI 2.2 – 5.5) and 6 times the odds of having bacteriologically confirmed TB (OR 6.1 (95%CI 3.1 – 12.2) compared to those identified following contact tracing.

Conclusions

Absence of a known TB contact in a chronically ill child should not decrease the index of suspicion for TB in an endemic setting. In these settings, a dedicated childhood TB clinic could increase identification of children with TB who would otherwise be missed in the routine settings.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-1139

NEONATAL RESPIRATORY DISTRESS SYNDROME AND A VESICLE

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Title of Case(s)

NEONATAL RESPIRATORY DISTRESS SYNDROME AND A VESICLE

Background

The incidence of neonatal herpes simplex virus (HSV) infection is 1/3200 to 1/10000. The diagnosis remains a clinical challenge. There are three periods of acquisition: intrauterine (<0,1%), perinatal (85%) and postnatal infection (10%). Neonatal HSV may be classified into three categories: localized skin, eye and mouth involvement (45%); meningoencephalitis (33%); disseminated disease (25%). Clinical manifestations generally occur between the first and third week of life. Mothers rarely have history of HSV infection.

Case Presentation Summary

A baby born at 34 weeks, without any obvious trigger, developed at birth a respiratory distress syndrome with hypotension. Despite the non-invasive ventilation he remained polypneic and regularly presented bradycardia and desaturation. A chest x-ray showed a pneumonia for which he received 19 days of antibiotics. At the fifth day, he was intubated for 5 days because of increased acidemia, dyspnea and lethargy. At the eighth day he presented an episode of fever. The day following his extubation, a vesicle appeared on his chest. Also, he presented a sudden desaturation and bradycardia. We diagnosed a pulmonary hemorrhage. We suspected an HSV infection and started acyclovir. The PCR for HSV-1 came back positive. Because of her persistent hypotonia, transfontanelar ultrasounds and cerebral MRI were performed, which showed right temporal, parietal and left fronto-parietal lesions, compatible with herpetic meningoencephalitis. The child presented thus a disseminated HSV infection.

Learning Points/Discussion

Newborns with disseminated HSV disease often present nonspecific signs and symptoms of neonatal sepsis. Like in our case, the diagnosis is frequently delayed until the second week of life. Seen the high mortality without treatment, it's crucial to keep HSV infection in mind in front of a newborn with a multiple organ failure.

04A. EDUCATION: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-1140

PERTUSSIS OUTBREAK IN INFANTS AND A CONTAINMENT PROGRAM BASED ON PROVIDING PERTUSSIS VACCINE DOSES AT THE AGES OF 6 WEEKS, 10 WEEKS AND 14 WEEKS

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Background

Bordetella pertussis infection in infants is associated with morbidity and mortality.

During a pertussis outbreak in Jerusalem in 2015 over 100 cases were notified in infants under one year with three infant deaths.

An intervention program based on providing pertussis vaccine doses at 6, 10 and 14 weeks was employed (the routine schedule is 2,4,6 months).

Methods

Epidemiological population-based study, including notified pertussis cases characteristics and assessment of age-appropriate coverage of pertussis vaccines among infants in the Jerusalem district.

Results

1084 **pertussis** cases were notified in the Jerusalem district in 2015 vs. 383 cases in 2014 and 185 cases in 2016.

The overall incidence rate increased from 37.5/100000 (2014) to 103.6/100000 (2015) and declined to 17.7/100000 in 2016.

Infants under one year (2015) had the highest incidence rate (364.4/100000); specifically, those under 6 months (83.4% of cases under one year). The overall hospitalization rate was 4.3%, infants – 32.4%.

The intervention program was employed on May 1st 2015 for infants 6 weeks of age.

The proportion of infants who received the first pertussis vaccine dose before age 2 months increased from 8.2% for infants born in April-May 2014 to 63.9% for those who were born in April-May 2015 [P=0.0001] and 15.2% for infants born in April-May 2016.

Following the program, the incidence of new pertussis cases declined remarkably and the fraction of the Jerusalem district of the national pertussis cases declined significantly.

Conclusions

The WHO\CDC recommendations in pertussis outbreak settings include shifting the first dose to age 6 weeks and reducing the space between doses to 4 weeks, resulting in 6,10,14 weeks schedule. Providing this schedule was found attainable. The following decline in incidence which was observed necessitates further studies.

22A. EDUCATION: OTHER

ESP17-1141

BRAIN ABSCESS: EXPERIENCE IN A TERTIARY-CARE HOSPITAL

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Title of Case(s)

BRAIN ABSCESS: EXPERIENCE IN A TERTIARY-CARE HOSPITAL

Background

Brain abscess (BA) is an uncommon disease in which surgery and prolonged antibiotics are the main therapeutic measures.

This is a retrospective study to describe the characteristics of BA diagnosed in children <14 -year-old during 2010-2016.

Case Presentation Summary

Thirteen patients were included. Median age at diagnosis 23 months (1-143). Ratio male/female 6/7. Fever, vomits and neurological deficits were the predominant signs. Median days from the onset of symptoms until diagnosis was 6 (1-18). Brain TC and MR were the neuroimaging most performed. BA were secondary to meningitis (6, 1 due to myelomeningocele infection), sinusitis (3), mastoiditis (2) and ventriculoperitoneal shunt infection (2). An increase of BA was observed in 2013 (5/13), 80% secondary to otorhinolaryngological infections. Several bacteria were isolated in 9 cases (69.2%): *C.koseri* (2), *S.pneumoniae* (1), *N.meningitidis* (1), *A.baumannii* (1), *Peptostreptococcus anaerobius* (1), *S.intermedius* (1), *C.albicans* (1), *P.aeruginosa* (1). Nine patients had multiple BA. The most frequent antibiotic combination was cefotaxime plus anti-staphylococcal antibiotic (especially vancomycin). Colistin was used in a BA secondary to multiresistant *A. baumannii* and liposomal amphotericin b in the one due to *C.albicans*. Median days of antibiotic 42 (14-63). Intrathecal therapy was used in 3 (23.1%). Five cases (38.5%) did not require surgery (4 with a diameter <3cm), with good outcomes. BA with conservative treatment compared with the surgical group, needed more days of antibiotics (mean 48,6 vs 36,63) and days of admission (mean 73 vs 42,63) ($p>0,05$). There were no exitus. 8 BA (61.5%) developed neurological sequels, 7 had multiple BA ($p= 0,068$).

Learning Points/Discussion

BA with conservative treatment had good outcomes with a longer duration of treatment and length of admission. A high percentage of neurologic sequels were observed.

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-1142

ENCEPHALITIS BY ZIKA AFTER THE EPIDEMIC AT THE SOUTH OF COLOMBIA. REPORT OF 2 CASES

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Title of Case(s)

Encephalitis by ZIKA after the epidemic at the south of Colombia. Report of 2 cases

Background

In the 2016 at least seventy countries in tropical area have reported cases of Zika virus (ZIKV) infection. The Americas suffered the most extensive and important outbreak and reports of neurological compromise of the ZIKV infection such as microcephaly and Guillain Barré syndrome have been noted; However, others neurological presentations are rarely described including few cases of meningoencephalitis. Here, we introduce for the first time, two pediatric cases of confirmed encephalitis by ZIKV infection in Colombia, which appear after the official end of the epidemic.

Case Presentation Summary

These are 2 patients from the urban area of Neiva (city located 250 Km at south of Bogotá, Colombia), ages of 31 days and 3 years, male gender, who consult for fever of more than 5 days associated with severe headache and tonic-clonic seizures (only suffered for the infant) and antecedent of maculopapular exanthema short lasting. Rapid tests for dengue virus NS1, plasma specific-IgM and IgG were negatives in both cases. The study of CSF showed mild lymphocytic pleocytosis without biochemical alterations and with negative microbiological studies. Enterovirus infection was also discarded by molecular methods. Specific quantitative RT-PCR for ZIKV demonstrate the virus in urine samples collected 8 days after symptoms onset.

Learning Points/Discussion

Infection with ZIKV should be considered as causative of viral encephalitis in endemic areas.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-1143

PARECHOVIRUS GENOTYPE 3 (HPEV3) OUTBREAK AMONG INFANTS, PORTUGAL, 2016

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⁴Maternidade Dr. Daniel de Matos - Centro Hospitalar e Universitário de Coimbra, Neonatology Service, Coimbra, Portugal

Title of Case(s)

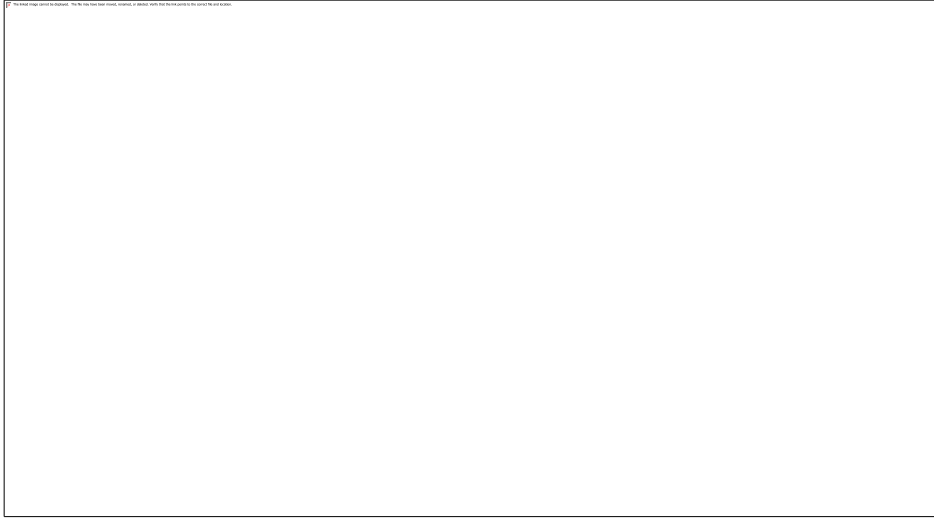
Parechovirus genotype 3 (HPeV3) outbreak among Infants, Portugal, 2016

Background

Human Parechoviruses (HPeV) have recently been recognised as an important cause of paediatric infection, generally associated with mild gastrointestinal and respiratory manifestations. However, HPeV3 has been associated with serious illness including sepsis and meningitis. Outbreaks may occur. We hereby describe an HPeV3 outbreak in infants registered from the 8 of June to the 12 of August 2016. Laboratory diagnosis was made by Rt-PCR in the cerebrospinal fluid (CSF) and stools. Genotyping was made by Rt-PCR and sequencing in stools samples from infants and family members.

Case Presentation Summary

HPeV3 infection was detected in 7 infants, with demographic and laboratory data shown in the table. Median age was 26 days (5-52). All presented with fever and irritability, 2 with gastrointestinal symptoms, 2 with a rash. One had seizures, with an MRI showing white matter diffusion restriction. The median duration of admission was 5.6 days (3-11), with favourable outcome in all. In 2 cases there were close family members with respiratory and gastrointestinal symptoms and fever. HPeV3 was identified in the stools of 3 mothers. All were from different geographical areas.



Learning Points/Discussion

This study reports the first HPeV 3 outbreak in Portugal, and these are the first cases diagnosed in a hospital where Rt-PCR is available since 2014. Besides detection of the virus in the CSF, there were no raised local or systemic inflammatory markers. Although there is no specific treatment, this diagnosis can avoid antibiotic treatment and prolonged admissions.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-1144

NEURODEVELOPMENTAL OUTCOME IN CONGENITAL CYTOMEGALOVIRUS INFECTION

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Background

A significant number of asymptomatic newborns infected with congenital cytomegalovirus (CMV) will present with permanent childhood developmental problems

Methods

Objective of the study was to assess development of children born with congenital CMV and are asymptomatic at age of 3 years.

Prospective cohort study of children with asymptomatic congenital CMV infection evaluated at birth and followed up until age 3 years by assessment in follow up clinic. Neurodevelopment characteristics were assessed by Bayley III assessment tool. 37 children were enrolled in cohort.

Results

Positive correlation was detected with head circumference. They have significantly ($p < 0.05$) lower scores for cognitive, language development, but perform better in motor area of development. Severe delay was not detected. From 37 children at age of 3 years cognitive outcome was lower than average for same age group in 7 cases (18.9%). Language development was moderately delayed in 9 cases (24%).

Conclusions

Congenital CMV infection is important in the etiology of developmental delays, especially in asymptomatic children. Further detailed assessment and follow up of the group is needed.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1146

MANAGEMENT OF RETROPHARYNGEAL AND PARAPHARYNGEAL ABSCESSSES

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Title of Case(s)

MANAGEMENT OF RETROPHARYNGEAL AND PARAPHARYNGEAL ABSCESSSES

Background

Deep neck infections (DNI) are at risk of life-threatening complications. Surgical indication is still a topic of discussion.

This is a descriptive retrospective study of retropharyngeal (RPA) and parapharyngeal abscesses (PPA) diagnosed in <14 - year-old patients assisted at a tertiary-care hospital during the period 2009-2016.

Case Presentation Summary

Over the study period, 24 patients were diagnosed of DNI: 14 RPA (58.3%), 6 PFA (25%) and 4 suffer from both (16.7%). Ratio male/female was 13/11. Median age 2.25 years-old (1-10.2). There was a peak of incidence in 2014 (29%). Fever (100%), cervical lymphadenopathy (87,5%) and torticollis (78%) were the most frequent signs. Mean leukocytes count 25,000 cells/ml (5,200-53,300), mean C reactive protein 152 mg/l (3-492). Cervical ultrasound test was done in 19 (79%), in 12 (63%) a diagnostic of suggestive DNI was performed. The study was completed with cervical TC in 83.5%. Half of the patients had received pre-admission antibiotics, 91,6% amoxicillin-clavulanic. All patients were admitted with intravenous antibiotics (70% amoxi-clav) and 11 (45.8%) received intravenous steroids. Surgical drainage was performed in 14 (58.3%), 93% with a diameter >2 cm (p= 0,12), 2 with mediastinitis, 4 with risk of airway compression. In 8 surgeries (57%), purulent material was not obtained. 10 patients were treated only with antibiotics (41.6%), 6 of them (60%) were >2cm. Conservative treatment and surgery showed no statistical differences in days of admission and duration of antibiotics. Microbiological isolation was only obtained in 3 (12,5%), all *S.pyogenes*. There were no exitus and all patients had a good outcome.

Learning Points/Discussion

In our study, conservative management with cervical ultrasounds and medical treatment was an adequate approach in approximately the half patients with DNI.

02B. SCIENCE: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-1147

TREND OF SPECTRUM ANTIBIORESISTANCE ESCHERICHIA COLI ISOLATED FROM URINARY TRACT INFECTIONS

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Background

Uropathogenic *Escherichia coli* is a very common etiologic agent of urinary tract infection in children. Antimicrobial prophylaxis and treatment of urinary tract infection increase antibioresistance of *E. coli*. Clinical experience combined knowledge of local antibioresistance was important in therapy, especially in patients with recurrent episodes of urinary tract infection (UTI). To investigate antibioresistance pattern of *Escherichia coli* isolates from pediatric outpatients with urinary tract infection.

Methods

The study included all outpatients (children aged up to 12 years) with positive urine cultures for *E. coli* in „Dr.V.Babes” Center, Bucharest, Jan 2014-Dec 2016.

The antibiotic susceptibility profiles were analyzed for all strains *Escherichia coli* using the Kirby Bauer disk diffusion susceptibility procedure and the VITEK 2 system for betalactam antibiotics, aminoglycosides, nitrofurans, fluoroquinolones, carbapenem, (CLSI 2014, CLSI 2015, CLSI 2016 recommendations).

Results

A total of 198 children aged up to 12 years were included in the study. *E. coli* isolated from urine specimens (74 strains 2014, 80 strains 2015, 44 strains 2016).

The isolated bacteria were *E. coli* non-ESBL (88,4%); 18 cases (9%) were found to be ESBL-producing organisms. *E. coli* resistance to ampicillin was 52,5% (104 strains).

E. coli isolated have low-level resistance to aminoglycosides (gentamicin 8%) and fluoroquinolones (ciprofloxacin 9%). Multiple drug-resistant *E. coli* ESBL producing

was 18 isolate, resistance to fluoroquinolones was 50% (9 isolate). No strain was resistant to amikacin, nitrofurans, carbapenem, fosfomycin.

Conclusions

1.Recurrent episodes of UTI increase the risk of ESBL-producing and antimicrobial resistance.

2. Management of UTI with E.coli ESBL producing is different from the infection to susceptible strains(E.Coli non ESBL).

3.Continuous monitoring of evolving resistance patterns in children will have a great importance in the following years**Systematic Review Registration (Please input N/A if not registered)**

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1148

KINGELLA KINGAE SEPTIC ARTHRITIS IN CHILDHOOD IN SPAIN

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Title of Case(s)

KINGELLA KINGAE SEPTIC ARTHRITIS IN CHILDHOOD IN SPAIN

Background

Kingella kingae is a common coloniser of the oropharynx, which cause outbreaks in day care facilities. It is an increasingly being recognized as a cause of bacteremia and osteoarticular infections in children. The limited data of septic arthritis due to *K. kingae* and the difficult to identify this organism in routine cultures, can delay the diagnosis and treatment leading to sequelae. Our objective was to describe the clinical and epidemiological features of acute septic arthritis due to *K. kingae* as well as the serum and synovial fluid inflammatory markers.

Case Presentation Summary

Hospital admissions due to *K. kingae* septic arthritis were retrospectively reviewed from January 2010 until December 2016 in two tertiary hospitals in Madrid.

A total of 5 children were identified. Median age was 24 (range 20-72) months. All infections occurred in autumn. All had local symptoms in the affected joint (knee 4, hip 1 case) for a median of 8 (range 3-12) days.

Blood/synovial fluid cultures were negative. *K. kingae* was identified by synovial fluid PCR in all children. Median values in synovial fluid were: leukocytes 52.750/ μ L (range: 10.040-78.320), 89% neutrophils (80-95%), proteins 4,4 g/dL (3-6,1) and glucose 60 mg/dL (46-70). Median serum CRP was 3,2 mg/dL (1,2-6). Serum procalcitonin was below 0,15 ng/mL in all. Antibiotics were given for a median of 20 days (10-21), without permanent sequelae.

Learning Points/Discussion

K. kingae is an underrecognized cause of septic arthritis in young children. It causes diseases accompanied by mild clinical features, and moderate altered laboratory data. Due to the low yield of cultures, molecular methods should be done in synovial fluid for a better and faster identification of this pathogen.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1149

ASSESSMENT OF PROGNOSTIC FACTORS IN PEDIATRIC BACTERIAL MYOSITIS AND NECROTIZING FASCIITIS: THE ROLE OF SEVERITY SCORES

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Background

Necrotizing fasciitis and bacterial myositis are rare and potentially fatal infections. Prompt diagnosis is essential, challenging and mainly based on clinical data. Our aim is to describe the epidemiology, microbiology, and severity of fasciitis and myositis at our center and to evaluate the usefulness of LRINEC score for adults and its recently proposed pediatric version P-LRINEC.

Methods

Descriptive, retrospective study of all consecutive hospitalized children (≤ 18 years) with myositis and/or necrotizing fasciitis (January 2000-December 2016). Myositis was diagnosed based on compatible MRI findings while fasciitis was diagnosed relying on compatible surgical and/or pathological reports. Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) includes: CRP, WCC, Hemoglobin, sodium, creatinine and glucose) while P-LRINEC only comprises sodium <135 mEq/L and CRP >20 mg/L.

Results

Overall, 25 patients were included: 8 fasciitis and 17 myositis. Median age was: myositis 7.8y (IQR=5.6-13.6) and fasciitis 4.3y (IQR=2.4-16.5), respectively. The initial clinical manifestations were similar and nonspecific in both groups. *S. pyogenes* was the most commonly isolated microorganism in both entities (29% myositis and 63% fasciitis, respectively). One patient died of fasciitis and sequelae were present in 50% of fasciitis and 23.5% myositis cases. LRINEC was a useful tool for stratifying fasciitis (85.7% high-risk) and myositis (60% low-risk) ($p=0.045$). In contrast, we could not find differences regarding P-LRINEC in our cohort ($p=0.87$).

Conclusions

High-risk LRINEC score (≥ 6) seems useful for early recognition of fasciitis, leading to early surgical management. On the other hand, P-LRINEC did not allow severity stratification in our cohort. Prospective and multicenter studies are needed to establish valid prognostic criteria in pediatrics that allow the identification of high risk patients and to be able to optimize management and early treatment.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-1150

IMPACT OF PNEUMOCOCCAL CONJUGATE VACCINES (PCV) ON SEROTYPE 19A NASOPHARYNGEAL CARRIAGE (NPC)

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Background and Objective

Reduction of NPC of pneumococcal serotypes included in PCVs plays an important role in the success of pneumococcal immunization programs. Here we described the preliminary results of a literature review of PCV impact on NPC related to serotype 19A.

Methods

The review included observational studies, published between 2008-2016 evaluating, the efficacy and effectiveness of higher valent PCVs on 19A NPC.

Learning Points Discussion

Results: Of 1030 unique articles retrieved, 27 were included. Of these, 20 are from PCV13 countries where 19A carriage in children was consistently decreased after the implementation of infant vaccination programs, such as the UK, US, Italy, France, Norway, Sweden, Ireland, Israel, Canada and Gambia. The 19A carriage rate was <5% and close to 1% in young children in some studies. Of the studies from PCV10 countries, the 19A carriage prevalence was either unchanged (Kenya and Brazil), increased (New Zealand) or decreased (the Netherlands).

Conclusions: The reduction in 19A carriage in PCV13 countries coincided with a significant reduction of 19A invasive pneumococcal disease (IPD) cases in unvaccinated age groups while the inconsistent data of PCV10 on 19A NPC would explain the increase of 19A IPD cases in older age groups in PCV10 countries. Our findings highlight the importance of serotype 19A inclusion into the vaccine formulation that translates into the reduction in carriage and reductions of pneumococcal diseases at the population level.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1151

ASSOCIATED FACTORS IN THE EVOLUTION OF SUSPECTED BACTERIAL CAP IN HOSPITALISED CHILDREN

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Background

Community acquired-pneumonia (CAP) is one of the most frequent causes of admission in children and *S. pneumoniae* is the most frequent bacterial pathogen in all age groups.

Since 2011, PCV13 vaccination has showed a better control of CAP in some countries, due to the inclusion of serotypes like 1 and 19A, that show a high circulation in the community and a significant involvement in complicated CAP with pleural effusion.

In our community, pneumococcal vaccination was not included in the official vaccination schedule, but private immunisation is chosen by some parents.

The aim of our study was to identify factors associated with clinical forms and evolution.

Methods

In previously healthy <14-year-old children admitted because of suspected bacterial –CAP, epidemiological, pneumococcal vaccination history, clinical and microbiological data were collected during 6 years (2011-2016). Suspicion of bacterial aetiology was defined as classic clinical and radiological manifestations, as well as CRP levels >80 mg/L at admission. We excluded subjects with viral, atypical, bronchoaspiration or nosocomial pneumonias and immunocompromised conditions.

Results

Two hundred and ninety-two children with suspected bacterial- CAP were recorded. Almost half of them were <3 years old (159, 54%) and 46% were >3 years. Among variables studied, statistical significant differences were found in seasonality, pleural effusion and vaccination history with PCV13 ($p<0.05$) (see table below). No

differences were seen with PCV7 or PCV10 antecedents.



Conclusions

Our results suggest that, because of there were more admissions during Winter and Autumn, suspected bacterial-CAP cases among children <3y could be driven by seasonal viral infections. Surprisingly, pleural effusion was more frequent in children >3y, that could be related to a lower PCV13 coverage in this age group.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1153

STREPTOCOCCUS DYSGALACTIAE AS A NEGLECTED CAUSE OF BACTERIAL TONSILLITIS

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Background

Acute tonsillitis is one of the most common childhood diseases, mostly of viral origin. Group A *Streptococcus* is the main bacterial agent, and its diagnosis is performed by a rapid antigen-detection test or culture from a throat sample. Nevertheless, there are other bacterial agents like *Streptococcus dysgalactiae* that we must consider in acute tonsillitis with negative rapid strep A test.

Methods

We collected all pediatric pharyngeal cultures positive for *Streptococcus dysgalactiae* from a regional hospital laboratory in Spain in the last 3 years. We detected 20 patients. We analyzed clinical and epidemiological data as well as the treatment they received.

Results

The mean age was 10,9 years (range: 5-14 years). 55% were female. Manifestations of acute tonsillitis were present in all patients except in 3 (15%) who had no fever, and 2 (10%) with no sore throat. 4 cases occurred in a cluster at a summer camp and two other cases in the same village, 29 days apart. All of them had negative rapid strep A antigen-detection test. Throat cultures were performed for all the cases. Two of them did not receive antibiotic therapy, with spontaneous resolution. The rest of them received amoxicillin, with full recovery. All the *Streptococcus dysgalactiae* isolated were sensible to ampicillin.

Conclusions

Streptococcus dysgalactiae is a well-documented cause of epidemic acute tonsillitis in children, with similar epidemiological and clinical data to *Streptococcus pyogenes* tonsillitis. The impact of *Streptococcus dysgalactiae* causing endemic or sporadic tonsillitis is uncertain. All our cases evolved favorably without local or systemic complications.

In summary, on clinical suspicion of bacterial tonsillitis, we recommend to perform throat swab culture in case of negative rapid strep A test to exclude other bacterial agents.

08C. EDUCATION: HIV/AIDS

ESP17-1154

FALSE POSITIVE HIV TESTS IN THE ERA OF “TEST AND TREAT” IN BOTSWANA: TWO CASE REPORTS

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Title of Case(s)

FALSE POSITIVE HIV TESTS IN THE ERA OF “TEST AND TREAT” IN BOTSWANA: TWO CASE REPORTS

Background

Botswana was the first country in Sub-Saharan Africa to provide free HIV testing, ART, and PMTCT. Though HIV incidence morbidity and mortality have plummeted, HIV prevalence remains high (22.2% ages 15-49 years). In June 2016 Botswana began implementation of “test and treat,” for all. Consequently, HIV-positive patients who previously did not meet national treatment criteria and were CD4-monitoring are being re-evaluated for ART. The Botswana-Baylor Clinical Children’s Centre of Excellence (BBCCCOE) cares for >2500 HIV-infected children.

Case Presentation Summary

Two children who were CD4 monitoring were re-evaluated for ART initiation and found to be HIV-negative. First, a 7-year old male born to an HIV-positive mother, was diagnosed by single HIV-1 DNA PCR in 2008. Second, a 19-year old male born to an HIV-negative mother, was diagnosed elsewhere using an undocumented method and referred to BBCCCOE for monitoring in 2005. They remained clinically well for years with normal growth, development, and CD4 count. On re-testing, both patients had negative double rapid HIV tests, ELISA and DNA PCRs. Patients and families were counseled and expressed mixed emotions. While upset over wasted resources and unnecessary stress, they were relieved to be HIV negative. The children have since been discharged from the clinic.

Learning Points/Discussion

A positive HIV test can be devastating to patients and families. A negative HIV test in the mother of the second patient should have raised suspicion. Our patients were happy to find they were HIV negative, though confused and stressed over years of misdiagnosis. As more programs move to “test and treat,” confirmatory HIV testing and thorough history taking is essential prior to committing patients to lifelong ART.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-1155

SEROLOGICAL FOLLOW-UP IN INFANTS WITH SUSPECTED CONGENITAL TOXOPLASMOSIS

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Background

Serial serologic testing is needed for diagnosis of congenital toxoplasmosis (CT) when initial results are ambiguous and also for treatment assessment in confirmed cases. Although it is not completely defined, maternal *Toxoplasma* IgG titers usually fall to undetectable levels in infants between 6 and 9 months of age, whereas those over the age of 1 year with congenital infection commonly conserve elevated IgG levels. The aim of this study is to obtain a better knowledge about serological evolution to avoid unnecessary analysis or treatments.

Methods

Infants born between 2009 and 2016 with potential vertical transmission of toxoplasmosis were recruited for a retrospective observational study. Maternal and clinical information as well as diagnosis and treatment data was recorded. Data were analyzed by IBMSPSS statistic V21.

Results

We studied 27 infants with potential CT, 77.8% (n=21) mothers received prenatal treatment with spiramycin. Only 1 case presented altered prenatal ultrasonography.

18.5% (n=5) were diagnosed with CT, 1 positive PCR in amniotic fluid, 2 positive PCR in CSF or blood and 2 clinical diagnoses.

In 51.9% (n=14) of infants CT was ruled out. Mean age in second IgG determination was 2.5 months (SD 2.5), being negative in 2 (7.4%) infants. The median time to IgG negativization was 6.6 (IQR 5.2-9.9) months. None of the asymptomatic children without birth-positive PCR were diagnosed of toxoplasmosis during serological follow-up.

Conclusions

In our series the average time to maternal antibodies negativization was around 6 months.

None of our CT cases was diagnosed by serological conversion.

Less frequent follow-ups could be considered in asymptomatic patients with initial negative PCR. Further data or multicentric studies are necessary to draw more consistent results.

22A. EDUCATION: OTHER

ESP17-1157

KNOWLEDGE, ATTITUDES AND PERCEPTIONS ABOUT ROUTINE CHILDHOOD VACCINATIONS AMONG MOTHERS RESIDING IN COMMUNITIES WITH LOW VACCINATION COVERAGE

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Background

Childhood vaccinations are an important component of primary prevention. Maternal and Child Health (MCH) clinics in Israel provide routine vaccinations without charge. Several vaccine-preventable-diseases outbreaks (measles, mumps) emerged in Jerusalem in the past decade. We aimed to study attitudes and knowledge on vaccinations among mothers, in communities with low immunization coverage.

Methods

A qualitative study including focus groups of mothers and semi-structured interviews with mothers residing in communities with low immunization coverage.

Results

Low immunization coverage was defined below the district's mean (at age 2 years, 2013) for measles-mumps-rubella-varicella 1st dose (MMR1/MMRV1) and for diphtheria-tetanus-pertussis 4th dose (DTaP4), 96% and 89%, respectively.

Five communities were included in the study; all were Jewish ultra-orthodox communities.

The mothers' (n=87) median age was 30y and median number of children 4.

Most mothers (94%) rated vaccinations as the main activity in the MCH clinics with overall positive attitudes.

Knowledge about vaccines and vaccination schedule was inadequate.

Of vaccines scheduled at ages 0-2 years (n=13), the mean number mentioned was 3.9±2.8 (median 4, range 0-9).

Vaccines mentioned more often were outbreak-related (measles, mumps, polio) and HBV (given to newborns).

Concerns about vaccines were obvious, trust issues and religious beliefs were not.

Vaccination delay was very common and vaccine timeliness was considered insignificant.

Practical difficulties in adhering to the recommended schedule prevailed.

The vaccinations visits were associated with pain and stress.

Overall, there was a sense of self-responsibility accompanied by inability to influence others.

Conclusions

Investigating maternal knowledge and attitudes on childhood vaccinations provides insights that may assist in planning tailored intervention programs aimed to increase both vaccination coverage and timeliness.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-1159

PREVENTIVE AND CONTROL OF ACQUIRED HOSPITAL INFECTION IN UNIVERSITY HOSPITAL CENTER, TIRANE, ALBANIA

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Background

The aims of the study were to show the presence of the waste management situation in our hospital, and to comply a program about situation and to determinate the steps to improve it.

Methods

This was a prospective study and was performed in year 2008. In this study were enrolled 443 collected questionnaires complied from health worker of the different positions, 86% female, 14% male, age structure from 25 years to 50 years.

Using of an easy to answer questionnaire, to be marked with crosses.

Questionnaire had Part A: Anonymous questions about personal dates: position, gender, age, etc.

B: Questions about the personal opinion of the waste management situation related with monitoring of the waste management and logistic / maintenance, all 24 questions. The different responds were qualified into three points: red, yellow and green point.

Results

From respond were seen that 8(33, 3%) of the responds were under red point. 13(54, 2%) were under yellow point, and 3(12, 5%) were under green point. The sharp accident was shown in the graphic 1. The average

accident rate was 2, 71 compared with 0, 3 in EU countries.



Conclusions

The situation of waste management in our institution was very weak and a project was compiled to improve it. It is necessary to do another study to reevaluate the situation and the research group intends also to make a study about prevalence and epidemiology of acquired hospital infections in our institutions.

22A. EDUCATION: OTHER

ESP17-1160

SEPTIC CEREBRAL SINUS THROMBOSIS

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Title of Case(s)

SEPTIC CEREBRAL SINUS THROMBOSIS

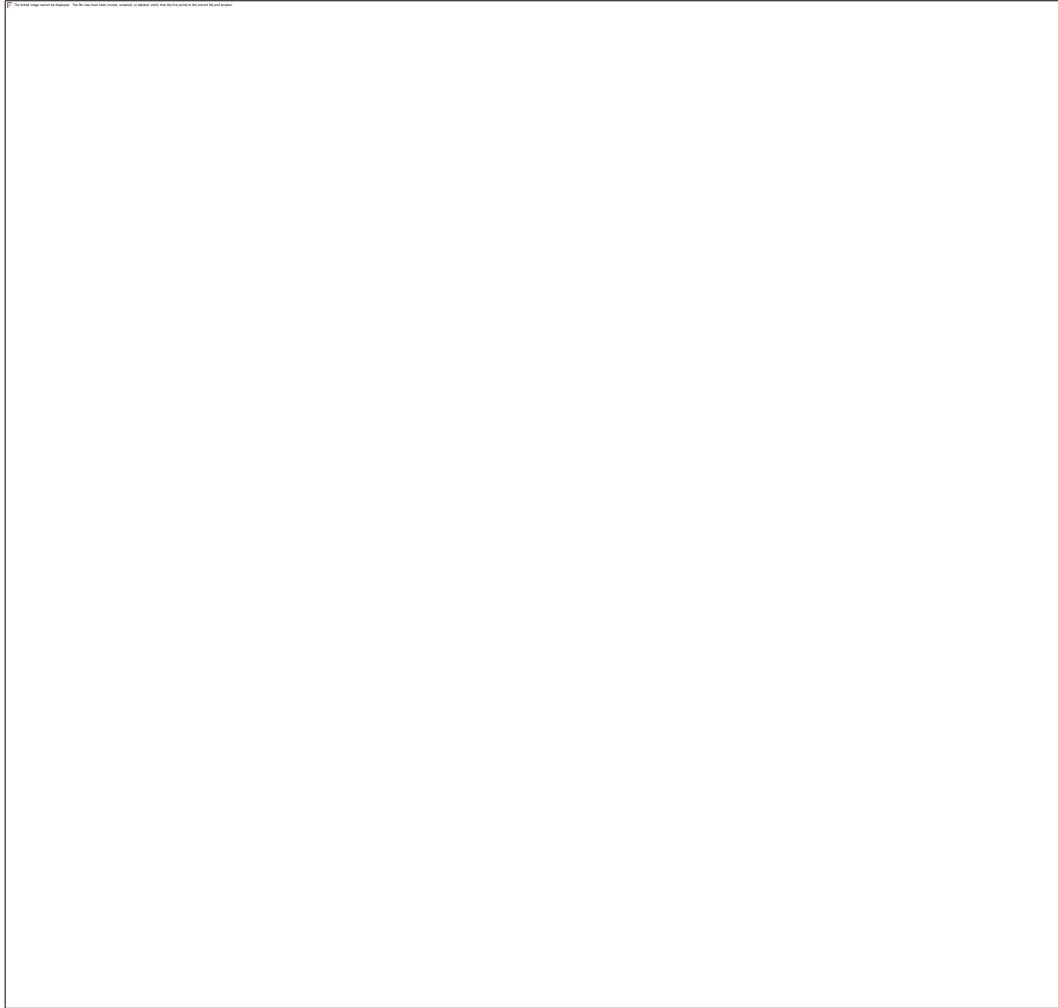
Background

Septic cerebral sinus thrombosis (SCST), although infrequent in children, is a life-threatening complication without an early diagnosis and treatment. Because of its low incidence and wide clinical variability, delayed diagnosis is frequent. The purpose of this study is to describe clinical features and management of this disease in a single-center consecutive cohort.

Case Presentation Summary

We identified 12 children diagnosed of SCST between 1995-2016. Ages ranged from 1 to 13 years, with a median of 4.5. 8/12 had received pneumococcal 13-valent conjugate vaccine. The symptoms at diagnosis are reflected in the attached table. The infectious focus were: 10/12 Otomastoiditis, 2/12 sinusitis. Median time to diagnosis was 6 days (Interquartil range, IR 8.75). 8/12 patients had received antibiotic for a median of 7 days (IR 9.5) before the diagnosis. 5 patients underwent CSF analysis obtaining 1 bacterial meningitis, 2 reactive meningitis and 1 intracranial hypertension. All CSF cultures were sterile. TC was made in 11 patients, being diagnostic in 9, MRI was made in all patients being always diagnostic. Surgical treatment (transtympanic drainage ± mastoidectomy ± abscesses drainage) was performed in 10 patients, obtaining cultures (2 *S. pneumoniae*, 1 *S. intermedius*, 1 *S. hominis*, 1 *S. Constellatus*, 5 negative). Blood cultures were collected, 2 were positive: (*S. pneumoniae* and *S. Intermedius*). Coagulation study was performed finding 4 elevations of VIII factor and 1 prothrombotic mutation.

All 12 patients recovered without sequels.



Learning Points/Discussion

The most common cause of SCST is mastoiditis. Bad general condition, vomits, headache and persistent fever although antibiotic treatment were the most frequent complaints. Strabism was the most important sign in physical examination. Reactive meningitis may be present in the CSF. MRI was the definitive diagnostic image.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1163

ACUTE FLACCID MYELITIS (AFM) ASSOCIATED WITH ENTEROVIRUS-D68 (EV-D68) INFECTION

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Title of Case(s)

ACUTE FLACCID MYELITIS (AFM) ASSOCIATED WITH ENTEROVIRUS-d68 (EV-D68) INFECTION

Background

An outbreak of AFM among children in USA during summer 2014 was associated with EV-D68 infection. The presence of this virus strain may pose a diagnostic challenge.

Case Presentation Summary

A previously healthy 3-year-old-girl with 48 hours fever and stiff neck came to the emergency room. A week earlier, she had an upper-respiratory illness. A lumbar puncture was performed. CSF showed a mild increase in white cell count (153/mm³, 49% neutrophils) and a slightly elevated protein concentration. Bacterial culture and molecular biology tests (MBT) for detecting viral infections in CSF were negative. The patient was discharged home with a diagnosis of lymphocytic meningitis. At home, she presented sudden weakness, unsteady gait and muffled voice and she came again to hospital. On admission, the girl was alert but with a progressive muscle weakness, limited mobility in her right arm and in her left leg (crossed injury) and tongue protrusion. She was transferred to the PICU and treated with intravenous antibiotics and acyclovir. Spine MRI was performed which showed an extensive signal alteration of the cervical spinal cord (C3-C5) reported as myelitis. Corticosteroids and intravenous-immunoglobulins were administered. There was no improvement. Cyclophosphamide was also tried. Despite this therapy, the neurological function deteriorated rapidly. Within 48 hours, the girl needed intubation and mechanical ventilation. MBT performed on nasopharyngeal aspirate were negative for bacteria but positive for EV-D68. NIV was used after extubation, 14 days later. Eventually a tracheostomy was performed due to weakness of **diaphragm**

Learning Points/Discussion

ev-d68 is a neurotropic agent that can cause AFM. The inability to detect EV-D68 in CSF does not rule out its causative role. In patients with acute neurological pathology EV-D68 infection should be considered.

22A. EDUCATION: OTHER

ESP17-1164

TRANSIENT ENCEPHALOPATY SECONDARY TO VIRAL RESPIRATORY INFECTIONS

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Title of Case(s)

TRANSIENT ENCEPHALOPATY SECONDARY TO VIRAL RESPIRATORY INFECTIONS

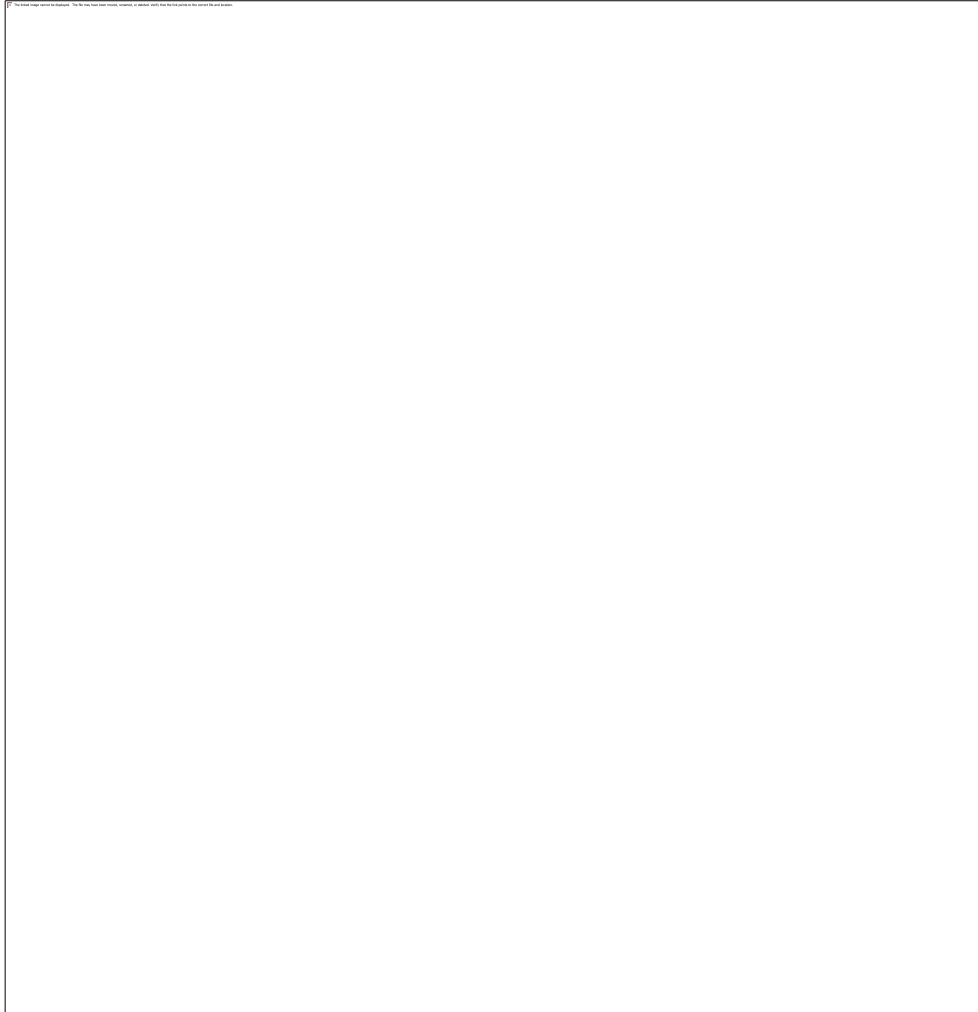
Background

Encephalitis is an acute infection of the central nervous system that may be very severe. The clinical syndrome of this condition usually consists of fever, headache, nausea/vomiting, accompanied by seizures, ataxia, altered behaviour or focal neurological signs. Encephalitis is usually secondary to a viral infection or autoimmune disorders. There have been reports of children having transient neurological symptomatology compatible with encephalitis but without confirmed microbiological isolation in CSF by standard procedures, with spontaneous favorable outcome.

Case Presentation Summary

Series of 4 previously healthy children admitted to a tertiary hospital with a clinical syndrome compatible with encephalopathy. In all these children multiple diagnostic tests were performed, including CSF, blood and urine cultures, serology, urinary drug screening, neuroimaging studies and EEG, all with negative/normal results. However, a respiratory virus (RV) from nasopharyngeal exudate was isolated in all 4 patients. Thus, adenovirus was detected in a 17 month-old child with acute ataxia and in a 2 month-old infant with opsoclonus. Parainfluenza was isolated from a 17 month-old patient with laryngitis and, finally, coronavirus was detected in an 11 month-old infant with fluctuating level of consciousness, vomiting and diarrhea. Furthermore, the oldest patient with adenoviral infection developed acute disseminated encephalomyelitis (ADEM) requiring high doses of corticosteroids. All patients showed favorable outcome and were followed at least 6 months, having a normal

psychomotor development, without sequelae.



Learning Points/Discussion

According to this case series, it may be recommended to search for RV in children with neurological symptomatology in whom no other etiological diagnosis is achieved. An early diagnosis of these infections could enable an appropriate therapeutic approach to these children, avoiding unnecessary invasive diagnostic tests, and allowing an early hospital discharge in most cases.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1165

INFLUENZA INFECTION IN CHILDREN ADMITTED TO HOSPITAL

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Title of Case(s)

INFLUENZA INFECTION IN CHILDREN ADMITTED TO HOSPITAL

Background

Although influenza usually is a self-limited disease in children, it may lead to hospitalization and complications. There is limited information on the management and outcome of children admitted with influenza. Our objective was to describe the clinical and epidemiological features of admitted children with influenza virus infection in a tertiary hospital in Madrid.

Case Presentation Summary

All patients admitted and identified with influenza between January 2016 and January 2017 were retrospectively reviewed. Diagnosis was based on either a positive antigen test or PCR in respiratory tract secretions. Nosocomial infection was considered when influenza was diagnosed more than 48 hours after admission. A total of 45 children were included (2 nosocomial). Median age was 15 months (range 0-17 years). Overall 35% had risk factors, including prematurity (11%) and asthma (9%). At admission, clinical symptoms included: fever ((86%) median 3 (range 0-12) days), bronchospasm (33%), gastrointestinal (vomits 26%, diarrhea 6,6%) and convulsions (11%). Rapid antigen test identified 41 children (sensitivity 91%). Viral antigen/PCR results revealed 60% influenza A and 40% influenza B. Coinfection was detected in 5 children (3 respiratory viruses, 1 *M. pneumoniae* and *C.pneumoniae* each). Oseltamivir was given in 15% (risk factors/UCI admission), and antibiotic in 13 children (29%). The median hospital stay was 4 (range 1-21) days. Median serum CRP was 2,9 mg/dL (range: < 0,29-32) and serum procalcitonin was determined in 23, being above 1 ng/mL in 5 patients.

Learning Points/Discussion

Although young children may be admitted to hospital because potential complications, they seldom receive antiviral treatment. Extrarespiratory symptoms are frequent in children admitted with influenza. Even though clinical features or laboratory results can mimic bacterial infection leading sometimes to antimicrobial treatment, the outcome is generally good.

09B. EDUCATION: HOST-PATHOGEN INTERACTION

ESP17-1166

THYROID ABSCESS DUE TO EIKENELLA CORRODENS IN A PEDIATRIC PATIENT

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Title of Case(s)

Thyroid Abscess due to *Eikenella corrodens* In A Pediatric Patient

Background

Eikenella corrodens is a gram negative bacillus that is commensal microorganism of the gastrointestinal and genitourinary tracts. *Eikenella corrodens* can cause several serious infections with head and neck the most common locations. Acute suppurative thyroid abscess are reported infections in adults, but pediatric infections caused by *Eikenella* species have been rarely reported.

Case Presentation Summary

A six year old girl admitted with fever and swelling of anterior region of neck. She experienced upper respiratory tract infection one week ago. She had a red, hot and tender mass at anterior region of neck, limiting neck movement. There were no other pathologic finding on physical examination. The inflammatory markers were increased. Ultrasonography revealed a multilobulated cystic lesion in the left lobe of the thyroid gland and the magnetic resonance imaging revealed an abscess of 46x58x38 mm extending from thyroid gland toward superior retropharyngeal, posterior prevertebral and mediastinum. Empirically cephazolin and clindamycin treatment was started. Fine needle aspiration of the abscess was performed, the culture of the purulent material yielded *Eikenella corrodens*. Since it belongs to HACEK group, the echocardiogram and x-ray were checked regularly which were found in normal ranges. Esophagography did not show any fistule tract. Serum immunoglobulins and the nitroblue tetrazolium test were normal. In spite of therapy, a second abscess developed in the right lobe of the thyroid gland and we had to drain it. *Eikenella corrodens* was again isolated and since it was not susceptible, clindamycin was withdrawn.

Learning Points/Discussion

Although *Eikenella corrodens* is a relatively rare pathogen, it can lead to deep tissue infections in children with no known risk factor. But clindamycin is ineffective in contrast to other oropharyngeal pathogens.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-1167

COMPARISON OF CURRENTLY USED AND RECENTLY PROPOSED APPROACHES FOR DIAGNOSING VENTILATOR-ASSOCIATED PNEUMONIA IN CHILDREN

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Background and Objective

Although ventilator-associated pneumonia (VAP) constitutes one of the most frequent reasons for administration of antimicrobials in pediatric intensive care unit (PICU) and the second most common health-care associated infection, there is no gold standard for diagnosis. We compared different diagnostic approaches that are currently used or are proposed for use in the diagnosis of VAP.

Methods

We conducted a review of published articles in PUBMED. The search strategy was “ventilator-associated pneumonia (VAP) in children”. Predefined criteria required that all articles found are original, compare different VAP diagnostic methods and include pediatric patients.

Learning Points Discussion

Overall, 367 articles were found up to January 2017. Among them 16 articles fulfilled the predefined criteria. Centers for Disease Control and Prevention (CDC) criteria were the most frequently used approach for VAP diagnosis [12 (75%) articles]. New approaches in VAP diagnosis included Clinical Pulmonary Infection Score [CPIS, 4 (25%) articles], biomarkers for VAP [4 (25%) articles], CDC ventilator-associated event (VAE) module [3 (18.7%) articles] and genetic markers for VAP [1 (6.2%) article]. Different microbiology techniques (with or without bronchoscopy) were compared most of the time with traditional CDC criteria. CPIS was compared with CDC criteria and with microbiology. Use of biomarkers was compared with CDC in 3 articles and with CPIS in 1. VAE definition was also compared with traditional CDC criteria. The only molecular study of blood RNA expression profiles used CDC criteria for comparison. Agreement between different approaches varied significantly.

Conclusions: The absence of a gold standard for VAP diagnosis impedes comparison of currently used and recently proposed approaches in children. Agreement between different approaches varies and new approaches are still experimental and thus more data are needed.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-1168

IMUNOGENICITY OF THE HEPATITIS B VACCINE, ACCORDING TO DIFFERENT DOSING SCHEDULES, IN PATIENTS WHO RECEIVED HAEMATOPOIETIC STEM CELL TRANSPLANTATION

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Background

The recommendations of immunization against hepatitis B in patients after haematopoietic stem cell transplant are variable and still doesn't have an agreement in the scientific literature about the right scheme. Therefore, the primary objective of this study is to compare the response of the Recombinant Hepatitis B Vaccine (VrHB) in different posology and doses in patients after TCTH that was forwarded to a Reference Center of Immunobiological

Methods

It was made a clinical trial, prospective, between January-2012 and December-2015, including patients that received the bone marrow transplant autologous or allogeneic at least 6 months. Was collected demographic, clinical and laboratorial data. They made a serological profile in the admission to the study and 30 and 60 days after receiving three shots (0,1,6 months) or four shots (0,1,6,8 to 12 months) double doses of VrHB, which is used in the Brazilian National Immunization Program. The conversion for hepatitis B was defined as the presence of antibodies Anti-Hbs > 10mIU/mL

Results

126 patients after the transplant received 3 or 4 shots of VrHB. 77 (66,1%) performed the serology and was included (52% male ; average age of 52 years (14-75 years)). Multiple myeloma was the most common underlying disease (54.5%). 91% of the cases performed allogeneic transplant. The rate of seroconversion after three or four shots of VrHB double doses was 57% (44/77) being significantly higher in patients which received 4 shots (73% (17/23)) than others (three shots (50% (27/54))). No association between seroconversion and sex, age, underlying disease, or the moment of 1° shot after transplant

Conclusions

The findings in this study, showing that the seroconversion rates significantly higher after 4 shots than three shots of VrHB, sustaining the recommendations of immunization with 4 shots of the VrHB in patients after the transplant.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1171

DETECTION OF VIRUSES AND ROLE OF HUMAN BOCAVIRUS IN CHILDREN WITH LOWER RESPIRATORY TRACT INFECTIONS

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Background

Viruses are the most common etiological agents causing lower respiratory tract infections (LRTI) in children. When etiological diagnosis is indicated (cohorting in hospitalized patients or decision for antiviral therapy), viral detection can be done by antigen detection, immunofluorescence, culture or polymerase chain reaction (PCR). We aimed to determine which viruses cause LRTIs in children attending to emergency department.

Methods

Nasopharyngeal swab samples were taken from children 1 month to 5 years of age, between 1st March 2015-January 31, 2016 at a single center. Patients with chronic diseases were excluded from the study. Virus were investigated with real-time PCR. Distribution of viruses were analyzed according to age groups and seasons. Correlation between clinical and laboratory findings and viruses were evaluated.

Results

95 patients (53.7% male) were included. The mean age was 26.3 months. 45% of cases have used antibiotics prior to admission. Cough (100%) and wheezing (70%) were the most common symptoms. Mean leukocyte count was 11,600/mm³, C-reactive protein was 2.84 mg/dL. The most common chest X-ray findings were hyperinflation and interstitial infiltrations (33% and 27%). Viral agents were detected in 51 cases (53.6 %). The most frequently detected viruses were rhinovirus (22%), human bocavirus (HBoV) (21%), and respiratory syncytial virus (RSV) (19%). HBoV was most common agent in the first year of life. Multiple viral agents were detected in 10.5% of patients (Table 1). RSV infections were mostly seen in the winter and HBoV was found throughout the year. There was no significant correlation between clinical and laboratory findings and viral agents

Conclusions

Although HBoV was most commonly detected virus in children under 1 year of age further confirmation with serology or culture is required.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-1172

EVALUATION OF SEROPREVALENCE OF TOXOCARA CANIS ANTIBODIES AND ASCARIS LUMBRICOIDES INFECTION AMONG EGYPTIAN ASTHMATIC CHILDREN

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Background

Bronchial asthma is a serious disease of childhood affecting millions of children in both developing and developed countries. At the same time, Helminthic infections are widespread health problems. Examination of the impact of helminthic infection on asthmatic children is important.

The aim of study was to detect the association between *Toxocara Canis* antibodies and *Ascaris lumbricoides* infections and the development of bronchial asthma.

Methods

A case-control study was conducted on 66 asthmatic children and adolescents, their ages ranged from 6-15 years who were attending to Pediatric department in Suez Canal University hospital, and were previously diagnosed as bronchial asthma according to **GINA 2011**. In addition, 33 age and sex matched healthy children served as a control group. All children were subjected to history taking, clinical examination, including; anthropometric measurements, and chest examination. Stool analysis and testing of *Toxocara* IgG for asthmatics and controls were investigated.

Results

The mean age of children in asthmatic group was 6.49 ± 2.99 years. Males were more in asthmatic group than females. Asthma was noticed more in children from urban areas compared with children from rural areas. Asthma was significantly more in children sharing a room with others than children having separate rooms. Asthma was more in children living in big families than children living in small families. In our study Asthmatic children had significantly higher *Toxocara* IgG and *Ascaris lumbricoides* than the controls. *Toxocara Canis* infection and *Ascaris Lumbricoides* infection were significantly associated with adolescence asthma.

Conclusions

Asthmatic children are relatively frequently infected with *Toxocara canis* and *Ascaris lumbricoides*. Catching *Toxocara canis* and *Ascaris lumbricoides* infection were associated with increased asthma diagnosis and frequency of asthma exacerbations.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1173

SEVERE PAEDIATRIC MORBIDITY LINKED TO EV-D68 IN GIPUZKOA

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Background

Until 2013 enterovirus D68 (EV-D68) was considered a rare cause of disease. Only sporadic cases and minor outbreaks of respiratory infection had occurred before. However, an outbreak of EV-D68 was the culprit of severe respiratory illness in USA in 2014. Additionally, there was an increase in the number of cases of severe neurological disease, mainly acute flaccid myelitis (AFM).

Methods

We studied respiratory samples through the year 2016. Retrospectively from January 2016-june 2016 and prospectively from June 2016-December2016. A follow-up sample of nasopharyngeal specimens that had tested positive for rhinovirus (RV/EV) were tested for EV-D68 by RT-PCR. Upon enrolment, systematics records about the patient's demographics and medical history including underlying medical conditions were made.

Results

EV-D68 was detected in 47 samples from 46 patients (20% of RV/EV samples). The first EV-D68 was detected on February 16th. March, May and June were the months with higher incidence (>10 cases/month). Isolated EV-D68 was identified as group B3. 8 cases(17 %) with severe conditions were transferred to the PICU. Median age was 3,96 years ranging from 1 month to 13 years. 1 child presented with severe acute neurological symptoms reported as AFM. In 7 patients the diagnosis was severe respiratory illness requiring the administration of 100% oxygen and non-invasive or invasive ventilation. There were no differences between asthmatic and non-asthmatic EV-D68 + children regarding PICU admissions rates.1 child needed long-term feeding and ventilatory support (through a tracheostomy). The mean length of stay was 20 days ranging from 3 to 94 days.

Conclusions

EV-D68 presence was widespread in Gipuzkoa in 2016 causing mainly severe respiratory distress in children with high disease severity. Over 17% requiring PICU admissions and respiratory support. All isolated strains belong to group B3

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1176

DEEP NECK INFECTIONS IN CHILDREN: DIAGNOSTIC AND TREATMENT CHALLENGES OF RETROPHARYNGEAL AND PARAPHARYNGEAL ABSCESSSES. A MULTICENTRE RETROSPECTIVE STUDY

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Background

Retropharyngeal and parapharyngeal abscesses (RPAs and PPAs) usually affect young children. The treatment includes surgical drainage and/or antibiotic therapy, but no specific guidelines exist. Appropriate diagnosis and treatment are necessary to reduce the risk of severe complications.

Aim of the study is to review diagnosis and management of children diagnosed with RPAs and PPAs and to compare the two types of treatment.

Methods

This is a retrospective study including all patients under 15 years of age admitted at the Department for Woman and Child Health of Padua and at the Pediatric Ward of Ca' Foncello Hospital of Treviso (Italy) with ICD-9 discharge diagnosis code of RPAs and PPAs, from 1st January 2010 to 31st December 2015.

Results

62 children were included. The median age was 3.5 years, 62.9% were males. It emerged a variety of signs and symptoms (most frequent: fever >38°C, cervical lymphadenopathy, neck pain and stiff neck) and a large mixture of bacteria from pus cultures. CT (61%) and MR (36%) were performed to confirm the presence of abscess. 76% of abscesses were small (<3 cm). 42 patients (70%) had surgery and 20 were treated with antibiotics alone (mostly ceftriaxone, metronidazole and clindamycin) with DOT of 27.5 days and LOT of 16.0 days of median. LOS was 10.5 days of median. None had severe complications.

Multivariate analysis indicated as independent predictive factors of surgery CT at diagnosis, abscess ≥ 3cm and Hospital of Padua as admission institution.

Conclusions

RPAs and PPAs mostly affect patients in early childhood, with a combination of non-specific signs and symptoms. A heterogeneous approach in diagnosis and management of these infections leads to necessity of common shared protocols in order to standardize care and improve patients' outcomes.

03D. SCIENCE: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1177

ACUTE LOBAR NEPHRONIA IN CHILDREN. A SEVERE DISEASE WHICH MAY HAVE MISLEADING PRESENTATIONS.

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Background

Acute lobar nephronia (ALN) is a severe kidney/renal infection that may evolve to renal abscesses and scars. We describe a case serie of pediatric patients with a diagnosis of ALN.

Methods

Patients were identified via database search of hospitalized children in a single tertiary referral centre between 2006 and 2016 with a discharge diagnosis of ALN

Results

A total of 18 episodes of ALN in 16 children (7 males) were identified. Of them, one third of patients (6/18) had an underlying uropathy. The median age was 64 months (range, 5-180 months). Fever >38,5°C was an universal finding and most patients reported also abdominal pain (89%). A severe presentation with septic shock was observed in two cases (11%). Mean (\pm SD) CRP level and leukocyte count were 197 (\pm 113,08) mg/l and 21962 (\pm 11249) cells/ μ l, respectively. Urine dipstick results were negative in 5 of the 17 episodes (29%). Urine culture was informative in over half of the episodes (10/18, 56%) and following microorganisms were isolated: *Escherichia coli* (n=5), *Proteus mirabilis* (n=2), *Pseudomonas aeruginosa* (n=2), *Enterococcus faecalis* (n=1). An initial ultrasound was performed in the 18 episodes and had an overall sensitivity for the diagnosis of ALN of 44%. Of the remaining 10 cases with false negative results a definitive diagnosis was established by CT scan (n=8) and MRI (n=2). All patients received sequential parenteral/oral antimicrobial therapy and parenteral antibiotics. Two children (11%) who developed large renal abscesses required percutaneous

drainage



Conclusions

ALN should be ruled out in children with high grade fever, abdominal pain and marked elevations of acute-phase-reactants despite having negative results in urinalysis and/or ultrasound imaging. Additional imaging testing (CT scan or MRI) should be considered in these patients

Clinical Trial Registration (Please input N/A if not registered)

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-1178

ACTINOMYCOSIS OF THE MIDDLE EAR: CASE REPORT

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Title of Case(s)

Actinomycosis of the middle ear: case report

Background

Actinomyces is a rare pathogen in middle ear infection. The diagnosis is difficult given the lack of specificity of the symptoms, the atypical course of the disease and the difficulty of isolating *Actinomyces*. Knowing the clinical presentation and evolution is crucial to suspect this infectious disease.

Case Presentation Summary

A two year old patient came to the Emergency Department (ED) for a history of earache in the last 3 days, not responding to Amoxicillin, and associated fever up to 38 degrees. He referred recurrent suppurative otitis media, 5 episodes in last 4 months, all past episodes treated with Amoxicillin successfully. In the physical examination, both ears were discharging. A sample was collected from the external auditive conduct with a syringe and sent for aerobic and anaerobic cultivation. He was discharged with Amoxicillin-Clavulanic. After anaerobic culture results (*Actinomyces naeslundii* and *Actinomyces odontolyticus*, both being sensible to Amoxicillin) he was reexplored: a minimum left auricular pavilion sweeping was evident and still had earache, no discharge was seen. He was hospitalized for intravenous antibiotherapy and imaging tests. The computed tomography scan showed left acute otomastoiditis without erosive changes. He received intravenous antibiotherapy with Ampicillin with good evolution. He was medically assessed by the Otorhinolaryngology department and valued for myringotomy and tympanostomy, which underwent 6 months later. The patient was started on a six-month course of oral Amoxicillin and followed up for a period of one year with good evolution.

Learning Points/Discussion

High level of clinical suspicion is needed to diagnose actinomycosis in patients with refractory or relapsing suppurative otitis media after short course of antibiotics. Anaerobic cultures should be obtained. Long follow up is needed due to high recurrence.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-1179

IS IT NECESSARY TO CHECK AUDIOLOGICAL STATUS IN CHILDREN TREATED WITH GENTAMICIN?

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Background

The National Commission for Early Detection of Hypoacusia (CODEPEH) recommends the re-evaluation of the hearing in children who has suffered any potentially harmful events, such as the prescription of ototoxic antibiotics like Gentamicin. The evoked Otoacoustic emissions (EOA) is a good method to assess the integrity of the cochlear auditory condition. The ototoxic effect of Gentamicin is very well described for authors since many years ago.

Methods

A prospective cohort study was presented, including 68 children who were treated with intravenous Gentamicin for several infections in a pediatric and neonatal ward of a secondary level hospital during a period of 2 years. Those children underwent serial EOA: At admission, coinciding with the extraction of gentamicin blood levels and/or at the end of treatment. All data were analysed by SPSS software.

Results

A total of 68 children, without any risk factor, participated in the study. The antibiotherapy used was a beta lactam plus gentamicin (67.6%) and Gentamicin in monotherapy (32.4%). Treatment was prescribed with different diagnostics, such as urinary tract infection (55.9%), sepsis or septic risk (44.1%). The 97 % of cases received 7 or less days of treatment. OEA records was not referred any alteration during the antibiotic treatment.

Conclusions

No subject was affected by the treatment, which reassures the safety of Gentamicin as a good antibiotic, with narrow spectrum, and few adverse events when used at correct doses. Even more we believe that in short courses treatment there is no need to check Gentamicin blood levels in patients with no other risk factors. In order to validate this results it is necessary to increase the subject's number, but at this moment we have not seen any ototoxic effect.

09A. EDUCATION: IMMUNE DYSREGULATION- FROM BED TO BENCH AND BACK TO BED

ESP17-1180

AGAINST ALL ODDS! A CASE OF AUTOIMMUNE ENCEPHALITIS

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Title of Case(s)

Against all odds! Antibody-mediated encephalitis

Background

Autoimmune encephalitides can be targeted by an immune response in the parainfectious form; diagnosis is difficult due to lack of specific clinical, laboratory or MRI findings. Patients may present with well-defined syndromes associated with detectable antibodies or with less specific features. We report a case of antibody-mediated encephalitis that occurred after a systemic infection.

Case Presentation Summary

A 5 yr old boy presented with multiform seizures (absences, nystagmus, eye deviation, stereotyped movements, and delirium in different combination) after a tooth infection. First MRI was negative. Seizure control was only achieved with associated topiramate and fenobarbital after barbituric coma. CSF was positive for moderate barrier damage (serum/CSF albumin ratio 1.1%), and showed an intratecal fraction of IgM of 89%; although routine antineuronal antibodies were negative, high dose methylprednisolone and IVIG were started without clinical improvement; seizures and psychiatric disorders persisted. CSF was tested against the cerebrum of rat and proved positive on the striatum. MRI on day 20 showed a mild enlargement and signal hyperintensity on T2w images of the claustrum, representing an atypical finding in encephalitis recently reported in FIRES (Febrile Infection-Related Epilepsy Syndrome) conditions. The child underwent plasmapheresis which led to complete recovery and the MRI alteration contextually disappeared. The autoantibody was searched in the residual liquid after plasmapheresis and its levels decreased progressively.

Learning Points/Discussion

Autoimmune encephalitides are increasingly studied but in many cases the autoantibody is not recognised. However, the diagnosis of this pathology must be kept in high consideration when clinical features are compatible, even in the absence of a defined MRI or biomarkers. Immunosuppressive therapy in different steps can control the production of autoantibodies and plasmapheresis can help remove circulating immunoglobulins or inflammatory mediators.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-1181

HOW OFTEN IS AMEBIASIS IN TRAVELLER CHILDREN? A RETROSPECTIVE OBSERVATIONAL STUDY IN A REFERRAL UNIT OF INTERNATIONAL HEALTH

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Background

Amebiasis, caused by *Entamoeba histolytica*, is an important cause of dysentery in resource-limited countries, but it's linked to travellers in developed countries. Risk of invasive disease highlights the importance of an accurate diagnosis of *E. histolytica*. Our aim was to determine the prevalence, risk factors, and usefulness of diagnostic tests for amebiasis in traveller children.

Methods

Observational retrospective study of successive stool samples studied for *E. histolytica/dispar* in children ≤ 18 years travelling from/to low-resource countries that attended the Unit of International Health Vall d'Hebron-Drassanes (Barcelona, Spain) from October 2014 to May 2016. Epidemiological and clinical data were registered from clinical charts. Definitive diagnosis of amebiasis was considered with the combined microscopic analysis and antigen detection of *E. histolytica* (EHA) in stool sample. Statistical analysis was performed with Stata®13.1 package.

Results

A total of 126 (57.9% male, median[IQR] age: 7[13-17] years) patients were included: 56.4% (71/126) autochthonous and 15.9% (20/126) immigrants from Sub-Saharan Africa. Visiting friends and relatives was the main travelling reason (49.2%; 62/126). Microscopic examination of stool samples was performed in symptomatic patients (61.1% (77/126)) or as screening in 38.9% (49/126). EHA was positive in 25.4% (32/126) cases, but only 18.8% (6/32) detected *E. histolytica/dispar* spp. cysts or trophozoites in microscopic examination. Bivariable analysis showed association between *E. histolytica* and age ≤ 5 years ($p=0.03$), diarrhoea ($p=0.02$), and vomiting ($p=0.009$). Vomiting was the only symptom associated to amebiasis ($p=0.04$) in multivariable logistic regression analysis.

Conclusions

The amebiasis prevalence was 25.4% in traveller children studied for intestinal parasites. Vomiting was found to be the only symptom associated to amebiasis. EHA is a useful technique to differentiate between *E. histolytica/dispar* and increases the diagnostic yield.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-1182

AN UNFORESEEN EMERGENCY IN TRACHEOSTOMISED CHILDREN

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Title of Case(s)

AN UNFORESEEN EMERGENCY IN TRACHEOSTOMISED CHILD

Background

Myiasis is a common problem in the developing countries. However, myiasis of the tracheostomal area is uncommon as compared to that of the ear and nose. As it is directly involving the airway it may present as an emergency anytime

Case Presentation Summary

A two years old male child tracheostomised for one year presented to the ENT OPD with blood stained, foul smelling discharge from the tracheostomal site since 1 week. There was no history of any respiratory difficulty. The tracheostomal dressing and tube had been changed about 20 days back. On examination, the dressing was completely soaked with serosanguinous discharge. The surrounding skin was erythematous, edematous and tender. The patient had stable vitals and no respiratory difficulty. While examining the stoma for possible tracheal myiasis patient developed sudden respiratory distress and become cyanosed. Tracheostomy tube removed and huge number of maggots were seen completely blocking the stomal site. Resuscitation started and few of the maggots removed to find a small opening. Immediately more number of obstructing maggots were removed and a fresh tracheostomy tube was put back. Patient was taken in the OT for exploration and removal of maggots under GA.

Learning Points/Discussion

1. Be aware of tracheostomal myiasis specially well foul smell along with serosanguinous discharge is seen
2. Education of caregivers regarding tracheostomal hygiene
3. Keep all equipments ready for possible airway obstruction in tracheal myiasis.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1183

TRENDS IN VACCINATION COVERAGE AMONG CHILDREN AND MOTHERS BETWEEN 2006 AND 2012 IN TOGO

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Background

The objective of this study conducted in the framework of the national review of Expanded Program on Immunization (EPI) in Togo is to assess the vaccination coverage of 12 to 23-month-old children against 9 targeted diseases (tuberculosis, diphtheria, tetanus, whooping cough, poliomyelitis, hepatitis B, *haemophilus influenzae* type b, measles and yellow fever) and that of mothers of less than 12-month-old children against tetanus.

Methods

It is an investigation which was conducted from November 26th, 2012 to December 3rd, 2012 according to a two-degree cluster sampling method (WHO method 1991). It helped collect information on 4118 children whose ages range from 12 to 23 months coming from 40 sanitary districts of the country. The average age of the population was 17.6 months

Results

Between 2006 and 2012 the rates of vaccination coverage increase and going from 5% to 9% for the different vaccines. Besides, the proportion of zero-dose child decreased between 2006 and 2012, from 7% to 2%. At the same time, we notice a reduction in the incidence and in the deaths related to these 9 diseases of the EPI. The results of EPI in Togo display a progressive and constant improvement of indicators since few years thanks to innovative strategies, especially the involvement of private clinics which sent their hidden data to the centralization data office and with the active involvement of women, mothers of children, gathered in associations created in the last five years, called "club-of-mothers" in the awareness raising and the motivation of their peers in 3 of 6 sanitary regions of Togo.

Conclusions

Innovative strategies improve vaccination coverage rate and reduce death cases, which will lead to the fulfilment of the Millenial Objectives for Development, especially in less-resourced-countries.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1184

NECROTIZING PNEUMONIA IN A CHILD WITH INFLUENZA A INFECTION

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Title of Case(s)

Necrotizing pneumonia in a child with Influenza A infection

Background

Secondary bacterial infections may accompany seasonal influenza. We report a patient with respiratory failure resulting from severe pneumonia.

Case Presentation Summary

A 10-year old boy was brought to emergency department with shortness of breath. He had a 5 day history of cough and fever and was prescribed antibiotics for upper respiratory tract infection. He had been given bronchodilator therapy for wheezing during the last three years. On admission his weight was 48.7 kg (>90 percentile), body temperature 37.7 C°, heart rate 110 beats/min, respiratory rate 50/min, oxygen saturation on room air 90%. Breath sound were normal on auscultation but chest x-ray showed complete opacification on right hemithorax with air bronchograms and parapneumonic effusion (figure 1). Blood tests showed hemoglobin 9.16 g/dL, Hct 26 %, leukocytes 18.3x 10³/mL (neutrophils 80 %), and platelets 226x10³/mL. Venous blood gas had a pH level of 7.50, partial pressure of carbon dioxide 32.3 mmHg, anion gap 10.8 mmol/L, and bicarbonate 25 mmol/L. Serum creatinine 0.53 mg/dL, blood urea nitrogen 11.2 mg/dL, albumin 2.7 g/dL, C-reactive protein 35.2 mg/dL, procalcitonin 94.6 ng/mL. Influenza A was positive on nasopharangeal aspirate. He was hospitalized and high flow oxygen at 60 L/min was initiated. Teicoplanin plus cefotaxime and oseltamivir were initiated. Because of increased work of breathing he was transferred to intensive care unit. On examination he was tachypneic, breath sound were absent on left side and rales were present on right side. He was not intubated but closely monitored during 4 days of stay at ICU.

Learning Points/Discussion

Covering for possible agents including *Streptococcus pneumoniae*, *S. pyogenes*, and *Staphylococcus aureus* shall be considered. *Influenza* vaccination in high risk groups including asthma is emphasized.

08C. EDUCATION: HIV/AIDS

ESP17-1185

EFFECTIVENESS OF A CELL PHONE APPROACH IN RE-ENGAGING HIV INFECTED CHILDREN LOST TO FOLLOW-UP IN RURAL MOZAMBIQUE

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Background

Mobile phones offer a promising means to improve health outcomes in resource-limited settings. However few studies address the effects on re-engagement in paediatric HIV care among patients. We aim to assess whether phone calls from health-care workers to caregivers of HIV positive children considered lost to follow-up (LTFU) facilitate their re-engagement in the Manhiça District Hospital (MDH), Mozambique.

Methods

This study was part of a prospective cohort study including all HIV positive children in care at the MDH. Between August to November 2016, active tracing of LTFU patients was performed. LTFU children were defined as those who had not attended the clinic for ≥ 120 days. Caregivers were contacted by phone call to investigate the cause of LTFU and promote re-engagement. The latter was determined 1-3 months after intended contact and estimated excluding deaths and silent transfers.

Results

Of the 129 children identified as LTFU, 94 were not reached, mainly due to the absence of phone contact number was the main reason. Out of the 34 caregivers located by call, the main reported causes of LTFU were: forgetting the appointment, changing the primary caregiver and transport problems. In multivariate analysis, those children contacted were significantly more likely to be re-engaged in care than those not located (66.7% vs 7.7%, aOR 2.9, 95%CI 1.6-4.2, $p < 0.001$). Being on anti-retroviral treatment was positively associated with re-engagement (26.67% vs 7.69%, aOR 4.0, 95%CI 1.4-6.7, $p = 0.003$) while stunting (HAZ < -2 SD) was a risk factor for not re-engaging (20% vs 38.46%, aOR -2.4, 95%CI -4.0 -0.9, $p = 0.002$).



Conclusions

Active tracing through phone calls is a potential effective tool to facilitate re-engagement in HIV care but the low level of established phone contact must be addressed. Understanding of the causes and consequences of discontinuation in care will be crucial to improve clinical outcomes.

09B. EDUCATION: HOST-PATHOGEN INTERACTION

ESP17-1186

GLUTEAL ABSCESS DEVELOPING AFTER GASTROENTERITIS COMPLICATED BY ANAL FISSURE

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Title of Case(s)

Gluteal Abscess Developing After Gastroenteritis Complicated By Anal Fissure

Background

The gluteal abscesses can develop as complications of fistula in inflammatory bowel disease, diverticulitis, colon carcinoma, and tuberculosis. A gluteal abscess usually originates from an infected anal crypt gland. Gluteal abscess develops when an anal crypt gland becomes obstructed which permits bacterial growth and abscess formation. Herein, we report gluteal abscess complicating anal fissure developed after acute gastroenteritis.

Case Presentation Summary

A 11 year old girl admitted with fever and swelling of left gluteal and anal region. She was in the follow up of pediatric neurology for microcephalia and mild mental retardation with unknown reason. She didn't have convulsion and she was able to perform daily activities without help. She had developed anal fissure after gastroenteritis 20 days before. On physical examination her left buttock showed a warm, tender, fluctuant area with surrounding redness extending to left femur limiting leg movement. The inflammatory markers were increased. The ultrasonography revealed abscess in 4x4 cm length on intergluteal area, also fluid collection from sacral vertebra to femur, 5 cm proximal to popliteal fossa. Empirical intravenous antibiotics composed of ceftriaxone and clindamycin were started. Ultrasonography gated pig tailed drainage catheter was placed. The culture of purulent, brown colored material yielded extended spectrum b-lactamase resistant *Escherichia coli*. The immunoglobulin levels, the lymphocyte profile and the nitroblue tetrazolium test were all normal. Any fistule tract or inflammatory bowel disease were excluded as predisposing condition. The antibiotherapy was switched to meropenem and amikacin. After 6 weeks of treatment the inflammatory markers were negative and the patient had complete recovery with no neurologic deficit.

Learning Points/Discussion

In conclusion, simple acute gastroenteritis sometimes can result in severe complications which is difficult to manage.

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-1190

RISK FACTORS FOR TUBERCULOSIS-ASSOCIATED COMPLICATIONS IN CHILDREN AGED LESS THAN 2 YEARS: AN OBSERVATIONAL STUDY IN A LOW-INCIDENCE TB REGION

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Background

Children ≤ 2 years of age are at increased risk of tuberculosis (TB)-associated complications due to the immaturity of the innate immune response. We aimed to identify risk factors for TB-associated complications in this age group in a low-incidence TB region.

Methods

Multicentric observational retrospective study of TB cases in children ≤ 2 years in Catalonia, Spain (2005-2013). Epidemiological and clinical data were collected from clinical charts. TB-associated complications were defined as any tissue damage generating long-term functional or anatomical impairment after TB treatment. Statistical analysis was performed with Stata® 13.1 package. Ethical approval was obtained from all participant centers.

Results

Overall, 134 (50.7% female, median [IQR] age: 13[8-18] months) patients were included, 1.5% (2/134) were lost to follow-up, and 18.9% (25/132) showed TB-associated complications. Most of them (94.8%) were autochthonous. TSTs were positive (≥ 5 mm) in 91.0% of cases. Median[IQR] time between onset of symptoms and diagnosis was one[0-2] week. TB treatment was completed in 99.2% of cases, one child with a complicated lymph node-TB with fistulization received only 4-month of treatment. Pulmonary TB was diagnosed in 94.0% (126/134) of children, and most common complications were lobar collapse (6/126) and bronchial hyperreactivity (5/126); TB meningitis was diagnosed in 14/134 (10.4%) patients, and hydrocephalus and mental impairment occurred in 2 and 3 cases, respectively; two spinal TB cases developed vertebral destruction and paraplegia. None of the patients died. Multivariable logistic regression analysis showed fever at diagnosis (OR= 3.2; CI95%: 1.08-10.4) and TB meningitis (OR=17.42; CI95%: 4.34-90.4) as independent risk factors for the development of TB-associated complications.

Conclusions

TB-associated complications occurred in one fifth of TB cases in children < 2 -year-old in Catalonia, and were associated with fever at diagnosis and TB meningitis.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1193

PERTUSSIS IN MEXICO, CURRENT SITUATION AND VACCINATION STRATEGIES: TRENDS OVER 1935-2016

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Background

Pertussis is a public health problem now in Mexico, their control presents problems as the suspicion outside the infant stage, the diagnostic confirmation, the incomplete or late vaccination schedules and their difficulty limiting its transmissibility.

The aim of this study is to describe different vaccination strategies against B. Pertussis and their impact in reducing the incidence of cases.

Methods

Historical review of immunization polices in Mexico was conducted from 1935 to 2016. Surveillance system was consulted to describe morbimortality.

Results

Previous vaccination (1935), the disease was highly endemic in our country with a incidence of 165 cases per 100,000 habitants.

The introduction (1954) and widespread (1973) use of DTP (whole-cell pertussis vaccines) resulted in a substantial decline in pertussis disease and epidemic cycles have been occurred each 3-4 years.

In 1999 DPT+HB+Hib was introduced and was replaced by acellular pertussis vaccine combined (DPaT/VIP+Hib) in 2007. Currently the schedule is focused to infants and toddlers at each of the following ages: 2, 4, 6 and 18 months and a booster at 4 years.

In the last 10 years infants have been the most affected group even though our strategies. By 2012 this group represented the 83% of the total reported cases, because of this the Tdap vaccine for pregnant woman was introduced in order to provide specific protection to susceptible infants prior to the usual vaccination schedule.

This vaccine strategies resulted in a substantial decline of the incidence rates from 165 per 100,000 in 1935 to 0.5 per 100,000 in 2016.



Conclusions

Because Pertussis is still a serious public health problem in Mexico we consider the introduction of new vaccine strategies to prevent transmission of the infection to infants.

Systematic Review Registration (Please input N/A if not registered)

N/A

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-1194

CUTANEOUS LEISHMANIASIS: A CASE REPORT

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Title of Case(s)

Cutaneous leishmaniasis

Background

Leishmaniasis is an important disease and is usually classified as visceral, mucosal or cutaneous. Cutaneous leishmaniasis caused by the protozoan *Leishmania* parasites which are transmitted by sand fly bites and usually manifests as dry, small, self-healing lesions, mainly located on the face, which heal with permanent scarring. Herein we report an immigrant infant from Iraque with cutaneous leishmaniasis.

Case Presentation Summary

A 14 month old boy presented with two month history of ulcerated skin lesions on the face. Physical examination revealed painless erythematous plaques with central ulceration in the right preauricular region and also six (15 to 10 mm in diameter) erythematous ulcerated plaque with crusts in the frontal region of head. There was no lymphadenopathy or hepato-splenomegaly. The diagnosis of leishmaniasis is confirmed by the presence of characteristic amastigotes forms of *Leishmania* spp. in the smear-specimen of cutaneous lesions. The laboratory findings; blood count, electrolytes, liver and kidney function tests were in normal range. The patient was treated with intravenous N methylglucamine antimoniate for 20 days. A significant improvement was observed after 20 days and all the lesions were healed.

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Learning Points/Discussion

Lesions of cutaneous leishmaniasis on the face can be very disfiguring, which may have long term psychological and social consequences. Because of higher rate of immigrants; increased number of sporadic cases expected and in non endemic regions cutaneous leishmania should be considered for early treatment.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1195

BRAIN AND LUNG ABSCESSES DUE TO AGGREGATIBACTER APHROPHILUS IN TWO IMMUNOCOMPETENT CHILDREN

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Title of Case(s)

Aggregatibacter aphrophilus infections in immunocompetent children

Background

Aggregatibacter aphrophilus is a Gram-negative coccobacillus that can cause brain and lung abscess. It is part of the normal canine oral flora and a transmission from dog to man may occur. It is a component of the commensal oral microbiota of preschool children. A. aphrophilus have been demonstrated to be susceptible to β -lactam antibiotics and quinolones.

Case Presentation Summary

Case 1: an 11-year-old boy was admitted for fever, vomit, and headache. During the previous month, the child had spent one week in the countryside in close contact with wild dogs. Brain MRI revealed a temporal abscess. Drained pus culture showed A. aphrophilus growth. Targeted therapy with ceftriaxone was started. After two weeks of antibiotic a new MRI revealed lesion reduction. No other parenchymal abscesses were found.

Case 2: a 3-year-old boy presented with vomit, headache and malaise. Close contact with wild dogs was reported. The child was afebrile with progressive decreased level of consciousness. A brain MRI revealed two abscesses in the left parietal and temporal lobe. Ceftriaxone was empirically started. Cultures of the drained material from the abscesses revealed A. aphrophilus, therefore ceftriaxone was continued. After five days, he presented respiratory distress and fever. A pulmonary CT scan revealed a multisepted abscess. Purulent material drained from the lung abscess showed gram negative bacteria with shape compatible with Aggregatibacter aphrophilus plus culture results showed Bacterioides fragilis. Therapy was changed to intravenous meropenem and metronidazole with clinical and radiological improvement. Immunodeficiency, congenital heart diseases were excluded in both cases.

Learning Points/Discussion

A. aphrophilus infections can be very aggressive in the pediatric population, thus it's important to consider this etiology in the differential diagnosis of brain abscess in children.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-1196

EMPYEMA CAUSED BY PNEUMOCOCCAL SEROTYPE 3 (ST3) IN A FULLY-IMMUNIZED 4-YEAR-OLD CHILD ASSOCIATED WITH SUBOPTIMAL ANTIBODY RESPONSE TO “NON-SUSPECT” VACCINE-SEROTYPES

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Title of Case(s)

EMPYEMA CAUSED BY PNEUMOCOCCAL SEROTYPE 3 (ST3) IN A FULLY-IMMUNIZED 4-YEAR-OLD CHILD, ASSOCIATED WITH SUBOPTIMAL ANTIBODY RESPONSE TO “NON-SUSPECT” VACCINE-SEROTYPES

Background

PCV13-breakthrough disease occurs, mainly associated with ST3. Here, we present a case of a 4-year-old girl, fully-immunized, with ST3 empyema, in a Greek Tertiary Pediatric Hospital. She had received 3 PCV13 doses at 2,4,6months and a boost-dose at 2 years-of-age;no co-administration was recorded. On follow-up, in an attempt to further investigate ST3 vaccine failure, we assessed antibody response to 6 PCV13-serotypes, including ST3.

Case Presentation Summary

Our patient suffered from right-sided empyema. Pleural fluid PCR detected ST3. She was started on i.v. antibiotics and progressively recovered. At one month post-infection, IgG levels, measured by ELISA, were for ST3 31µg/ml, for ST23F and ST18C 4.2µg/ml and 6.5µg/ml respectively, while for ST19A,ST6B and ST9V were undetectable. Total IgG/IgM/IgA levels were normal.

Our patient adequately responded to 2 PCV13-antigens and had normal total immunoglobulin values; thus, any major humoral immunodeficiency may be excluded. Therefore, the undetectable values of the other PCV13-serotypes tested imply a suboptimal primary antibody response and/or rapid antibody waning due to low vaccine immunogenicity. Remarkably, the sufficient ST3 IgG levels post wild-type infection suggest that immunological memory may not be “quick” enough to prevent invasive pneumococcal disease (IPD), when circulating antibodies are below the protective threshold.

Learning Points/Discussion

ST3 and ST19A vaccine failure, based on their lower antibody titers and limited booster effect, is not surprising. However, the low antibody values following PCV13-boost-dose for the other 3 PCV13-serotypes in our patient imply that even complete PCV13 immunization status does not preclude from a PCV13-serotype IPD. In such cases, measurement of antibodies to other PCV13-serotypes post wild-type infection and post another PCV13 boost-dose may be recommended.

22A. EDUCATION: OTHER

ESP17-1198

POST-SEPTAL CELLULITIS: ARE WE OVERLOOKING THE EYE?

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Background

This audit reviews the main characteristics of post-septal cellulitis in children, aiming to identify early symptoms at diagnosis which could help clinicians establish an accurate and early diagnosis .

Methods

Retrospective and descriptive audit based on data collected from medical records of 29 paediatric patients who were admitted to a tertiary children's hospital with orbital cellulitis between 2004 and 2016. Analysis was conducted with SPSS.

Results

In our series, the prevalence of post-septal cellulitis was higher in males (69%) with a median age of 74,11 months (+/- 39,1 SD). The most frequent symptoms at diagnosis were inflammatory signs involving the eye (96,6%), fever (62,1%), eye pain (58,6%) and ophtalmoplegia (48,3%). Proptosis (31%), visual impairment (20,7%) and headache (27,6%) were seldom present in our study. Median time of symptoms duration prior to admission was 2,9 days (+/- 1,8 SD). Median number of previous visits to the Paediatric Emergency Department was 1 (+/- 0,8 SD) with pre-septal cellulitis (33,3%) and conjunctivitis (23,8%) being the most common discharge diagnosis. History of cold was present in 15 patients (51,7%) and 9 patients were already started on oral antibiotics. CT scanning revealed acute sinusitis in all but one patient, with ethmoidal (89,7%) and maxilar (79,3%) sinuses being the most affected. Overall, outcomes were successful with a median length of stay of 7,9 days (+/- SD 3).

Conclusions

Post-septal cellulitis is often mistaken with pre-septal cellulitis as clinical findings are normally difficult to assess, leading to diagnosis delay and possible complications. Thus, it is basic to bear in mind common presenting features as fever, eye pain, inflammatory symptoms and ophtalmoplegia as well as history of acute sinusitis in order to make a prompt diagnosis.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-1199

HUMAN PARECHOVIRUS 'EMERGES' AS A PAEDIATRIC PATHOGEN IN IRELAND: A NATIONAL SURVEILLANCE STUDY 2013-2015.

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Background

Human parechoviruses (HPeV) are members of the *Picornaviridae*. HPeV cause mild gastrointestinal or respiratory illness, pneumonia, myocarditis, encephalitis, meningitis, flaccid paralysis, and sepsis-like illness in neonates and young infants. HPeV testing was added to the National Virus Reference laboratory (NVRL) CSF virology panel for children under three years-old in Ireland in June 2013.

Methods

: HPeV is now routinely detected by RT – PCR and traditional cell culture. HPeV specific primers target the highly conserved 5-UTR region of HPeV not previously detected by enteroviral RT-PCR. We conducted a retrospective review of results of national HPeV testing by the NVRL and clinical notes of all HPeV-positive cases from 2 tertiary paediatric hospitals in Dublin from June 2013 to May 2015.

Results

A total of 5,263 specimens from 3,544 patients tested for HPeV over the study period. The virus was detected in 106 patients (58 male [56%]). Average age of patients with detectable HPeV was 207 days (range 5-1044). Stool specimens generated most of detectable HPeV 54 (34%) followed by CSF 46 (29%). 66 patients tested positive for HPeV in 2 tertiary paediatric hospitals with variable presentations included: fever, 50 (75%); sepsis, 34 (51.5%); meningitis/encephalitis, 33 (50%), gastro-intestinal symptoms 29 (43.9%); respiratory symptoms, 19 (28.7%); rash, 13 (19.6%). 6 (9%) patients required PICU.

Conclusions

HPeV is a significant cause of febrile illness in neonates and young infants in Ireland. Sepsis or meningitis/encephalitis are prominent presenting features. Prior to the recent introduction of routine HPeV testing, it was an under-recognized pathogen in the Irish paediatric population and such cases would have gone undiagnosed.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1200

NEISSERIA MENINGITIDIS SEROGROUP Y INFECTION IN ITALY: CASE REPORT AND CONSIDERATIONS

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Title of Case(s)

NEISSERIA MENINGITIDIS SEROGROUP Y INFECTION in Europe

Background

Neisseria meningitidis invasive meningococcal disease is a major public health issue worldwide, due to the related severe complications and mortality. Incidence and distribution of disease-causing serogroups vary over age and geographical location; in Europe serogroups B and C have been the most reported. Immunization programs may play a fundamental role in preventing such severe disease and spreading of emerging serogroups.

Case Presentation Summary

A nine-year-old female presented with a 10-hour history of fever, malaise, leg pain and 2-hour history of petechial rash.

Her immunizations were up to date, including the vaccination for meningococcus serotype C, the only meningococcal vaccine provided by the Italian National Immunization Plan.

Lumbar puncture showed limpid clear cerebrospinal fluid with normal pressure and findings.

Upon clinical hypothesis of meningococcal meningitis, ceftriaxone was started. Blood and cerebrospinal fluid cultures were positive for *N. meningitidis* serogroup Y.

After two hours from admission the petechial rash evolved in necrotic-hemorrhagic skin lesions on both legs.

Neurological condition worsened and she was admitted in pediatric intensive care unit for 12 days.

When general condition gradually improved, she was transferred to ordinary department for other 45 days, where she was daily evaluated and treated by received a plastic consultant.

She recovered completely without neurological or vital organ outcome. Meningococcal disease resulted in scarring both legs but maintaining normal function.

Learning Points/Discussion

Most European countries' immunization schedules include meningococcal vaccine of serogroup C, while some of them are now also introducing serogroup B vaccine in their latest immunization programs, being these two serogroups the most prevalent in Europe. However, given the severity of the disease, physicians should also consider less prevalent serogroups in their differential diagnosis when clinical features are typical, and treat accordingly.

04A. EDUCATION: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-1202

PERTUSSIS NEWBORN PROTECTION IN WALLONIA, BELGIUM: STILL A LONG WAY TO GO!

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Background

As in many countries, the number of confirmed pertussis cases increased during the last decade. To increase the newborn protection, the National Immunization Technical Advisory Group recommended in 2009 a “cocoon” strategy in the immediate post-partum and in 2013 the Pertussis vaccination during each pregnancy between 24 and 32 weeks. The cocoon strategy consists in vaccinating all the members of the family surrounding a young child. Both strategies were measured in the last children vaccination coverage survey carried out in 2015.

Methods

A random cluster sample study according the EPI cluster sampling technique was conducted in 2015. 770 children 18-24 months of age were randomly selected in 47 municipalities of Wallonia. Trained investigators interviewed the parents at the children's homes.

Results

Anamnestic data were collected from 562 mothers. The survey response rate was 78.8%. 37.8% (33.0-41.4) of mothers (included 6.5% during pregnancy) and 24.2% (20.6-27.8) of fathers were vaccinated against pertussis. For the mothers, more than 50% of the vaccinations were performed by a midwife, 23.2% by gynecologists and 21% by general practitioners. Conversely, more than 77% of fathers were vaccinated by GPs.

Conclusions

Three years after introduction of the “cocoon strategy” only a third of the parents were immunized showing the difficulty of this strategy. Albeit immunization during pregnancy was not already recommended, 6,5% of the newborns received mother's antibodies against pertussis. In Wallonia, gynecologists remain reluctant to vaccinate pregnant women. A 65% coverage objective for Pertussis vaccination during pregnancy has been endorsed by immunization programme and vaccine for pregnant women are free of charge. To reach this goal a real adhesion of professional organizations and of the HCW to support maternal immunization is challenging needed.

22A. SCIENCE: OTHER

ESP17-1203

HISTONE DEACETYLASE INHIBITION REVERSES SEPSIS-INDUCED SUSCEPTIBILITY TO PSEUDOMONAS AERUGINOSA PNEUMONIA

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Background

There is growing evidence that sepsis induces long lasting alterations of transcriptional programs that may lead to sepsis-induced immune suppression (SIIS), secondary infections and death. We hypothesized that epigenetic changes contribute to the pathophysiology of SIIS. To test this hypothesis, we studied the effects of histone deacetylases (HDAC) inhibition with trichostatin A (TSA) in a double-hit murine model of SIIS and secondary pneumonia.

Methods

C57BL/6 mice were treated with TSA (2 mg/kg ip) or saline serum (CTL) 30 min before induction of sepsis by cecal ligation and puncture (CLP). Surviving mice underwent intratracheal instillation of 1.5×10^6 CFU of *Pseudomonas aeruginosa* 8 days after CLP. We evaluated the effect of TSA on survival to the primary and secondary infections. Cellular responses and apoptosis were assessed by flow cytometry 8 days after CLP. Bacterial clearance was assessed in the BAL and in the blood 4 and 12 h after pneumonia.

Results

Whereas treatment with TSA did not change survival after CLP, TSA improved survival after tracheal instillation of *P. aeruginosa* ($P=0.009$). TSA-treated mice had significantly higher absolute dendritic cells, T and B-lymphocytes counts with reduced lymphocyte apoptosis after CLP and reduced dendritic cells deactivation. Four hours after secondary pneumonia, TSA-treated mice improved bacterial clearance in the BAL, with reduced systemic dissemination of *P. aeruginosa*.

Conclusions

HDAC inhibition with TSA improves survival in our murine model of secondary pneumonia, improves bacterial clearance and attenuate cellular features of SIIS. These results suggest that sepsis-induced epigenetic changes contribute to the advent of SIIS.

Clinical Trial Registration (Please input N/A if not registered)

20B. SCIENCE: VACCINE DEVELOPMENT, IMMUNOGENICITY AND SAFETY

ESP17-1204

FUNCTIONAL POTENTIAL OF SPECIFIC ANTIBODIES AGAINST B-CELL EPITOPES WITHIN VIRULENT SURFACE PROTEINS OF S.PNEUMONIAE FOLLOWING VACCINATION IN RABBITS

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Background

Characterization of antibodies against previously identified B-cell epitopes, located within pneumococcal surface proteins PhtD, PhtE and ZmpB revealed the efficacy of the specific anti-peptides antibodies to elongate significantly the survival time in a mouse model of lethal sepsis against Pneumococcal Serotype (PS) 3. We further evaluated the quantitative and qualitative characteristics of adaptive immune response, against these epitopes, in a rabbit model.

Methods

New Zealand rabbits were primed with the selected peptides, separately in three groups, emulsified in complete Freund's adjuvant. All rabbits were boosted, two times, with their relevant peptide emulsified in Incomplete Freund's Adjuvant. The kinetics of antibody concentrations and avidity were evaluated by appropriate ELISAs, whereas the opsonophagocytic killing capacity of anti-peptide rabbit antibodies against clinical isolated pneumococcal serotypes (PS) 1,3 and 19A was tested by an Opsonophagocytic Killing Assay (OPKA).

Results

All immunized rabbits produced gradually higher anti-peptide antibody concentrations and avidity between the 1st and last bleeding ($p < 0.0001$). Rabbits immunized with the selected peptides had higher OPKA titers than their preimmune sera against the tested PS. We also detected that anti- PhtD-peptide avidity and opsonophagocytic capacity were superior compared with the others peptides ($p < 0.05$).

Conclusions

All tested peptides were immunogenic and induced specific antibodies in rabbits. The progressive avidity maturation could be considered as evidence for the development of peptide-specific immunological memory. Such promising characteristics of immune response indicate that the peptides under investigation require further evaluation, in order to be used as novel vaccines candidates.

Clinical Trial Registration (Please input N/A if not registered)

20C. SCIENCE: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-1206

ENHANCING DETECTION OF UPPER RESPIRATORY TRACT NEISSERIA MENINGITIDIS COLONISATION BY TESTING SALIVA

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Background

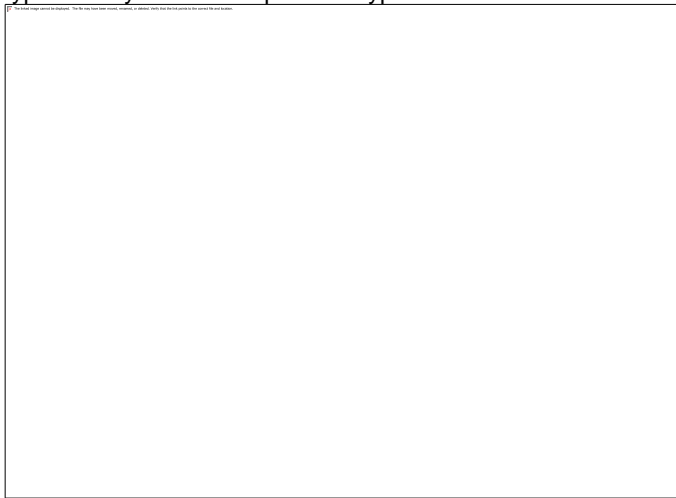
It is not known whether novel protein antigen meningococcal (Nm) vaccines can reduce carriage and transmission. Studies to find out require large numbers of subjects and samples, previously oropharyngeal swabs (OPS) with identification of Nm by culture. We evaluated the use of saliva samples. Saliva collection is quick, easy and non-invasive and permits frequent sampling but has previously been reported to yield low sensitivity by culture. We re-evaluated this approach using qPCR.

Methods

We collected paired OPS swabs and 1mL saliva samples from 1000 healthy students in Coimbra, Portugal in April 2016 into STGG broth, stored at -80°C until DNA extraction and qPCR analysis for the Nm-specific gene *sodC* and capsular genogroup-specific genes for group B. Samples were cultured on GC agar plates for 72h and products subjected to DNA extraction and qPCR. Ct values of <36 were considered positive.

Results

Results on the first 366 sample pairs showed that overall direct detection rates of Nm in saliva and throat swabs were equal while for group B in saliva they were lower. Lawn culture augmented detection rates for both sample types. Analysis of both specimen types also increased sensitivity relative to each singly (see table).



Conclusions

Detection of Nm by qPCR in saliva is feasible, making frequent sampling possible and viable bacteria are present, an observation of potential relevance to transmission. Some paired samples are discordant so using both sampling methods enhances sensitivity of detection. Use of lawn culture PCR increases sensitivity of detection in both samples when combined with direct PCR detection. Use of these methodologies should greatly enhance the power of carriage studies to detect the impact of vaccines upon carriage and transmission.

Work supported by an investigator-led project grant from Pfizer.

Clinical Trial Registration (Please input N/A if not registered)

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-1207

AN UNUSUAL CASE OF NEONATAL UREAPLASMA UREALYTICUM MENINGITIS TREATED WITH LEVOFLOXACIN

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Title of Case(s)

An unusual case of neonatal ureaplasma urealyticum meningitis treated with Levofloxacin.

Background

Ureaplasma urealyticum is a rare but described cause of invasive neonatal infection including meningitis. Published case reports show a wide variation in the choice and length of anti-microbial treatment given.

Case Presentation Summary

A 28 week, 1.36kg preterm infant was born after spontaneous preterm rupture of membranes at 24 weeks gestation. Over the first week of life he required significant ventilatory and inotropic support, but improved.

On day 16 of life he had fever and generalised seizures. A lumbar puncture confirmed meningitis (CSF white cells 277 cells/mm³ (70% lymphocytes), red cells 1008 cells/mm³, protein 1.8 grams/litre, glucose <0.6 mmol/litre) and he was commenced on Meropenem. 16S PCR of CSF identified Ureaplasma urealyticum no other organism was identified. He was switched to levofloxacin (10mg/kg) and completed a 6 week course, with good neurological outcome.

Learning Points/Discussion

1. Ureaplasma urealyticum is a cause of neonatal meningitis.
2. Levofloxacin has good CNS penetration and there is little resistance within the UK. It is an option for treatment of neonatal ureaplasma meningitis.
3. More research needs to be undertaken to understand the best treatment strategy for such cases.

22A. EDUCATION: OTHER

ESP17-1209

CHROMOSOMALLY INTEGRATED HHV-6: ELEVEN CASES DETECTED IN IMMUNOCOMPETENT CHILDREN (2012-2016)

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Title of Case(s)

Chromosomally integrated HHV-6 in eleven children

Background

CiHHV-6 is a condition in which the complete HHV-6 genome is integrated into the host germline. CiHHV-6 occurs in less than 1% in UK and USA. This phenomenon has the potential to confound the diagnosis of active HHV-6 because viral DNA is in every nucleated cell in the body and can be found in whole blood, serum, plasma and cerebrospinal fluid.

Case Presentation Summary

We reported eleven cases of children with ciHHV6. They were admitted for diverse causes: fever, lameness, jaundice, neutropenia, respiratory infection, and cardiomyopathy. In all cases a viral screening was performed with detection of high HHV6 viral loads in whole blood ($> 6 \log_{10}$ HHV-6 genomes/ml). Therefore an HHV6 infection was hypothesized and four children of eleven have been treated with intravenous (iv) immunoglobulins (Ig) and adding ganciclovir just in tow cases. Antibodies against HHV6 antigen were present in six of eleven cases, in two cases the antibodies were negative and in the remaining cases they haven't been researched. In view of no clinical improvement and with high persistent viral loads in whole blood, the condition of ciHHV-6 have been suspected. The diagnosis was confirmed with HHV6- PCR detection on children's hair follicle of all eleven cases, then therapy such as iv Ig, ganciclovir has been interrupted and other causes to justify the symptoms have been examined.

Learning Points/Discussion

Identifying individuals with ciHHV-6 is important because every cell in the body harbors the HHV-6 genome linked to human chromosomal DNA. No pathology has been conclusively associated with ciHHV-6, thus routine screening is not recommended. However when a patient has high HHV6 DNA copy numbers, the screening for ciHHV-6 should be considered to prevent an unnecessary treatment.

22A. EDUCATION: OTHER

ESP17-1210

CLINICAL FINDINGS AND RISK FACTORS OF INFECTION DUE TO SERRATIA SPP. IN PEDIATRIC INTENSIVE CARE UNIT

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Background

Serratia species are one of the important cause of nosocomial infections, especially in intensive care units. The aim of this study was to identify clinical features and risk factors of *Serratia* infection in the pediatric intensive care unit.

Methods

We retrospectively evaluated medical records of children requiring pediatric intensive care unit stay between 2012-2015, for obtained *Serratia* spp. from sterile body fluids.

Results

Medical records of seven boys and two girls, totally nine children (aged between 6 months to 6 years), showed positive culture results for *Serratia* spp (8 out of them were *Serratia marcescens* and one is *Serratia plymuthica*). One out of these obtained strains is ESBL producing microorganism. Six children have ventilatory associated pneumonia, two children have bloodstream infection and one children central line associated bloodstream infection. 3 out of children have an underlying immunosuppression and 4 out of children have chronic neurological disease. Presence of central venous access have been noted 6 out of 9 children. Length of hospital stay varied from one to 105 days and mortality rate was 66%.

Conclusions

Serratia spp as rare but an important opportunistic pathogen are associated with significant morbidity and mortality, especially in children with an underlying condition and/or requiring long term stay in PICU

03A. EDUCATION: GROUP A STREPTOCOCCUS

ESP17-1212

IS THE CONCEPT OF RHEUMATOGENIC STREPTOCOCCUS PYOGENES A MYTH ? A LITERATURE REVIEW FROM 1944 TO 2016 AND A MOLECULAR ANALYSIS OF THE M-PROTEIN

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Background and Objective

The concept that specific Group A streptococcus (GAS; *Streptococcus pyogenes*) strains are more rheumatogenic than others is widely disseminated. However, there has only been one single review of predominant serotypes involved in streptococcal outbreaks associated with Acute Rheumatic Fever (ARF) between 1939 and 1971 in the USA. This review found the following *emm*-types to be associated with ARF: 1,3,5,6,14,18,19,24,27 and 29. A review of GAS *emm*-types associated with ARF in endemic regions, has never been undertaken. The objective of this review is to provide a more comprehensive list of *emm*-types associated with ARF and to analyze the genetic diversity of ARF-associated M proteins.

Methods

Reports of original research in the Pubmed database, from 1st January 1944 (first publication of Jones criteria) to 31rd December 2016 were used as sources to identify cases of ARF. All articles reporting ARF-associated GAS strains or ARF-associated *emm*-type-specific antibody response were selected. Revised Jones Criteria published by the American Heart Association in 2016 were used to define ARF. A maximal delay of 4 weeks between ARF onset and microbiological characterization by either culture or serological answer has been used.

Learning Points Discussion

Among 28 relevant studies, 75 different GAS *emm*-types were listed as associated with ARF. Only 10.7% of these *emm*-types were known as classical rheumatogenic strains. A large number of GAS *emm*-types have therefore been associated with ARF.

These 75 *emm*-types belong to various genetic backgrounds as shown by their dissemination along all clades of a phylogenetic tree including 175 different *emm*-types.

The concept of "rheumatogenicity" should therefore be extended to strains other than those classically described in the USA. These results should inform GAS vaccine development.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1214

PNEUMOCOCCAL MENINGITIS COMPLICATED BY SUBDURAL EMPYEMA IN THE POST-VACCINE ERA

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Title of Case(s)

Pneumococcal Meningitis Complicated by Subdural Empyema in The Post-Vaccine Era

Background

A breakthrough infection occurring with 13-valent pneumococcal conjugate vaccine (PCV13) in Turkey are previously described. Although patients with invasive pneumococcal disease (IPD) present less commonly with meningitis, case fatality rates are high and neurological morbidity is frequently found in survivors. Herein, we report two cases of pneumococcal meningitis complicated by subdural empyema.

Case Presentation Summary

Case 1: Three-month old boy was referred to our PICU with fever, vomiting, altered consciousness and sepsis. He suddenly developed septic shock and vancomycin (15mg per kg dose every 6 hours) and cefotaxime (75mg per kg every six hours) with a provisional diagnosis of bacterial meningitis and sepsis. On the second day of admission, lumbar puncture was performed and PCR revealed *S.pneumoniae*. On the 9th day of admission, physical examination revealed the signs of elevated intracranial pressure and MRI showed subdural empyema and multiple brain abscess.

Case 2: Five-year old boy with pneumococcal meningitis was transferred to us with seizure and altered consciousness. He was evaluated for intracranial complications of meningitis and MRI showed subdural empyema and sagittal sinus vein thrombosis.

Learning Points/Discussion

PCV7, included in the Childhood National Immunization Program in Turkey in November 2008, was replaced with PCV13 in February 2010. Two patients, aged 2 months (case 1) and 5-year (case 2) had received a single dose of PCV13 and 4 doses of PCV13, respectively. All of these vaccinations had been administered appropriately in accordance with their ages. Despite the vaccination program, *S.pneumoniae* is still continued to be a health program and cause of mortality and morbidity. Pediatricians should be kept in mind *S.pneumoniae* as a cause of meningitis.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-1215

UNEXPECTED CHANGES IN ROTAVIRUS SEASONALITY IN THE CONTEXT OF LOW COVERAGE VACCINE USAGE

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Background

Two rotavirus (RV) vaccines have been used in Portugal on the private market since May 2006 with estimated combined coverage rising from 16 to ~40% between 2007 and 2016.

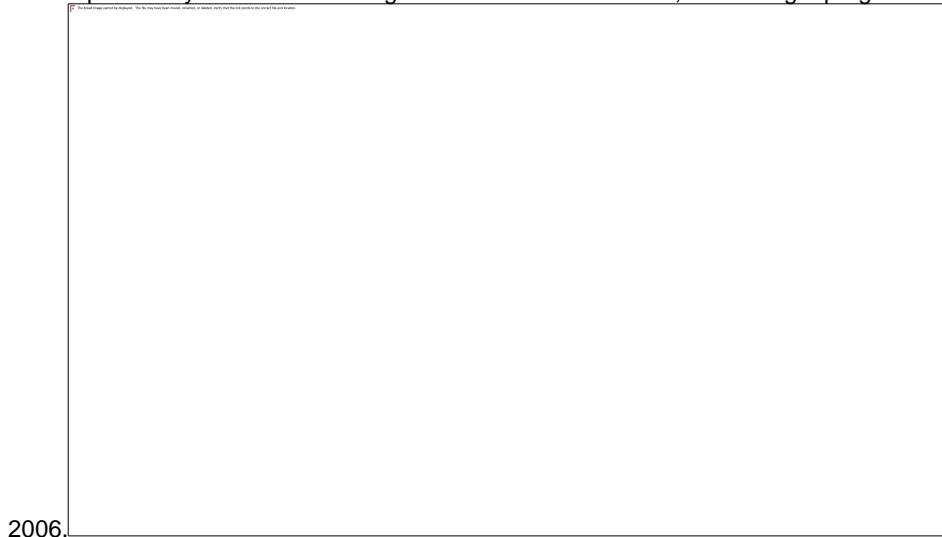
Despite high effectiveness in preventing acute gastroenteritis (AG) in recipients shown in a case control study done in this population, low vaccine coverage has limited impact on RVAG incidence in Portugal. Following several years with annual epidemics of varying seasonality but no progressive trend towards delay, we observed an unusually large epidemic in 2016 in the last quarter of the year as shown below (figure 1).

Methods

Since 2012 all children $\leq 36M$ attending the ES or admitted to the Short Stay Unit with AG providing a stool sample were tested for RV (between 30 and 36% every year). The monthly distribution of cases was analysed.

Results

Seasonality differed between years, with two peaks in 2013. In 2016 a large epidemic with 159 RV+ cases seen and 65 (41%) admissions occurred between October and December. The proportion of admissions was higher than in previous years. The mean age of cases was 18 months, continuing a progressive rise from 14 months in



Conclusions

This unusual seasonality of RVAG has not been described in recent studies and may have been due to the accumulation of a pool of non-vaccinated susceptible children or to the introduction of a novel RV strain into this community. Further data on genotyping are being obtained.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-1216

FINE NEEDLE ASPIRATION CYTOLOGY IN CHILDREN WITH SUBACUTE OR CHRONIC LYMPHADENOPATHIES: A 16 YEARS SURVEY IN SPAIN

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Background

Subacute or chronic lymphadenopathies in children are for various etiologies, mostly infectious but also other like malignancies. While fine needle aspiration cytology (FNAC) is widely used in the adult population, it is slowly gaining acceptance in children. The purpose of this study was to evaluate the usefulness and safety of FNAC in this situation.

Methods

A retrospective review of cytopathology records, from 1998 to 2014, of all FNAC of subacute or chronic lymphadenopathies in patients under 17 years old was performed. Fine-needle aspiration cytologies were performed by experienced cytopathologists in a specific room. Sedoanalgesia adapted to age and children condition was carried out by experienced pediatricians or anesthesiologists in the "one-day clinic".

Results

472 FNAC were performed, for 463 data were completed and were included in final analysis. Most of them were cervical lymphadenopathies. The anatomopathological diagnoses included reactive lymphadenopathy (n=339; 73%), granulomatous inflammation (n=47; 10%), malignant etiology (n=55; 12%), no diagnostic (n=15; 3%) and other (n=7; 2%). Globally, 290 of patients were males (63%) and median age was 11,6 years. Median age, by diagnostic groups, was 12,9 years for reactive lymphadenopathy; 10,9 years for malignancies and 2,5 years for granulomatous inflammation. There were no major complications resulting from this technique.

Conclusions

FNAC, performed by experienced cytopathologists with adequate sedoanalgesia, has revealed to be a safe, well-tolerated and valuable diagnostic tool. The technique reduces the need for more invasive and costly procedures.

02B. EDUCATION: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-1217

DAPTOMYCIN USE IN CHILDREN: EXPERIENCE WITH VARIOUS TYPES OF INFECTION AND AGE-GROUPS

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Background

In Greece, there have been high rates of methicillin (40-60%) and clindamycin (15-25%) resistance among community-acquired *Staphylococcus aureus* isolates. Therefore, we sought to identify other antimicrobial treatment options such as daptomycin.

Methods

We studied retrospectively all pediatric infections treated with daptomycin at the University General Hospital of Larissa, Greece from January 1, 2007 to June 16, 2016.

Results

Of a total of 128 patients (median age 2.8 years, range 8 days to 14.5 years, 76.6% <7 years) treated with daptomycin, 45 (35.2%) suffered invasive infection, most frequently musculoskeletal, and 83 (64.8%) non-invasive infection, i.e. complicated skin and soft tissue infection. *S. aureus* was the most commonly recovered pathogen (n=61) (63.9% methicillin-resistant isolates, 21.3% clindamycin-resistant). The average daily dose of daptomycin was 10 mg/kg qd and the median duration of therapy was 10 days. Daptomycin was administered alone (n=61) or in combination therapy (n=67), most frequently with rifampin (n=40) and/or a β -lactam (n=33). Open or closed drainage was performed in 86 (67.2%) of the total number of patients. Out of 128 treated patients, 123 (96.1%) patients achieved clinical success; 114 (89.1%) had complete remission and 9 (7%) improvement of their disease. There were no failures with daptomycin therapy. Daptomycin was well tolerated.

Conclusions

Daptomycin administered alone or in combination with other antimicrobial agents to children of a wide age range was efficacious and well tolerated in the treatment of complicated infections of suspected or proven staphylococcal etiology.

12B. EDUCATION: INVASIVE FUNGAL INFECTIONS

ESP17-1218

CANDIDA ALBICANS ENDOCARDITIS: SUCCESSFUL TREATMENT OF VEGETATIONS WITH RECOMBINANT TISSUE PLASMINOGEN ACTIVATOR IN AN EXTREMELY LOW BIRTH WEIGHT PRETERM INFANT

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Title of Case(s)

Fungal endocarditis in a newborn

Background

Fungal endocarditis (FE) is a serious neonatal infection with a high morbidity and mortality. Systemic fungal infections are common in very low birth weight neonates and 65% of them are caused by *C. albicans* species. We report a successful treatment of *C. albicans* endocarditis with recombinant tissue plasminogen activator (r-TPA) and antifungal therapy. In the literature only two other cases are described.

Case Presentation Summary

A female preterm infant was born at 30th weeks of gestation. She needed neonatal intensive care unit for respiratory distress. Umbilical venous catheter (UVC) was placed in a central vein. UVC was removed after 5 days. On 8th day of life, the general status was deteriorated. Laboratory exams revealed high CRP levels. Blood cultures and UVC tip culture grew *C. albicans*, then micafungin was started at 8 mg k⁻¹. Despite micafungin, CRP levels were increased. An echocardiogram (ECHO) revealed a pedunculated vegetation in the right atrium (12mmX5mm) attached to Eustachio valve. Therefore amphotericin B liposomal was started at 3 mg k⁻¹, and micafungin was increased at 10 mg k⁻¹. ECHO revealed no vegetation resolution. A treatment with r-TPA was considered. r-TPA was administrated at 0.2 mg k⁻¹ h⁻¹ for 6 h through a central venous catheter. After one single dose of r-TPA no vegetation was more detectable. r-TPA was not repeated and a daily dose of low-molecular-weight heparin (LMWH) was administrated for two weeks with anti-factor Xa monitoring. Antifungal therapy was administrated for 21 days with a good clinical outcome.

Learning Points/Discussion

r-TPA should be considered in the setting of FE unresponsive to antifungal therapy. A prompt administration of r-TPA should reduce the requirement for surgical intervention in ELBW infants with FE.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1219

EARLY IMPACT OF MATERNAL PERTUSSIS IMMUNIZATION PROGRAM ON PERTUSSIS HOSPITALIZATIONS AMONG INFANTS IN SEVILLE, SPAIN

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Background

Since November 30, 2015 a maternal pertussis vaccination program during pregnancy was introduced in Andalusia, Spain. The aim of this study was to describe the epidemiological features and outcome of pertussis cases requiring hospitalization over a four-year period and to analyse the early impact of the maternal immunization program.

Methods

Patients admitted to a single tertiary centre with positive results by PCR for *Bordetella pertussis* were prospectively collected from 2012-2016.

Results

Overall, 112 children with B. pertussis infection were admitted to hospital during the period of study. Of them, 108 (96%) and 110 (98%) were aged \leq 4 months and 6 months, respectively. Most patients were unvaccinated (62%). Predisposing risk factors were detected in 19 patients (16%), being prematurity the most commonly identified risk factor (11%). The median length of hospital stay was 11 days (range, 1-43 days) and 19 patients (16%) required ICU admission. Six deaths (5%) occurred in infants aged $<$ 2 months. Pertussis hospitalization rates in children younger than one year increased significantly between 2012 and 2015 ($P < 0.001$). After the introduction of the maternal pertussis vaccination program, pertussis hospitalization rates declined in 2016 by 76% compared to prevaccine years (age $<$ 1 year: hospitalization rates 50.96 per 10.000 in 2012-15 vs 12.13 per 10.000 in 2016; IRR 0.24, 95% CI 0.09-0.51).

Conclusions

Pertussis caused significant burden of disease during recent years. Pertussis hospitalization rates increased significantly since 2012 but this trend was rapidly reversed in 2016 following the introduction of the maternal pertussis immunization program. Continued surveillance of pertussis infections is warranted to fully understand the effectiveness of this program.

22A. EDUCATION: OTHER

ESP17-1220

KAWASAKI DISEASE: INITIAL ECHOCARDIOGRAM PREDICTS SUBSEQUENT CORONARY DISEASE

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Background

Kawasaki disease (KD) is an acute febrile systemic vasculitis that affects blood vessels of small and medium calibre. With the availability of intensified treatments for most severe patients, it is crucial to identify patients at high risk for coronary artery aneurysms (CAA) as soon as possible. However, the available severity scores (Kobayashi, Egami, Sano) have not been validated in European settings and there is little data concerning the link between initial echocardiogram findings and cardiac prognosis in KD patients.

Our study investigated whether the results of the first echocardiogram can predict KD resistance to conventional therapy and/or subsequent development of CAA and whether available severity scores for KD can predict severe disease in a European setting.

Methods

We retrospectively analysed demographic, clinical, biological, echocardiographic and therapeutic data from children diagnosed with KD between 2006 and 2016 at the Robert Debré University Hospital, Paris, France.

Results

A total of 157 children with KD were included. Initial echocardiogram was performed after a median of 6 days of fever (IQR 5-11) and was abnormal in 48 cases (31%). The initial presence of any echocardiographic abnormality was strongly associated with the resistance to intravenous immunoglobulins ($p=0.004$) and the development of coronary artery lesions within the first six weeks of disease ($p=0.01$). All patients ($n=7$) with persistent coronary abnormalities at one year already had an abnormal initial echocardiogram. In our population, severity scores had low sensitivity (24-33%) and low specificity (72-81%) to predict immunoglobulin resistance or cardiac involvement.

Conclusions

In European settings, abnormalities in early initial echocardiogram should be considered to identify patients with severe disease that may need intensified treatment.

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-1221

TUBERCULOSIS MENINGITIS IN AN UNVACCINATED AND IMMUNOCOMPETENT CHILD

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Title of Case(s)

Tuberculosis meningitis in an unvaccinated and immunocompetent child

Background

Tuberculosis meningitis (TBM) is the most severe extrapulmonary complication of tuberculosis. Until February 2016 in Portugal the national immunisation plan included the universal immunisation with Bacille Calmette-Guérin (BCG) vaccine of all neonates, but since then the recommendations were to vaccinate only children younger than 6 years old and if belonging to defined risk groups.

Case Presentation Summary

The authors present a case of a 7-months-old female without BCG vaccine that started with fever, irritability and hyporeactivity. The lumbar puncture showed pleocytosis, with polymorphonuclear neutrophils predominance, and hyperproteinorraquia. The clinical presentation and laboratory findings were suggestive of bacterial meningitis so empirical antibiotherapy with ceftriaxone and vancomycin was started. However, in 4 days she developed hydrocephalus and needed CSF neurosurgical drainage. She was admitted in our Infectious Disease Unit with multidisciplinary approach. Chest X-ray showed a middle lobe hypotransparency and bronchoscopy disclosed a bronchial stenosis. This radiological finding, plus meningitis with hydrocephalus led to the suspicion of pulmonary tuberculosis with secondary meningeal involvement. Empiric tuberculostatic therapy was started, with good clinical outcome. The tuberculin skin test and the PCR amplification for *Mycobacterium tuberculosis* complex in bronchoalveolar lavage (BAL) were positive. The cultural of bronchial secretions for acid-fast bacilli was also positive, which confirmed the diagnosis. It was excluded immunodeficiency.

Learning Points/Discussion

The absence of specific symptoms and signs in patients with TBM, makes clinical suspicion very important. In this case the *Mycobacterium tuberculosis* was only isolated in the bronchial secretions and the PCR was positive in the BAL. However, the diagnosis was based on clinical factors, complementary exams and supported by good clinical and analytical response to tuberculostatic therapy.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1222

NTM KIDS – RESULTS OF A PROSPECTIVE, OBSERVATIONAL, MULTICENTER EPIDEMIOLOGICAL CASE-CONTROL STUDY ON NTM LYMPHADENITIS IN CHILDREN

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Background

Risk-factors predisposing immunocompetent children to lymphadenitis due to non-tuberculous mycobacteria (NTM) are still poorly understood. Furthermore, data aiding in risk-adapted therapeutic decision-making is scarce.

Methods

We enrolled children with NTM lymphadenitis and controls matched for age, sex, and center. Past medical history, socioeconomic factors, and data on exposition to NTM were recorded for each individual. In the patient group, the course of disease, therapy, and possible residual symptoms were assessed. Additionally, histology of affected lymph nodes was analyzed by a standardized method, when material was available. Blood samples were collected for further analysis. Patients were followed until complete recovery.

Results

128 patients and respective controls were recruited. Median age at presentation was 29 months. Notably, there was a predominance of the female sex (62%). Mycobacterium avium was isolated most frequently (75%). In half the cases, culture remained negative and the pathogen could only be identified by PCR. Our analysis did not yield significant differences between groups for socioeconomic status, frequency of prior infections, allergies, vaccinations status, and contact to pets, farm animals, and soil.

Conclusions

These findings challenge the idea of a “lifestyle disease”. Of note, over 90% of patients underwent surgery (i.e. extirpation, drainage, or biopsy) before enrollment. It may be argued that patients with mild, rapidly resolving disease could be underrepresented in our cohort.

Correlation of histology, treatment, and outcome as well as molecular markers is currently analysed. Ideally, this will allow to identify markers for severe or refractory disease, aiding in developing a risk-adapted approach.

08C. EDUCATION: HIV/AIDS

ESP17-1225

EVALUATION OF THE VARIABILITY OF HIV-1 FROM MOTHER TO CHILD: A RETROSPECTIVE ANALYSIS FROM A PAEDIATRIC COHORT

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Background

Vertical HIV transmission gives the opportunity to evaluate viral evolution from acute infection on, as well as the possibility to compare mother and child viral pairs. Early antiretroviral treatment (ART) improves immunological and clinical outcome and decreases the burden of viral reservoirs. This study analyses virus variability between mother-child pairs by evaluating the effect of ART on genotypic variability.

Methods

We selected 13 HIV-1 infected mother-child pairs diagnosed between 2004 and 2015. Pol sequences were obtained before ART starting for children, and close to the child's delivery for mothers. Phylogenetic analysis was performed to evaluate potential viral evolution between mother-child viral pairs. For 7 children, we also analyzed a second sequence obtained after ART starting to evaluate the potential emergence of drug resistance mutations (DRMs).

Results

Phylogenetic analysis did not show significant variability between mother-child pairs (Figure 1). No transmission of DRM from mother to child was found. DRMs associated with resistance to nucleotide reverse transcriptase inhibitors (NRTI) was found in 4 low compliant children.

Conclusions

Our study confirms no viral evolution between mother to child. Early start of ART may prove its usefulness by "freezing" the most representative virus and creating in these patients the best virological condition for future curative approaches. GRT analysis shows how DRM onset due to failed virological suppression in HIV-1 patients still represents a challenge for clinicians. In HIV-1 pediatric population, which faces a life-long therapy, early onset of DRM limits future therapeutic range. Further analysis on a larger cohort is needed to improve viral characterization.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-1227

IMPORTED MALARIA IN A TERTIARY HOSPITAL IN SPAIN DURING THE PERIOD 2000-2016

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Background

There were 212 million malaria cases and 429000 deaths from malaria worldwide in 2015. Imported malaria remains a problem in Europe. The aim of this study was to describe the epidemiology, clinical characteristics, management and outcome of the malaria cases in a non-endemic setting in northern Spain.

Methods

We performed a retrospective descriptive study of the laboratory-confirmed malaria in patients under 15 years of age admitted to Marques de Valdecilla University Hospital (Santander, Spain) between 2000-2016. Clinical charts were reviewed.

Results

A total of 13 malaria cases were identified (61.5% *Plasmodium falciparum*, 30.8% *Plasmodium vivax* and 7.7% *Plasmodium ovale*). Most of cases (61.5%) were diagnosed in the last 6 years. Median age was 4.3 years (IQR: 2.2-8.1) and 61.5% were women. The 61.5% of infections were acquired in Equatorial Guinea (23.1% in Pakistan, 7.7% in Cameroon, 7.7% in Ethiopia). 46.2% of the patients were immigrants, 38.5% travellers visiting relatives and friends (VRF) and 7.7% adopted children. The interval between the arrival in Spain and the symptoms onset was 13 days (IQR: 1-105). Fever (100%), gastrointestinal symptoms (61.5%) and general malaise (53.8%) were the most frequent symptoms. Additional findings were anemia (69.2%), thrombocytopenia (76.9%), splenomegaly (23.1%), hepatomegaly (30.8%), jaundice (30.8%) and hemoglobinuria (15.4%). Median blood parasitemia was 4% (IQR: 1-7). Only one VRF with parasitemia up to 5% received intravenous treatment (artesunate). Oral treatments were quinine-sulphate (38.5%), chloroquine (23.1%), mefloquine (23.1%), atovaquone-proguanil (15.4%). The outcome was satisfactory but one recurrence.

Conclusions

An increased rate of the imported malaria has been observed in our setting in the last years, due to immigration and VRF. A prompt suspicion in all febrile patients with a travel history of visiting a malaria endemic area is essential.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1230

AIR SAMPLING MONITORING OF ASPERGILLUS SPP IN PUBLIC HOSPITALS OF CHILE TO ATTEND CHILDREN WITH CANCER. A NECESSARY STEP TO IMPLEMENTATION OF PREVENTIVE MEASURES

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Background

Nosocomial invasive filamentous fungal infections could result from inhalation of filamentous fungi conidia present in hospital environment. Invasive aspergillosis (IA) is a major opportunistic infection in haematology patients. High- efficiency particulate air (HEPA) filters do not completely prevent nosocomial fungal infections.

Methods

prospective (Descriptive) multicenter cohort study of environmental load of conidia of *Aspergillus spp.* oncology units from 5 public hospitals , was monitored air sample for fungi between June and November 2016. Air samples were collected once a week from three patients rooms, Air sampling was performed twice a day using Air IDEAL 3P (BioMérieux Clinical Diagnostics) loaded for each sample with Sabouraud chloramphenicol plates for fungal isolation, 1m³ of air was obtained in 10 minutes collection time. The analysis of the cultures were processed in the Mycology Laboratory, hospital Luis Calvo Mackenna and University of Austral

Results

717 samples were obtained: 184 'non-protected' internal air (NPA wards) 285 protected internal air (PIA wards) and 288 HEPA filtered air (> 95% efficiency and > 10 air changes per hour) (HFA wards) presented *Aspergillus* air counts >5 cfu/m³. In 16/449 sample positive (NPA and PIA) 3.5%. The most frequently recovered were other *Aspergillus spp.* (46/143) *A.niger* (87/143), *A.fumigatus*. (46/143). There were no significant statistical difference in relation to daily temperature and humidity of the country"

Conclusions

Our findings underline the importance of environmental surveillance and strict implementation of preventive measures. In addition to air filtration systems, room access conditions to hospital units may prevent high fungal air load. Effective protective measures may be taken to avoid the emergence of clinical infections.

Clinical Trial Registration (Please input N/A if not registered)

FONIS SA14ID0154

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-1231

LYME DISEASE- NOT SO FRIGHTFUL

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Title of Case(s)

Lyme disease-not so frightful

Background

Lyme disease is a diagnostic and therapeutic challenge for general physicians and pediatricians. Often it is overdiagnosed and unnecessary treatment is prescribed. There is evidence that prolonged antibiotic therapy is not beneficial and the risk outweighs the benefits. Our department is a referral pediatric infectious diseases center for south-west region of Poland. We present a cohort of patients who required an infectious disease consult due to suspicion of Lyme disease.

Case Presentation Summary

There were 58 patients referred to our clinic with a presumptive diagnosis of Lyme disease during a three-year period. In our diagnostic approach we run two-tier antibody tests (ELISA followed by Western-blot), lumbar puncture, CSF examination (general analysis, Lyme serology), and neuroimaging, if necessary. Moreover, we carried out a follow-up within 12-18 months after a discharge. In the majority of patients, i.e. 31, Borrelia was excluded. Eleven of them had established different diagnosis (multiple sclerosis, rheumatologic diseases, prior EBV infection). In four patients with further diagnosed autoimmune-related disease, unspecific IgM antibodies were found. Fifteen patients had borrelia with typical signs and symptoms (erythema migrans, lymphocytoma, facial nerve palsy) followed by positive serology testing. Neuroborrelia was found in twelve patients, all of them were treated with 2- to 4-week course of ceftriaxone and complete resolution of symptoms was reported by as many as eight patients (the status of three patients is unknown, one patient reported persisting, vague symptoms with normal laboratory test results and neuroimaging).

Learning Points/Discussion

The proper diagnostic approach of Borrelia with careful anamnesis, examination and finally laboratory testing is crucial for an appropriate treatment choice and further therapeutic success. In patients with unspecific or persisting after treatment Lyme disease symptoms other conditions should be strongly considered.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1232

A REVIEW OF HIGHER-VALENT PNEUMOCOCCAL CONJUGATE VACCINE (PCV) IMPACT ON ACUTE OTITIS MEDIA (AOM) AND NASOPHARYNGEAL CARRIAGE (NPC) DUE TO NONTYPEABLE HAEMOPHILUS INFLUENZAE (NTHI)

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Background and Objective

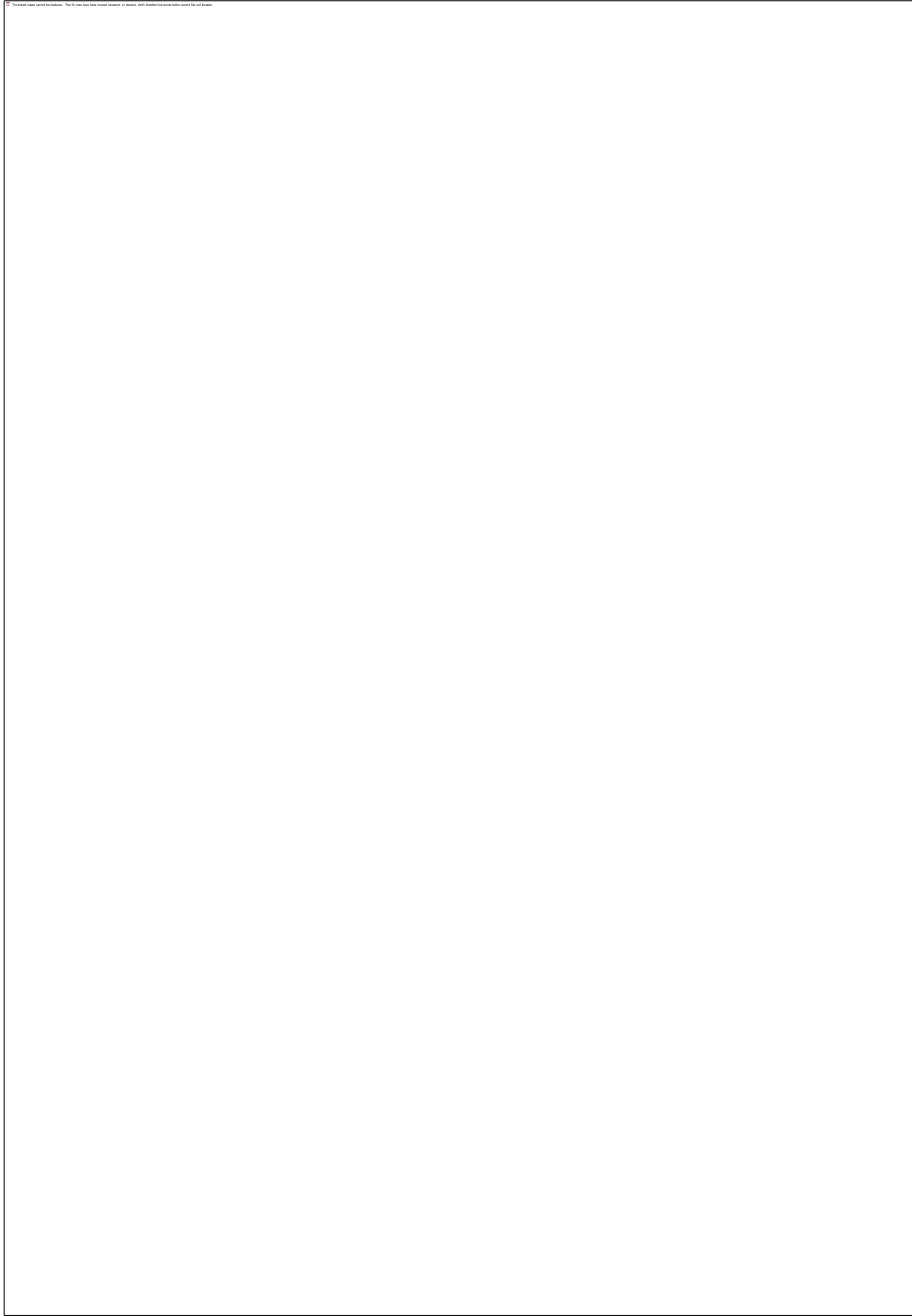
Acute OM (AOM) is one of the most commonly diagnosed childhood infections, with two leading causative bacterial pathogens being *Streptococcus pneumoniae* and NTHi. AOM causes significant economic burden in many countries given its high incidence. While effectiveness of PCVs against AOM and NPC caused by *S. pneumoniae* is clear, to understand impact against NTHi, we reviewed the literature on clinical effectiveness of PCVs in preventing NTHi-AOM or NTHi-NPC.

Methods

A review of literature was performed to identify studies assessing impact of higher-valent PCVs on occurrence of NTHi related OM as well as NTHi NPC.

Learning Points Discussion

Results: Identified studies reporting at least one outcome of NTHi-AOM or NTHi-NPC are presented in Table 1. Two publications (of one randomized controlled trial [RCT]) for an investigational 11-valent vaccine where all serotypes were conjugated to protein D (a highly conserved protein from NTHi) showed a significant reduction in NTHi-AOM and NTHi-NPC. Of 8 identified studies of PCV10 (where 8 serotypes are conjugated to protein D) none showed impact on NTHi-AOM or NTHi-NPC. Two studies with a vaccine conjugated to a CRM₁₉₇ carrier protein (PCV13), have shown 68% and 72% reductions in NPC and all OM episodes (acute and non-acute) caused by NTHi, respectively.



Conclusion: Although an investigational 11-valent protein D conjugate vaccine demonstrated efficacy against NTHi-AOM and NTHi-NP carriage in one RCT, no PCV10 study has corroborated these findings. This should be taken into consideration when evaluating real world impact on NTHi disease, as well as when estimating PCV impact on NTHi in cost-effectiveness models, as AOM is often a key driver of cost-effectiveness.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-1234

INCIDENCE, RISK FACTORS AND ANTIBIOTIC RESISTANCE OF HEALTH CARE ACQUIRED INFECTIONS IN PICU – 1 YEAR PROSPECTIVE STUDY

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Background

Healthcare acquired infections (HCA-infections) are a growing problem worldwide. Hospital surveillance systems are of great value for infection control. This study aims to evaluate incidence, risk factors and resistance patterns of PICU-acquired infections, after care bundle implementation.

Methods

Prospective analysis of all cases of HCA- infections in 2016, in a tertiary care hospital. Demographic, clinical and microbiological data were analyzed.

Results

It was registered 30 HCA-infections in 20 children, out of 399 admissions: blood stream infections: 7.3/1000 CVC days; urinary infections: 7.6/1000 bladder catheter days, pneumonia: 9.4/1000 ventilation days. Median age 1.5m (min 1d, max 17y), 33% newborn, 67% male. Considering 30 nosocomial infections, 20 had a positive culture, being *Klebsiella pneumoniae* the most frequent isolated microorganism (n=10) and 6 were antibiotic resistant strains (1 CoNS, 1 MRSA and 4 ESBL). Parenteral nutrition and CVC duration were statistical related to HCA-blood stream infection (p=0.001), as well as bladder catheter duration for urinary infection (p=0.026) and ventilation-free-days for pneumonia (p<0.001). Underlying disease was statistically related to HCA-infections (p<0.001), as well as admission from other ward (p<0.001) and previous colonization (p<0.001). Neither previous surgery (p=0.523), nor immunosuppression (p=0.185) and groups of age were statistically related with HCA-infections. One patient died.

Conclusions

Klebsiella pneumoniae was the most isolated microorganism in infection and 40% were ESBL producing strains. Duration of medical devices, underlying disease and previous hospital admission or colonization were risk factors for infection in our unit. Increased efforts must be implemented in order to reduce HCA-infections rates.

22A. EDUCATION: OTHER

ESP17-1237

CASE OF YOUNG PATIENT WITH GROUP B MENINGOCOCCUS SEPTICEMIA AND MENINGITIS

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Title of Case(s)

CASE OF YOUNG PATIENT WITH GROUP B MENINGITIS

Background

The appearance of cases with meningitis from group B meningococcus seems to increase in recent years. It is usually a disease with fulminant onset and severe clinical picture.

Case Presentation Summary

Refers the case of 12 years old boy submitted at Regional Hospital with hemorrhagic rash and hemodynamic instability. The patient intubated and transferred for further treatment (support the respiratory and circulatory system) to the Pediatric Intensive Care Unit. During the clinical examination showed severe hemodynamic instability and needed the administration of 4 inotropes medicines. Hemorrhagic rash has been declining. The lumbar puncture performed on Regional Hospital found 200 cells, polymorphonuclear type, glucose 122mg / dl, album 34,8mg / dl. He remained in the PICU for a period of seven days and extubated easily, without any worrying symptoms of the central nervous system. The control of both the serum and the cerebrospinal fluid showed serotype meningococcal group B. The patient had previously been vaccinated with vaccines for meningococcal group C, A, C, W. Y

Learning Points/Discussion

Meningococcal septicemia and meningitis may be particularly threatening the lives of young patients. Early diagnosis and treatment is paramount to deal with it. The vaccination for meningococcal group B appear to be life-saving intervention to reduce disease incidence in the world population.

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-1238

PERSISTENT BACK PAIN AFTER TRAUMA

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Title of Case(s)

PERSISTENT BACK PAIN AFTER TRAUMA

Background

Back pain is a common complaint in adolescents. Although majority have underlying musculoskeletal or biomechanical origin, infectious, neoplastic and inflammatory etiologies should also be considered. Although uncommon, tuberculous spondylitis (TS) is the most common form of extrapulmonary tuberculosis.

Case Presentation Summary

We present a previously healthy fifteen-year-old male from Guinea-Bissau, with lumbar pain starting one month earlier after a direct trauma. During this period he received analgesics and anti-inflammatory drugs. He denied fever, weight loss or night sweating. As the pain got worst he was admitted to hospital. His examination was normal except for a painful swelling over the upper lumbar region, with no neurologic impairments. Spine scan showed vertebral osteomyelitis with abscess, complicated by L1 pathological fracture. Thoracic image showed condensation with hilar lymphadenopathy. Investigation revealed an increased erythrocyte sedimentation rate, positive IGRA and tuberculin test. *Mycobacterium tuberculosis* was not isolated on bronchoalveolar lavage or gastric juice. He started on antituberculous treatment and had spinal stabilization surgery one month after treatment for refractory pain. After five months of treatment he shows a favourable evolution maintaining follow-up with a multidisciplinary team.

Learning Points/Discussion

Because of its insidious onset, TS is usually difficult to diagnose. In this case, the recent history of trauma might have also contributed to the diagnosis delay. Although *Mycobacterium tuberculosis* was not isolated, the diagnosis was made based on epidemiologic grounds, clinical manifestations, suggestive imaging, positive tuberculin test and positive IGRA associated with response to treatment. Although uncommon, TS must be remembered to permit early specific treatment and avoid vertebrae destruction and collapse leading to spine deformities.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-1240

GIANT HYDATID CYST OF LIVER PRESENTED WITH SOFT TISSUE CYST ON FACE

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Title of Case(s)

Giant Hydatid Cyst of Liver Presented with Soft Tissue Cyst on Face

Background

Cystic hydatid disease is a zoonosis caused by *Echinococcus granulosus*. Musculoskeletal or soft tissue hydatidosis accounts for about 0,5%-5% of all echinococcal infections in endemic areas and is almost secondary to the hepatic or pulmonary disease. It has been hypothesized that the presence of lactic acid in the muscle does not allow the larvae to grow into cysts. Only few cases of primary subcutaneous hydatidosis have been reported, and even in regions with endemic *Echinococcosis*, cervicofacial region is extremely rare.

Case Presentation Summary

Five-year old boy admitted to our clinics with a provisional diagnosis of cyst hydatid. In another center, the pathological examination of soft tissue mass revealed cyst hydatid. Hemagglutination tests for *Echinococcus* and ELISA were positive. MRI scan demonstrated a three giant cyst hydatid lesion on liver. Their dimensions are 9 x 8.7cm, 9x8cm and 8x6.3cm and it contains numerous cystic formations with thin outlines. The patient received Albendazole (400 mg/day) for eight weeks. Percutaneous drainage or surgery could not be performed due to multiple lesions and the size of lesions.

Learning Points/Discussion

Hydatid cyst disease is still a major health problem in agricultural countries including Turkey. The parasite is named *Echinococcus granulosus*, and humans can be an incidental intermediary host in the life cycle of the parasite. Although cysts are most commonly located in the liver (50–65%) and the lungs (20–30%), multiorgan involvement is seen in 20–30% of cases. Pediatricians should kept in mind the subcutaneous presentation of cyst hydatid and all patients who presented with subcutaneous cyst hydatid should be evaluated for other organ involvements.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-1241

INFECTIOUS MILK? GROUP B STREPTOCOCCUS (GBS) LATE-ONSET SEPSIS (LOS) AND MENINGITIS IN PREMATURE TWINS ASSOCIATED WITH BREASTFEEDING: FIRST REPORT FROM CENTRAL AMERICA *R. Esquivel-Zuñiga¹, G. Naranjo-Zuñiga², G. Malavassi-Viales³, S. Díaz-Martín⁴, K. Camacho-Badilla², R. Ulloa-Gutierrez³*

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Title of Case(s)

INFECTIOUS MILK? GROUP B STREPTOCOCCUS (GBS) LATE-ONSET SEPSIS (LOS) AND MENINGITIS IN PREMATURE TWINS ASSOCIATED WITH BREASTFEEDING: FIRST REPORT FROM CENTRAL AMERICA

Background

The use of intrapartum antibiotics has declined GBS neonatal early-onset sepsis, however the incidence of LOS remains unchanged. There is controversy whether LOS originates from GBS colonization or exogenous sources. We report the first case in Central America of premature twins with GBS-LOS, possibly associated with breastfeeding.

Case Presentation Summary

Male (1) and female (2) twins were born at 30 weeks of gestation from a 38-year-old mother who had premature rupture of membranes, no GBS screening and no intrapartum antibiotics. BW were 1660g and 1590g, respectively. Twin 1 was born by spontaneous vaginal delivery and twin 2 by C-section due to breach presentation. Both required intubation due to respiratory distress, received surfactant treatment, and were switched to noninvasive ventilation the day after. Twin 1 started maternal breastfeeding at day 12 and twin 2 on day 2. Both received 5 days of ampicillin and amikacin until blood cultures were negative and went home on day 30 without evidence of sepsis. Both twin 1 and twin 2 developed apneas on days 36 and 42, respectively. Blood and CSF cultures were positive for penicillin/ampicillin-susceptible GBS in twin 1, and only blood cultures in twin 2. Ampicillin was switched to penicillin for a total of 14 and 10 days, respectively with clinical improvement. GBS was isolated from mother's breast milk culture; she was treated with amoxicillin and rifampin.

Learning Points/Discussion

The presentation, the synchronicity, and the detection of GBS in breast milk suggest an enteral mode of transmission with a short incubation period. Breast milk cultures should be considered if GBS-LOS is detected, particularly in sick twins.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1242

A LYME PERICARDITIS PROGRESSING INTO MASSIVE PERICARDIAL EFFUSION

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Title of Case(s)

A Lyme Pericarditis Progressing into Massive Pericardial Effusion

Background

This presentation is about a case report finally diagnosed with Lyme pericarditis, admitted to our clinic with signs and symptoms of pericardial effusion.

Case Presentation Summary

A 14 years female child presented to our clinic with the following symptoms experienced on the same day; respiratory distress, hyperpnea and chest pain which was localised in the left without spreading. The patient's general status was moderate-good, she was conscious, oriented but tachypneic. Leukocyte: 21.800/mm³, Hb: 13.7 gr/dl, thrombocyte: 353.000/mm³, CRP: 146 mg/L, ESR: 84 mm/hr. A 10 mm pericardial effusion was discovered in the ECHO requested due to heart murmurs and minimal voltage reduction of the iso-electric line. The sputum samples were negative for AFB and ppd was 6 mm. The viral serology rheumatological screening were negative. Patient's follow-up showed low blood pressure and progressively increasing respiratory distress. Repeated echocardiography revealed a massive pericardial effusion and 1000 cc hemorrhagic pericardial fluid was drained surgically. The biochemical assessment of the pericardial fluid was in exudate character, ADA level was 55U/L. There was no isolation in the pericardial fluid culture. Pathology was in conformity with fibrinotic pericarditis. Since possible pericardial effusion causes for the patient were eliminated, a *Borrelia burgdorferi* serology was taken into consideration as the patient lived in a rural area or had contact with animals. The patient's anti-*Borrelia* IgG and IgM were positive, the patient was diagnosed with Lyme pericarditis and started on doxycycline therapy. All clinical findings showed remission after a week of treatment.

Learning Points/Discussion

As a result, Lyme disease should always be kept in mind in the differential diagnosis of pediatric pericarditis cases who live in rural areas and in contact with animals.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1243

DECREASED NEED FOR CEFTRIAXONE FOR ACUTE OTITIS MEDIA AFTER INTRODUCTION OF PNEUMOCOCCAL VACCINATION WITH PHID-CV10

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Background

Ceftriaxone is commonly used in the treatment of severe acute otitis media (AOM) unresponsive to oral antimicrobials and has been the treatment of choice at The Children's Hospital Iceland (CHI). The 10-valent pneumococcal non-typeable *Haemophilus influenzae* Protein D-conjugate vaccine (PHiD-CV10, Synflorix) was introduced into the paediatric vaccination scheme in Iceland in April 2011. The aim was to study the effect of PHiD-CV10 introduction on the incidence of IM ceftriaxone for AOM at CHI.

Methods

All procedural codes for ceftriaxone injections and all visits and admissions to CHI with the discharge diagnosis of AOM during the pre-vaccine (2008 – 2011) and post-vaccine (2012 – 2015) periods were extracted from electronic inpatient records. Data was linked on the individual level using unique government issued personal identification numbers. Rates of ceftriaxone use for AOM and rate of AOM visits were compared before and after vaccine introduction using Chi-squared tests of independence.

Results

Visits for AOM decreased from 2828 out of 51.655 hospital visits (Incidence risk (IR) 56.7 per 1000 visits) in the pre-vaccine period to 2594 out of 57.087 (IR 45.4 per 1000 visits) after vaccination (incidence risk ratio (IRR) 0.80 95%CI 0.76 - 0.84, $p < 0.0001$). Ceftriaxone was administered to 368 out of 2690 (IR 136.8 per 1000 visits) visiting CHI for AOM in the pre-vaccine period compared to 163 out of 2305 children (IR 70.7 per 1000 visits) after vaccination (IRR 0.52 95%CI 0.43 – 0.62, $p < 0.0001$).

Conclusions

Both absolute and relative ceftriaxone use and visits for AOM decreased significantly at CHI following pneumococcal vaccination. Our results suggest a clinically significant reduction of middle ear infections non-responsive to oral antimicrobial treatment.

22A. EDUCATION: OTHER

ESP17-1245

ACUTE GASTROENTERITIS IN INFANTS: THE EXPERIENCE OF AN EMERGENCY HOSPITAL FOR CHILDREN

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Background

Acute gastroenteritis is a major cause of pediatric morbidity and mortality around the world. In developed countries it is a common reason for presentation to general practice or emergency departments and for admission to hospital. The aim of our study was to determine the etiology and costs of acute gastroenteritis in hospitalized children and identify possible risk factors for nosocomial gastroenteritis.

Methods

We carried out an observational, retrospective study in "Grigore Alexandrescu" Emergency Hospital for Children from Bucharest, Romania. We included all children hospitalized for acute gastroenteritis with age between 0 to 12 months, between January and December 2016. Data were collected regarding sex, age, environment, etiology, nosocomial infections, feeding patterns, hospitalization duration and costs and processed with Microsoft Excel and SPSS Statistics 20.

Results

There were 710 infants diagnosed with acute gastroenteritis, 7.3% during hospitalization. Viruses were detected in 31.2% cases (177 Rotavirus, 21 Adenovirus, 12 Norovirus), bacteria (E.Coli, Klebsiella) in 1.1%, virus-bacteria coinfection in 0.3%, remaining 67.3% without etiology. The average cost of hospitalization was 426 euro/patient and the mean duration 5 days. Absence of an etiological agent was positively correlated with an increased cost for hospitalization ($p < 0.05$). There were 52 cases of nosocomial gastroenteritis (86.3% with Rotavirus). Nosocomial infections were positively correlated with bottle-feeding ($p < 0.05$) and hospitalization longer than 5 days ($p < 0.01$).

Conclusions

While bacterial gastroenteritis is less common, viruses remain an important cause of diarrhea. Almost 70% of acute gastroenteritis remain without an etiological agent, which increases the costs of hospitalization. Rotavirus is still the most frequent agent incriminated in nosocomial infections, favored by bottle-feeding and prolonged hospitalization. Identifying the cause in acute gastroenteritis might decrease costs on the health system by using specific treatment.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-1247

TRENDS IN ANTIMICROBIAL RESISTANCE - THREE DECADES OF EXPERIENCE

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Background

An increment in the incidence of multidrug resistant bacteria was noticed over the last years. Paediatric data are scarce. To analyze trends of antimicrobial resistance over a three decade period, in a PICU of a level III pediatric hospital.

Methods

Retrospective data collection of the following isolated microorganisms from biological products and catheters and its resistance profile: *Enterococcus spp*, *Escherichia coli*, *Klebsiella spp*, *Pseudomonas spp*, CoNS, *Staphylococcus aureus* and *Acinetobacter/Citrobacter/Serratia*. Microorganisms and their resistance profile were analyzed over a two year period of each decade: 1995/1996-Decade1, 2008/2009-Decade2 and 2015/2016-Decade3.

Results

There was an increase in the number of isolated *S. aureus* ($p < 0.001$) and *Klebsiella spp* ($p < 0.001$). On the opposite, the number of isolated *Pseudomonas spp* ($p < 0.001$) and *Acinetobacter/Citrobacter/Serratia* ($p < 0.001$) decreased. A stability in isolation of CoNS ($p = 0.212$), *Enterococcus spp* ($p = 0.274$) and *E. coli* ($p = 0.721$).

Regarding antimicrobial resistance, ESBL producing Gram negatives remained stable (*Klebsiella spp*, $p = 0.232$; *E. coli*, $p = 0.248$). A progressive methicillin resistance by *S. aureus* ($p = 0.022$) and CoNS ($p < 0.001$) was found. *Enterococcus spp* resistance to vancomycin ($p = 0.037$) and multidrug resistant *Pseudomonas spp* ($p = 0.033$) decreased. Overall, the percentage of multidrug resistant strains increased, through three decades period ($p = 0.01$).

Conclusions

Differences of bacteria isolated and its resistance profile were found and their knowledge is important to improve the efficacy of empirical antibiotic therapy. Increase of Gram negative bacteria and MRSA isolations and the multidrug resistant bacteria are of great concern.

12B. EDUCATION: INVASIVE FUNGAL INFECTIONS

ESP17-1251

CANDIDA PERICARDITIS AT PRETERM NEONATE.CASE REPORT

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Title of Case(s)

CANDIDA PERICARDITIS AT PRETERM NEONATE.CASE REPORT

Background

The incidence of fungal infection rised in the last few years especially at ELBW neonates.Currently the incidence of this type of infection is around 9% with a mortality of 33%. We are presenting the particular debut of a late onset neonatal septicemia at a VLBW neonate .The debut was with pericarditis and the etiology of the septicemia was candida speciae.

Case Presentation Summary

Our case is a female newborn , who was born at 25 weeks of gestation , 650g birth weight and 2/4/5 Apgar score.The patient was born by cesarian section from mother with chorioamniotitis and PROM (33 hours before birth). After resuscitation at the delivery room she was admitted to NICU. She received Surfactant ,respiratory support , antibiotics , inotrop medication and total parenteral nutrition.The outcome was favorable till 9th day of life when the condition become poor and the patient presented cardiopulmonary arrest.The hearth ultrasound highlights a significant pericardial collection .Due to the poor condition was performed a pericardial puncture which revealed a serocitrin fluid.In culture was isolated candida speciae. The same germ was isolated in patients hemoculture .The uroculture and culture of CSF were sterile.The outcome of the patient was good under the specific antifungal treatment.At discharge - age of 3 month -were no complication founded related to the fungal infection.

Learning Points/Discussion

Candidal septicemia often is a severe systemic infection at neonates.The symptoms are difficult to distinguish by the coagulase negativ staphylococcal septicemia. The main clinical manifestation at the presented case was the pericarditis .This is not a common form of manifestation.Were not founded cerebral, eyes or joint affectation.The central nervous system involovement represent an important risk factor for mortality and outcome.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1252

EFFECT OF PNEUMOCOCCAL VACCINATION ON TYMPANIC TUBE PLACEMENT RATE: A POPULATION BASED STUDY

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Background

Tympanostomy tube placements (TTP) are the most common paediatric surgical procedure. Randomised controlled trials have demonstrated a reduction of TTP following pneumococcal vaccination. The 10-valent pneumococcal non-typeable *Haemophilus influenzae* Protein D-conjugate vaccine (PHiD-CV10, Synflorix) was introduced into the paediatric vaccination program in Iceland in April 2011. The aim was to evaluate the effect of the vaccination on the TTP rate in Iceland.

Methods

All children <6 years of age in Iceland were enrolled. Data on reimbursements for TTP was collected from the Icelandic National Health Insurance database for the period of 2005–2016. Individual vaccination status was extracted from the National Vaccine Register of the Directorate of Health. Cumulative proportion of vaccine eligible (VEC, 2011–2015) and vaccine ineligible (VIC, 2005–2010) cohorts receiving ≥ 1 TTP before the age of 3 were compared using Chi-Squared test and linear trend in proportion tested using Chi-Squared Test for Trend. Incidence rate was calculated by age and calendar year.

Results

26789 TTP were performed on 18270 children from 2005–2015. A total of 2329 children (out of 9025, 25.8%) in VEC and 6611 (out of 28023, 23.6%) in VIC received ≥ 1 TTP before 3 years of age. Children in VEC were significantly more likely to have undergone ≥ 1 TTP before 3 years of age (RR 1.09, 95%CI 1.05–1.14, $p < 0.00001$). A significant positive linear trend in proportion was noted ($p < 0.00001$). Overall incidence rate was significantly higher in the post-vaccine period (Mantel-Haenzel adjusted IRR 1.04, 95%CI 1.01–1.08, $p = 0.016$).

Conclusions

Cumulative proportion and incidence of TTP increased significantly during the study period despite the added protection of PHiD-CV10. No explanation is evident. This unexpected result will be investigated further.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1255

A RARE CASE OF RHABDOMYOLYSIS WITH EXTREMELY ELEVATED CREATINE KINASE (CK) LEVELS IN AN 11.5 YEARS OLD GREEK CHILD WITH INFLUENZA A INFECTION

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Title of Case(s)

A rare case of rhabdomyolysis with extremely elevated creatine kinase (CK) levels in an 11.5 years old Greek child with influenza A infection

Background

A well recognized clinical picture in influenza epidemics is benign acute childhood myositis, a self limiting muscle syndrome characterized by elevated CK values, reported as high as 500 times the upper limit of normal. We report a rare case of influenza A infection and rhabdomyolysis with extremely elevated CK levels 900 times above the upper reference limit without major complications.

Case Presentation Summary

A previously healthy 11.5 years old girl presented following a 2 days history of fever and cough. 12 hours prior to admission she developed fatigue, myalgia and dark urine. Normal muscle power and tone were observed. Nasopharyngeal swab confirmed influenza A infection and urine analysis detected myoglobinuria. Analysis revealed increased CK (50.130 IU/L) levels and the patient was placed on treatment with sodium bicarbonate to alkalinize the urine, iv fluids and oseltamivir. CK levels continued to rise with a peak of **179.450** IU/L one day after admission and normalized after 20 days. The patient showed very mild musculoskeletal symptoms and no signs of rhabdomyolysis complications. In order to exclude other causes of extreme elevation of CK levels, quantification of free amino acids in the serum, acylcarnitine profile, Anti-Jo1 and Anti-Sm antibodies were performed with negative results.

Learning Points/Discussion

This is the first reported case of influenza A infection and CK levels 900 times the upper reference limit without major complications in a healthy child, to our knowledge. Immediate treatment with adequate hydration and sodium bicarbonate seems to be crucial to preserve renal and cardiac function. Our case highlights the lack of correlation between elevated CK levels and clinical severity.

22A. EDUCATION: OTHER

ESP17-1256

SYSTEMIC INFECTION WITH BARTONELLA HENSELAE COMPLICATED WITH OSTEOMYELITIS AND PERIDURAL ABCESS INVOLVING C5-C6 VERTEBRA IN AN IMMUNOCOMPETENT CHILD

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Title of Case(s)

SYSTEMIC INFECTION WITH BARTONELLA HENSELAE COMPLICATED WITH OSTEOMYELITIS AND PERIDURAL ABCESS INVOLVING C5-C6 VERTEBRA IN AN IMMUNOCOMPETENT CHILD

CASE REPORT

Background

Bartonella henselae causes a broad spectrum of clinical syndromes ranging from the classical presentation of chronic lymphadenitis to more serious, systemic presentations like prolonged fever, hepato-splenic, neurologic, musculo-skeletal or ocular involvement.

In immunocompetent patients systemic infection with *Bartonella henselae* is rare, most of them presenting as local infection in skin and lymph nodes. There are few cases reported of osteomyelitis secondary to infection with *Bartonella henselae*.

Case Presentation Summary

We report the case of an immunocompetent 10-year-old girl diagnosed with systemic cat-scratch disease.

The child was admitted to hospital after a 2-day history of cervical pain accompanied by left arm paresthesias, fever and lymphadenitis in the inguinal region.

Her past medical history revealed left inguinal lymphadenitis and a purulent skin lesion on the left thigh 3 months prior to this admission.

After clinical and neurologic examination, an MRI of the cervical column showed images consistent with osteomyelitis and epidural cervical abscess involving C5 and C6 vertebra.

Close contact with cats was reported and clinical suspicion of *Bartonella henselae* was raised.

Serum Ig M and Ig G antibodies to *Bartonella henselae* tested positive, but PCR from blood was negative for *Bartonella henselae*.

The patient received 6 months of antibiotics with clinical and radiological improvement.

Learning Points/Discussion

In our pediatric case, after an initial local inguinal lymphadenitis, the systemic infection with *Bartonella henselae* was complicated by osteomyelitis and peridural abscess involving C5 and C6 vertebra. The disease occurred in an immunocompetent patient. The treatment was well tolerated and the recovery was completed without sequelae lesions.

This case involved a multidisciplinary team consisting of an infectious diseases specialist, a neurosurgeon and a radiologist.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-1257

RELIABILITY OF CLINICAL SYMPTOMS AND SIGNS FOR DIAGNOSIS OF SERIOUS BACTERIAL INFECTION IN YOUNG FEBRILE CHILDREN

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Background

Serious bacterial infection (SBI) can be difficult to distinguish from viral infection; the consequences of a delayed or missed diagnosis can be serious and occasionally fatal

Methods

This prospective diagnostic study was conducted on children less than 5 years of age coming to emergency department of Ismailia Fever Hospital presenting with febrile illnesses. A questionnaire contains more than 45 clinical signs and symptoms, and SBI were confirmed or excluded using standard radiological and microbiological tests. The sensitivity, specificity of signs and symptoms, the positive predictive value, negative predictive value and the accuracy of diagnosis of SBI were calculated

Results

The prevalence of SBI was 14.8 %, with Urinary tract infection (2.5%), Pneumonia (7.5 %), Meningitis (4.8 %). We found that, (presence of urinary symptoms, general appearance very unwell, abdominal pain and highest temperature=40 °C or more) had the highest PPV with high sensitivity and specificity also their accuracy in diagnosis of UTI was above (90%).

Grunting, elevated respiratory rate, breathing difficulties, general appearance moderately unwell, and presence of respiratory symptoms had the highest PPV with high sensitivity and specificity, also their accuracy in diagnosis of pneumonia was above (90%).

Special signs like (Kernig, Brudzinski, and neck stiffness) also the child is being not alert, bulging fontanel, general appearance very unwell, crying, no fluid intake in previous 24 hour had the highest PPV with high sensitivity and specificity also their accuracy in diagnosis of meningitis was above (90%).

Conclusions

this study found that, UTI, pneumonia, and meningitis occur in about 14.8 % . There was underestimation of diagnosis of SBI leading to under treatment with antibiotics. Combining the clinical signs and symptoms into a clinical diagnostic model could improve decision making for detecting SBI.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1260

MANAGEMENT OF PAEDIATRIC INFLUENZA AT THE MERCY UNIVERSITY HOSPITAL, CORK, IRELAND DURING THE 2015-2016 AND 2016-2017 INFLUENZA SEASONS; CLOSING THE AUDIT LOOP.

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Background

During the 2015-2016 influenza season, we audited the management of paediatric influenza at Mercy University Hospital (MUH) in Cork, Ireland, using Ireland's Health Service Executive (HSE) paediatric influenza treatment algorithm and Health Protection Surveillance Centre's (HPSC) influenza vaccination guidelines. Findings and recommendations were shared with the Microbiology and Paediatrics Departments in May 2016.

Methods

We reviewed all laboratory-confirmed influenza cases and collected information regarding patient demographics, symptoms, clinical management and adherence to prior audit recommendations.

For completeness, data will be collected until Week 14 (10 April, 2017); significant changes in figures are not expected as HSPC reports waning cases. Trends were compared with national paediatric influenza surveillance. Influenza testing was performed in the MUH microbiology laboratory using the Xpert® Flu, Cepheid® system. Statistical analyses were completed using SPSS Statistics.

Results

To 1 February 2017, results included 9 laboratory-confirmed influenza cases (6 male, 3 female) aged 2-18 years, median 13 years, 0 influenza-related deaths. 5 are haematology patients.

All diagnoses were influenza A(H3N2), mirroring national data. Average length of hospital stay was 1.5 days. 5 of 9 patients were isolated prior to diagnosis. 4 were prescribed concomitant antibiotics. Efforts were made to document vaccination status and swab early (average 0.44 days). No healthcare-associated infections occurred.

Conclusions

Huge strides have been made in the management of paediatric influenza at MUH. Despite fewer cases, the positive effects of education are clear in comparison with last year's audit.

We will encourage appropriate antimicrobial practice and an overall increase in guideline adherence through continued evaluation and re-evaluation of the influenza management at MUH, as sustained staff education will drive sustained improvements in patient care.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-1261

ISCHEMIC STROKE IS DESCRIBED IN A NEWBORN WITH CONGENITAL CMV. ANTI BETA2-GLYCOPROTEIN I IGG WERE ELEVATED. VASCULAR THROMBOSIS COULD BE ASSOCIATED TO CONGENITAL CMV.

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Title of Case(s)

Ischemic stroke in a newborn with congenital Cytomegalovirus infection

Background

CMV is the main cause of psychomotor retardation and sensorineural hearing loss related to congenital infections in developed countries. Vascular thrombosis is one of the manifestations of acute CMV infection but has rarely been reported in congenital CMV. The most accepted theory indicates that thrombosis is triggered by endothelial damage caused by the virus and accompanied by a transient anti phospholipid antibodies production.

Case Presentation Summary

We here report a case of a newborn with congenital CMV infection identified at birth by CMV-DNA detection in blood and urine.

Pregnancy was complicated by primary CMV infection at 29-30 weeks of gestation and asymmetric fetal growth restriction with greater decrease in abdominal size (10th percentile for gestational age) than head circumference (50th percentile). At birth biometric parameters were consistent with intrauterine growth retardation. Blood cell and platelet counts were normal. Brain transfontanellar ultrasonography, auditory brainstem response, fundus oculi examination did not detect any abnormal findings. A transient supraventricular tachycardia was diagnosed at four days of life and digoxin was started. No interatrial shunt was detected at the echocardiogram.

At 4 months of life, MRI evidenced right occipital stroke in the posterior cerebral arterial area, probably occurred in the perinatal period. Baby was asymptomatic. Visual evoked potential test, EEG and neurological examination were normal. Elevated values of anti-beta2 glycoprotein I IgG (24.3 U/ml; upper limit 8 U/ml) were detected. Risk factors for thrombosis other than CMV were absent.

Learning Points/Discussion

To our knowledge this is the first case of cerebral arterial thrombosis associated to congenital CMV. Thrombotic disease is rare in neonates but has to be considered in intrauterine CMV infection to assess the better investigations and follow-up in these babies.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1262

SEVERE PVL-POSITIVE BONE AND JOINT INFECTIONS IN CHILDREN – CASE SERIES AND CLINICAL CHARACTERISTICS

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Title of Case(s)

Severe PVL-positive bone and joint infections in children – case series and clinical characteristics

Background

Osteomyelitis and septic arthritis are common paediatric infections especially in infants. In culture-positive infections, *Staphylococcus aureus* is still the most common pathogen. Panton-Valentine leukocidin (PVL) is a toxin produced by about 2 % of *S. aureus*. Severe bone and joint infections with complications like pulmonary abscesses, thromboembolic disease and multiorgan failure have been described in children.

Case Presentation Summary

Case	Age (y)	Primary site	Complications	Etiology	Treatment	Hospital stay (days)
#1	14	Pelvic bone osteomyelitis	DVT, lung emboli, pulmonary septic emboli	MSSA	Cefotaxime Clindamycin	43 days
#2	11	Pelvic bone, vertebral osteomyelitis	Pulmonary septic emboli, paraspinal abscess, myositis	MRSA	Linezolid Rifampicin	70 days
#3	2	Hip joint	Repeated surgery	MRSA	Vancomycin Clindamycin	17 days
#4	15	Ankle joint septic arthritis, fibula osteomyelitis	Combined septic arthritis and osteomyelitis, repeated surgery	MSSA	Cloxacillin Clindamycin	13 days
#5	1	Ankle septic arthritis	Repeated surgery, tendon rupture, need for plastic surgery and skin grafting	MSSA	Cefotaxime Clindamycin	21 days

Learning Points/Discussion

Although severe complications as listed above, there was no mortality in this series of PVL positive bone and joint infections. Only two of five children were below 12 years of age. This is in contrast to non-complicated acute osteomyelitis in children where the vast majority is below 5 years of age. The length of hospital stay was between 13 and 70 days compared to a mean of 5 days in non-complicated osteomyelitis. Where septic arthritis was present, repeated and aggressive surgery was needed. Antibiotic combinations including a protein synthesis inhibitor such as clindamycin, rifampicin or linezolid were used. Close collaboration with the microbiology laboratory, paediatric infectious disease specialist and orthopaedic surgery is important for successful outcome in these children.

21B. SCIENCE: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-1264

FACTORS RELATED TO TOXOPLASMA GONDII INFECTION IN LIBYAN CHILDREN

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Background

Toxoplasmosis is an important, widespread, parasitic infection caused by *Toxoplasma gondii* (TG). In immunocompetent subjects it is considered benign and usually asymptomatic. The chronic infection is now suspected to be a risk factor for various psychiatric and neurological disorders, including epilepsy.

Methods

This is a controlled study about possible relation of TG to development of epilepsy. A total of 298 children (148 with epilepsy and 150 non epileptic controls) were recruited over one year period in two referral health centres in Tripoli, Libya. Age ranged from 6 to 17 years. Possible factors related to TG infection were surveyed with a questionnaire given to each child's parent or legal guardian. Blood samples were studied for the presence of anti-TG IgG antibodies (Chorus Toxoplasma-IgG, DIESSE Diagnostica Senese, Italy).

Results

Mean age was 11 years (range 6–17,5 years). Prevalence of TG infection in studied children was 29%. Table shows variables independently related to TG infection by logistic regression.

	β coefficient	p	Odds ratio
Eating raw meat	1,216	0,002	3,37
Drinking untreated water	0,993	0,004	2,70
Eating raw vegetables	1,408	0,000	4,09
Frequent soil contact	1,038	0,002	2,82
Neighbor's cats	1,759	0,000	5,81

Variables not related to TG infection were: sex, age, residence (urban, suburban and rural), drinking non pasteurized milk, personal hygiene, blood transfusions and contact with dogs.

Conclusions

Prevalence of TG infection was close to expected, 29%. Absence of relation of age to TG infection suggests that most of children acquired TG infection before 6 years of age. There was no relation between place of residence and TG infection. Contact with cats and soil and eating raw meat and vegetables were the main risk factors.

Clinical Trial Registration (Please input N/A if not registered)

N/A

22A. EDUCATION: OTHER

ESP17-1265

EPIDEMIOLOGY, DIAGNOSIS, TREATMENT AND COMPLICATIONS OF KAWASAKI DISEASE IN CHILDREN AT THE UNIVERSITY HOSPITAL OF JUNDIAI MEDICAL SCHOOL: A RETROSPECTIVE STUDY

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Background

Background: Kawasaki disease (KD) is the most common cause of acquired heart disease in children worldwide. Despite its importance, KD is still underreported in Latin America and Brazil, and including in the micro region of Jundiaí. **Objectives:** to report the prevalence and the frequency of coronary complications of KD at Hospital Universitário de Jundiaí, a university hospital located in Southeast Brazil.

Methods

Methods: a retrospective study based on chart review, laboratory and imaging tests of all patients, admitted to the university hospital from 2011 to 2016 who received a diagnosis of either classic or complete KD.

Results

Results: Fifteen patients were included, 80% of which were males. Thirty-three percent of the patients were diagnosed in the year of 2014. Median age was 2,9 days. The mean duration of fever was 6 days. Sixty-seven percent of the patients received antibiotics prior to the diagnosis, 80% of them for a clinical suspicious of scarlet fever. Clinical symptoms included mucositis (86%), rash (80%), cervical lymphadenopathy (73%), conjunctival hyperemia (66%), pharyngeal erythema (66%), edema, hyperemia or stiffness of the hands and feet (66%), strawberry tongue (46%), rash or peeling of genital areas (46%), irritability (40%), vomiting (33%), cough (33%), abdominal pain (26%), hard breathing (20%), hoarsness (20%), and arthralgia, arthritis or myalgia (13%). One patient had jaundice. No patients had meningeal signs or diarrhea. Echocardiography revealed coronary changes in one patient only. All patients were treated with immunoglobulin.

Conclusions

Conclusions: KD was most frequent among boys. Mucositis, rash, conjunctival hyperemia and cervical lymphadenopathy were the most frequent symptoms, and only one patient developed a coronary aneurism. The increase in the number of patients diagnosed with KD from 2014 on may be related to underreporting in the previous period

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-1266

EVALUATION OF DIASORIN LIASON® XL TEST FOR SEROLOGICAL DIAGNOSIS OF PERTUSSIS INFECTION.

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Background

Whooping cough is a bacterial respiratory infection caused by *Bordetella pertussis*. Despite widespread vaccination, pertussis remains endemic in different European Countries.

The aim of this study was to compare the diagnostic performance of a new chemiluminescent immunoassay (CLIA) test for the quantitative determination of IgG and IgA antibodies to *B. pertussis* purified toxin (PT) with two commercially available enzyme immunoassays (ELISA- IgG and IgA to PT).

Methods

Forty-six single serum samples from subjects with suspected pertussis were analyzed with n.1) NovaLisa, *Bordetella pertussis* toxin-ELISA (IgG & IgA), DiaSorin; n.2) SeroPertussis™ Toxin IgG and IgA ELISA tests, Savyon Diagnostics; and n.3) CLIA-LIAISON® XL *Bordetella pertussis* Toxin IgG and IgA, DiaSorin.

Results

The sensitivity for each kit determined on the basis of the agreement among at least two kits was 100%, 100% and 89%, and the specificity resulted equal to 88%, 97% and 97%, respectively.

Twelve IgG-PT serum samples with intermediate results were subsequently tested with IgA-CLIA test and IgA-ELISA assays. Eleven samples with IgA-PT concentrations below the 12 IU/mL value were graded negative; only 1 was above the 12 IU/mL value and graded positive with all kits. Out of 9 serum samples that resulted IgG-PT >100 UI/ml, 8 cases were confirmed as pertussis by real-time PCR tests.

A selected panel of sera containing different concentrations of anti-PT IgG, ranging from undetectable levels to concentrations clinically associated with infection and including the Pertussis Antiserum (Human) 1st WHO Reference Reagent, was tested with the DiaSorin Liason® XL test. The results that we obtained with the new CLIA test were in total agreement with the reference results.

Conclusions

These preliminary and promising findings prompted us to extend the evaluation of the new CLIA Liason® XL test.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1267

HIGH UPTAKE OF PNEUMOCOCCAL CONJUGATE VACCINE (PHID-CV10) IN THE VACCINATION PROGRAM IN ICELAND

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Background

Vaccines are generally well accepted in most European countries including Iceland. The 10-valent pneumococcal non typeable *Haemophilus influenzae* Protein D conjugate vaccine (PHiD-CV10, Synflorix) was introduced into the paediatric vaccination program in Iceland in April 2011 at 3, 5 and 12 months of age. No catch up vaccination was implemented. The aim was to describe the vaccine uptake and coverage.

Methods

All pneumococcal vaccinations were extracted from the National Vaccine Register (NVR) for the period 2005 - 2015. To mitigate possible omissions in the NVR, all vaccine purchases with Anatomic Therapeutic Chemical (ATC) code J07 were extracted from the National Drug Prescription Database (NDPD) and linked using unique governmental issued personal identification numbers. Proportion of each birth cohort receiving 1, 2 and 3 vaccine doses was calculated and number of children whose parents refused vaccination identified. The daily cumulative proportion of fully vaccinated children 12–36 months of age was calculated.

Results

62,267 doses of PCV were administered to 23,374 children from 2005–2015. Proportion of vaccine eligible cohorts (2011–2015) having received 1, 2, and 3 doses was 99.7%, 98.2% and 92.7% respectively compared to 3.1%, 2.2% and 0.7% of vaccine ineligible cohorts (2005 – 2010). Only 56 additional doses were found in the NDPD compared to the NVR. No significant difference in coverage was found between residential areas and gender. 375 parent refusals for 199 children (0.91% of children) were identified.

Conclusions

PHiD-CV10 uptake was rapid and extensive. A drop in vaccine coverage was noted for the third (12 month) dose compared to the first and second. Widespread vaccine uptake is critical for the success of a vaccination program.

14B. EDUCATION: NON-INVASIVE GASTROINTESTINAL AND MUCOSAL INFECTIONS

ESP17-1268

INFECTIOUS MONONUCLEOSIS AND CHOLESTATIC HEPATITIS: A RARE ASSOCIATION

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Title of Case(s)

Infectious mononucleosis and cholestatic hepatitis: a rare association

Background

Infectious mononucleosis (IM) is one of most common clinical condition of Epstein-Barr virus (EBV) infection, usually presenting with self-resolving increase in transaminases. Cholestatic hepatitis in IM is rare in children.

Case Presentation Summary

Case 1: Previous healthy 14 years-old girl complains with anorexia and headache associated to sore throat and mild asthenia. She had periorbital edema, tonsillitis with exudate and hepatosplenomegaly. Two weeks later she was admitted with persistent intermittent fever, vomits, coluria, icteric sclera, pruritus and a macular rash.

Case 2: Ten years-old healthy girl presented with coluria and jaundice, signs added to fever and sore throat started 48 hours before. She had spleen and liver enlargement. Because of marked asthenia and poor general condition, she was admitted.

Complete blood count showed lymphocytosis (71%/46%) and monocytosis (16%/13,2%). Liver enzymes: AST 934/331U/L and ALT 860/57U/L; evidence of cholestasis (GGT 288 and 276U/L; ALKP 422/626U/L; Total bilirubin/direct 2.8/2.39 and 6.2/5.23mg/dL); prolonged protrombine time and low serum albumin. Abdominal ultrasound showed homogeneous hepatomegaly and excluded obstructive causes.

Serology to EBV revealed positive VCA-IgM, VCA-IgG and EA-EBV, negative EBNA-IgG. Serology to HSV1, 2, and B, C, D, E Hepatitis were negative for acute infection. Immunoglobulin (A,G,M,E) levels, C3 and C4, alfa1-antitrypsin and serum copper were normal. Mitochondrial, LKM1, transglutaminase and smooth muscle antibodies were negative. In case 1, ANA were positive (tittle 1/160). None patient had previous medications.

Both completely recovered after 6 weeks.

Learning Points/Discussion

Cholestatic hepatitis is a rare and potentially serious manifestation of IM. EBV infection should be include in the diagnosis of cholestasis even in the absence of clinical signs of IM. The prognosis is good with fully recovery.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1269

THE CHARACTERISTICS OF HOSPITALIZED CHILDREN DIAGNOSED WITH INFLUENZA DURING 2015-2016 FLU SEASON

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Background

To prescribe the clinical and demographic characteristics of children who required hospitalization for influenza, their immunization coverage, to evaluate the provided diagnostic tests and treatment as well as to outline the complications observed. Influenza is a serious public health problem. During the 2015-2016 period, 408 patients of all ages were admitted to the Intensive Care Unit (ICU) and 197 died.

Methods

The medical records of children hospitalized for influenza in B' Department of Pediatric University Hospital "P.&A. Kyriakou", Athens were retrospectively studied over a 9-month period (October 2015-June 2016). A data recording form was completed for every patient. Only patients with laboratory confirmed influenza were included.

Results

48 children (28 male) were included. The mean age was 4,62 years and the mean length of stay was 5,9 days. Only 2,1% of children had been vaccinated. The primary symptoms were fever (83,6%), gastrointestinal complaints (12,6%), respiratory distress (41,8%), neurological symptoms(21%) and muscular weakness (31,3%).2 patients required ICU admission. One of them had pre-existing neurological condition and the other developed residual neurological deficit.

32 children received antiviral treatment but only 37,5% of them within the first 48h of symptoms onset.

29,2% of patients presented musculoskeletal complications such as myositis and 25,2% Central Nervous System (CNS) complications (seizures, encephalitis).

All children had negative rapid tests and diagnosis was confirmed by PCR or indirect fluorescence assay.

Conclusions

Our data suggest that during 2015-2016 musculoskeletal and CNS complications of influenza were observed more often than expected. Furthermore, the early treatment onset should be discussed in order to prevent severe complications and decrease the duration of hospitalization. Indications of Antiviral vaccination should be further reviewed.

02B. EDUCATION: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-1272

THERAPEUTIC DRUG MONITORING (TDM) OF VANCOMYCIN IN NEWBORN PATIENTS.

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Background

Vancomycin dose in newborns depends on postmenstrual age (PMA), gestational age (GA) or postnatal age (PNA) based on international recommendations. Neonates have a high pharmacokinetic (PK) variability. Trough levels between 10–20 mg/L could be associated with AUC/MIC >400. Objectives: To describe vancomycin monitoring in newborn during the first days of treatment.

Methods

Prospective and descriptive study (May-15 to Jun-16) of vancomycin TDM in term and preterm newborns from a NICU. Vancomycin dose of 15 mg/Kg was used in according to PMA and PNA. Peak and trough vancomycin levels were taken after fourth dose. Data was analyzed using 1-compartment linear model with zero-order input to calculate PK parameters: volume of distribution (Vd), half-life ($t_{1/2}$), clearance (Cl) and area under curve (AUC). Prism 7.02 was used for statistics. Results were expressed as medians and interquartile ranges (IQR)

Results

26 patients were evaluated; 16 males, median weeks of GA [RIQ]: 28 [25-30]; median grams of born weight: 1121 [759-1418]. Median vancomycin dose was 30 [19.5-45] mg/kg/day. PK parameters values were Vd= 1.05 [0.5-2.1] L/Kg; $t_{1/2}$ = 5.6 [4.7-7.7] h and Cl= 0.11 [0.04-0.35] L/h. In 8 patients trough levels were <10 mg/L and only 4 reached >20 mg/L. Half of patients achieved trough levels of 10-20 mg/L (14/26) but only 8 of them accomplished the AUC/MIC >400; instead 10 patients achieved trough of 10 - 15 mg/mL with 7 patients accomplishing AUC/MIC >400. Subtherapeutic trough levels were correlated with higher Cl and Vd, and lower $t_{1/2}$ of vancomycin.

Conclusions

High variability of vancomycin PK parameters are challenging in newborns. A vancomycin trough level between 10-15 mg/L should be sufficient to accomplish the AUC/MIC parameter. Thus, higher trough levels could not be necessary in these patients.

12B. EDUCATION: INVASIVE FUNGAL INFECTIONS

ESP17-1274

PEDIATRIC GASTROINTESTINAL BASIDIOMYCOSIS MIMICKING MALIGNANCY

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Title of Case(s)

Paediatric Gastrointestinal Basidiomycosis Mimicking Malignancy

Background

Basidiomycosis is a rare fungal infection with high prevalence in southwestern province of Saudi Arabia (Tohama region), United States (Arizona) and Iran; it mainly causes subcutaneous infections and rarely gastrointestinal disease. Because of its indolent nonspecific presentation, gastrointestinal basidiomycosis is often misdiagnosed as IBD, Tuberculosis or Malignancy. To date less than 80 cases have been reported in English literature in children and adult.

Case Presentation Summary

Our patient is a previously healthy 7 years old girl from Tohama Asser which is located in the south western region in Saudi Arabia. She presented with 3 months history of abdominal pain and mass felt in the lower abdomen with constipation. It was associated with intermittent fever and significant weight loss. CT Scan showed suspicion of malignancy (rhabdomyosarcoma). Laparotomy was done and biopsy was taken from the pelvic mass. The preliminary intra-operative frozen section showed dense infiltration by lymphocytes, histiocytes, plasma cells and eosinophils. This cellular infiltrate was interpreted as round blue cell tumor.

Histopathological examination of the biopsy revealed mesenteric fat and connective tissue with heavy infiltration by lymphocytes, histiocytes, plasma cells and eosinophils. Large and wide septated fungal hyphae are seen in association with nucleated basidiospores. Eosinophilic cell aggregates condense around the fungal hyphae forming Splendore-Hoeppli phenomenon. The fungal hyphae are positive for PAS special stain.

The patient was treated with voriconazole for 9 months with quick and significant improvement.

Learning Points/Discussion

Our case showed success of antifungal therapy without surgery. Abdominal mass with eosinophilia should keep the possibility of gastrointestinal basidiomycosis especially for patients coming from high risk area. Early diagnosis and treatment associated with favorable prognosis and outcome.

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-1276

RESURGENCE OF HYDATIDOSIS IN SPAIN

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Title of Case(s)

Resurgence of Hydatidosis in Spain

Background

Hydatidosis is a major world-wide health problem in developing countries. Its incidence declined in Spain thanks to the improvement of hygienic-sanitary conditions, although it has experienced a resurgence due to the increase of immigration. We report two cases of immigrant children diagnosed in a period of three months in our hospital, after a period of almost 10 years free of this disease.

Case Presentation Summary

Case1: 4 year old male presented to the emergency department with dyspnea. Physical examination revealed hyperinflation in right lung. His chest radiograph showed a well-defined hypodense lesion of 8x6x5cm. in the upper lobe of that lung. Abdominal ultrasound revealed well-defined lesion with septae and multiple cysts of 3.5x2x3cm. in the right lobe of liver. CAT scan confirmed their location and size. Blood eosinophil counts were significantly high. After a positive serology, the patient received a month course of albendazole, followed by surgery for both hepatic and pulmonary cysts, and finally, a further three month course of antiparasitic treatment, with favourable outcome.

Case2: 9 year old female consulted for abdominal pain accompanied by nausea. Abdominal ultrasound highlighted the presence of two well defined cysts of 6x6cm in both hepatic lobes. CAT scan confirmed the absence of extrahepatic lesions. Blood test showed moderate eosinophilia and positive IgG for Echinococcosis. Minimally invasive procedure for the removal of cysts was practiced. The patient received antiparasitic treatment with albendazole the previous month and the following three months, allowing the patient to recover without complications.

Both patients owned domestic animals.

Learning Points/Discussion

The increase of cases imported in our country emphasize the importance of thinking about this pathology when facing an immigrant child in contact with animals and abdominal or respiratory symptoms.

02B. EDUCATION: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-1277

RESISTANCE OF STAPHYLOCOCCUS AUREUS TO FIRST LINE ANTIBIOTICS IN CHILDREN WITH COMMUNITY-ASSOCIATED INFECTIONS IN CRETE

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Background

Community-associated staphylococcal infections are very common in childhood. Resistance of *Staphylococcus aureus* to first line antibiotics is a cause for major concern. The aim of this study was to look into resistance patterns of *Staphylococcus aureus* isolates to first line antibiotics in a tertiary center over a 9-year period.

Methods

A retrospective study was performed looking into *S.aureus* clinical isolates from children aged less than 16 years who required in-hospital treatment for community-associated staphylococcal infections over a nine-year period from 2008 to 2016. Susceptibility to first line antimicrobial agents including fusidic acid (FA), trimethoprim/sulfamethoxazole (TMP/SMX) and clindamycin (CLI) was determined using the disc-diffusion method.

Results

A total of 231 *S. aureus* isolates were included from children aged less than 16 years. Fusidic acid resistance was observed in 50.2% (116/231) of isolates, 18.6% (43/231) of isolates were resistant to CLI and 1.7% (4/231) were resistant to TMP/SMX. There was no statistically significant difference of FA resistance between the first and second half of the study period: (2008-2011) 51/94 vs (2013-2016) 57/115 [OR 1.20, 0.95 CI (0.69-2.08), p 0.57]. Methicillin resistance was observed in 42.8% (99/231) of the isolates. No statistically significant difference in FA resistance among methicillin susceptible and resistant isolates was noted. CLI resistance of MRSA isolates was higher compared to MSSA isolates: 27.4% (28/102) vs 11.6% (15/129) [OR 2.87, 0.95 CI (1.43-5.74), p 0.002]. There was no statistical significant difference among resistance patterns of *S.aureus* isolates regarding age and gender.

Conclusions

Fusidic acid resistant *S.aureus* isolates are highly prevalent among children with community-associated infections in Crete, and resistance to clindamycin is considerable as well. Trimethoprim/sulfamethoxazole is an alternative first line agent with low resistance rates in this region.

01C. EDUCATION: ANTIBIOTIC STEWARDSHIP AND INFECTION CONTROL

ESP17-1278

HOW WE ADHERE TO URTI ANTIBIOTIC TREATMENT RECOMMENDATION?

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Background

The Polish Ministry of Health finances the antibiotics protection program, under which further editions of recommendations of conduct have been published since 2009 for community-acquired RTI (last in 2016). The aim of this study was to assess doctor's knowledge and adherence to these recommendations.

Methods

A questionnaire survey on antibiotics use among 204 pediatricians, family doctors and residents was conducted. The main outcome measures were: the procedure in the most common clinical situations and knowledge depending on the professional experience: up to 5 years (residents) and over 5 years.

Results

30% of physicians do not have sufficient knowledge about principles of treating *Streptococcus pyogenes* infections. Significantly often correct answers were provided by residents 79% vs 50% ($p=0,008$). 28,7% of physicians do not use the Centor's Scale (CS). In comparison with other respondents, residents used Centor's Scale the most often (75% vs 50%) ($p=0,028$). Among the doctors declaring the use of CS, 51.4% correctly indicate the point value (4 points), when the administration of antibiotic is needed. Only 26,3% of physicians correctly recognize clinic situations when implementation of antibiotics is necessary immediately. 76% of respondents used watchful waiting in acute otitis media and acute rhinosinusitis (ARS), however 31.2% of respondents do not choose amoxicillin as the antibiotic of choice in bacterial ARS treatment. Significantly better answers were given by doctors with short work experience 59% vs 39% ($p=0,013$). In case of allergy to amoxicillin as many as 39.8% of respondents chose wrong antibiotic for a change (1st generation cephalosporin, phenoxymethylpenicillin or cotrimoxazole).

Conclusions

Polish doctors know and use recommendations on antibiotics use in an insufficient way. In many cases, younger doctors have greater knowledge of current recommendations.

14B. EDUCATION: NON-INVASIVE GASTROINTESTINAL AND MUCOSAL INFECTIONS

ESP17-1279

KNOWLEDGE, ATTITUDE AND PRACTICE OF DIARRHOEA PREVENTION AMONG CARE-GIVERS OF UNDER-FIVE IN MAKOKO AREA

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Background

Research has shown the high incidence of diarrhoea and death toll it causes especially in tropical regions like sub-Saharan Africa. Diarrhoea has consumed resources in terms of man-power and finance, such that its effects weigh in on the economy. Research has also shown that diarrhoea can be controlled, prevented, and in the long run eradicated. This is a contrasting finding and begs the question as to why diarrhoea still has such high toll if it is preventable.

Methods

This was a descriptive cross-sectional study among 365 residents of Makoko, selected using a multi-stage random sampling. Data was collected using an interviewer-based questionnaire and analysed using Epi info 2007. Chi-square was used to test association. P-value of <0.05 was considered statistically significant.

Results

Respondents were mostly in the age range of 29-38 years and majority were females (95.89%). Secondary education (81.37%) was the prevalent level of education. The respondents showed a poor knowledge of the causes of diarrhea (36.7%) and good attitude to the prevention of diarrhoea. However, the knowledge of diarrhoea prevention strategies was not as good as the practices.

Conclusions

The participants had a poor knowledge and a good attitude of diarrhea prevention, the practices were also good. There is need for advocacy and health education in order to bring about a voluntary positive change in the behavior of people in communities towards their health.

20A. EDUCATION: FROM VACCINE RESEARCH TO WORLDWIDE IMPLEMENTATION

ESP17-1280

METHODS OF COMMUNICATIONS WITH THE HEALTH CARE PERSONNEL TO IMPROVE ADHERENCE TO VACCINATION

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Background

The vaccination coverage of children has extremely dropped in Ukraine. The Ministry of Health reported in August of 2016 that only 30% of children are fully immunized against measles, 10% against hepatitis B, and 3% against diphtheria, pertussis, and tetanus. Not all health providers are adherent to immunization which contributes to a low vaccination coverage. Communication with the health care staff about vaccination is important to improve coverage.

The recent outbreak of polio 2015 – 2016 (CVDPV outbreak in Ukraine) raised interest of parents to immunization

Aim was to Improve adherence of health care providers in immunization, improve their communication skills, improve adherence of health care personal to evidence based knowledge about immunization.

Communication was organized through internal and external channels. On external level UNICEF implemented multi-channel communication campaign including videos, posters, materials and info kits for parents. In addition to this UNICEF conducted trainings with medical workers both doctors and health care managers to improve their knowledge and skills on immunization and effective counselling.

Results

In 2008 positive attitude towards immunization was 28%. However, in 2012 positive index increased up to 46% and in 2016 it reaches 72%. This result achieved due to critical contribution of capacity development interventions - regular trainings and conferences provided by UNICEF. Participants in those events were about 8,000 doctors and nurses from the whole regions of Ukraine. The awareness of polio among caregivers and parents increased from 68 percent before the outbreak to 89 percent during Round 1, 91 percent during Round 2, and 96 percent during Round 3.

Conclusions

The percentage of parents who were aware of the polio outbreak in the country increased from 58% in November 2015 to 66% in February 2016.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1281

INCIDENCE OF CAMPYLOBACTER INFECTION IN A GREEK PEDIATRIC POPULATION: A SEVEN YEAR PERIOD RETROSPECTIVE STUDY

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Background

The incidence of campylobacter infections in Europe is constantly increasing and has become a problem of public health. The purpose of the present retrospective study is to record gastrointestinal infections in children of different age groups caused by *Campylobacter* spp (*C.spp*) and the resistance phenotypes to major antibiotics. Other factors as age and need or not for hospitalization were also considered.

Methods

We conducted a retrospective study of 11.848 stool samples from pediatric patients up to the age of 14 years with acute gastroenteritis during two 3-year periods: from 2006 to 2009 (A) and from 2010 to 2013 (B). The stool cultures and the identification of enteropathogens were done by conventional methods. A total of 14.9% (776) of samples were positive for at least one pathogen in period A and 4.97% (331) in period B.

Results

The main bacteria responsible for gastrointestinal infections in period A were *Salmonella* spp and *C.spp* with an incidence of 47.5% and 44.8% respectively. During period B *C.spp* were more frequently discovered (60.84%) with a constant superiority of *C.spp* against *Salmonella* spp. Predominant species in both periods were *C. jejuni* (A: 97.7%, B: 94%). The number of hospitalized patients in period B was higher than in period A, 73.9% vs. 52% respectively. *C.spp* displayed high resistance to ciprofloxacin but low resistance to erythromycin and tetracycline.

Conclusions

The etiology of acute diarrhea varies in children of different age groups. In the present retrospective study the *C. jejuni* is the predominant cause of acute bacterial gastroenteritis in children. Our findings indicated that erythromycin is the most suitable first line drug. Proper use of antibiotics in the treatment of acute diarrhea is crucial due to the high level of antibiotic resistance.

20C. EDUCATION: VACCINE EFFECTIVENESS AND EFFICACY

ESP17-1282

LONG-TERM ANTIBODIES RESPONSE TO H INFLUENZAE VACCINE IN PAEDIATRIC PATIENTS WITH RHEUMATIC DISEASES

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Background

Vaccines have been proved to be very effective as a preventive measure. The long-term immunity in patients with rheumatic diseases (RD) remains quite unknown. The aim of this study is to compare the long term post-vaccinal antibodies in patients with RD diseases and healthy children against H Influenzae (Hib).

Methods

A cross-sectional study was performed. Patients with RD and healthy children older than 10 years old were recruited. Their age, sex, diagnosis, treatment, and vaccines were recorded. Their antibodies titers against Hib (IgG anti-PRP) were measured by ELISA and compared between groups. An Anti-PRP IgG seroprotective level >1mg/L was considered.

Results

60 patients and 15 controls were included. Patients: median age 13 years old IQR[10.2-12.7], 62.5% male, 82% had Idiopathic juvenile arthritis, and 18% autoimmune disease (5 lupus, 5 dermatomyositis); 46% had received biological therapy. Healthy children: median age 11.3 RIQ[11.3-12.7], 35% male. All of them had received a full schedule vaccination against Hib.

The median antibody titers was 0.63 mg/L IQR [0.29-2.4] for patients and 1.12mg/L IQR[0.46-5.37] for healthy. After multiple lineal regression to avoid confusion, the adjust coefficient (mean difference) was -1.8, $p=0.1$. The 53.4% of the controls and 42.4% of the patients were seroprotected, 31% of the patients who had received biological therapy vs 53% of the patients who never did ($p=0.08$) and 50% of AIJ patients vs 41% with autoimmune disease ($p=0.26$). After logistic regression, adjusted OR was 0.5 CI [0.05-5.24] ($p=0.1$) favouring healthy group.

Conclusions

Results show a tendency towards a worse long term antibodies response to Hib vaccination in patients with RD compared to healthy children although it didn't reach statistical significance, probably because of the low number of healthy children included.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1286

IS MACROLIDE THERAPY NECESSARY?

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Background

Macrolides are the recommended antibiotic for *Mycoplasma pneumoniae*, the most common atypical bacterial cause of lower respiratory tract infections (LRTI) in children. In practice macrolides are often prescribed empirically in the absence of pathogen identification. It is unclear the effect of macrolide therapy in children with mild to moderate LRTI.

Methods

Catalyzing Ambulatory Research in Pneumonia Etiology & Diagnostic Innovations in Emergency Medicine "CAPRE DIEM", a prospective cohort study, of children, 3 months to 18 years of age, who present to the ED with LRTI. Children with chronic complex conditions were excluded. The primary independent variable was receipt of macrolide therapy at ED visit. The outcomes, collected 7-12 days after discharge, included: 1. An unscheduled follow-up visit to a physician or ED; and 2. parental report on the child's condition (i.e. better or not). The association between macrolide therapy and outcomes were estimated using multivariable logistic regression models adjusted for age, race, day of illness on presentation, *M. pneumoniae* (PCR performed on all enrollees of CARPE DIEM), and radiographic pneumonia.

Results

Of 530 children, 62 (13%) received macrolide therapy, 8 of which were positive for *M. pneumoniae*. Children who received macrolide therapy were statistically more likely to be older, White, and have radiographic pneumonia. There was no statistical difference in outcomes between children who received macrolides when compared with those who did not. However, children who had underlying *M. pneumoniae* were 10% less likely to report feeling better compared with those who didn't have *M. pneumoniae* (95% CI: 0.03, 0.35).



Conclusions

Most children who are diagnosed with LRTI who receive macrolide therapy do not have evidence of *M. pneumoniae* and do not feel improved having had macrolides prescribed.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-1287

RESPIRATORY SYNCYTIAL VIRUS HOSPITALIZATION (RSVH) AND INCURRED MORBIDITIES THE SEASON AFTER PROPHYLAXIS

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Background

Respiratory syncytial virus (RSV) infection is common in children aged < 2 years. Few studies have evaluated long-term outcomes post-prophylaxis. The study objective was to determine the incidence and incurred morbidities of RSVH, the season following completion of prophylaxis.

Methods

A retrospective, chart review was conducted of all infants born in the 2009-2014 RSV seasons who were enrolled in a prophylaxis program in one institution. RSV infection was identified by Disease codes and confirmed by RSV-positivity. Data were classified into five groups based on indications for prophylaxis. For each subgroup, differences between children with and without RSVH were analyzed by independent t-test and Chi-Square test. A p-value < 0.05 was considered statistically significant.

Results

During five RSV seasons, 832 infants made 906 visits to the program for palivizumab injections. The overall RSVH incidence over 5 seasons following completion of prophylaxis was 3.1% (26/832). RSVH incidence varied by indications for prophylaxis. Children with chronic lung disease (CLD) had the highest incidence (n=6/55; 10.9%), followed by serious medical disorders (n=5/136; 3.7%), preterms 33-35 weeks gestation (n=4/162; 2.5%), preterms < 32 weeks gestation (n=10/412; 2.4%), and congenital heart disease (n=1/67; 1.5%). Comparison of all demographic characteristics in children with and without RSVH indicated gestational age was significant only in the group < 32 weeks (p=0.045). Overall, median length of RSVH stay was 2 days; 38.5% (10/26) required oxygen for a median of 3.5 days; 19.2% (5/26) required intensive care. None of the hospitalized infants died.

Conclusions

Infants with CLD are at highest risk for RSVH in the season post prophylaxis and this may merit palivizumab for more than 2 seasons irrespective of CLD disease severity. A larger prospective study is needed to confirm the findings.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-1288

ISOLATED PATHOGENS FROM PATIENTS' BLOOD CULTURE IN A TERTIARY GREEK PEDIATRIC HOSPITAL- A 5-YEAR RETROSPECTIVE STUDY

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Background

Bloodstream infections are substantial causes of morbidity and mortality in children. Staphylococcus species are the most commonly isolated microorganisms. We retrospectively reviewed the frequency of pathogens isolated from blood cultures obtained from hospitalised children over a 5 year period in a tertiary hospital and their correlation with C-reactive protein (CRP) values. We also reviewed susceptibility patterns to most common antibiotics.

Methods

During a 5-year period (2011-2015) we examined 9431 blood cultures obtained from children 20 days to 14 years of age. Incubation was done using the BACTEC 9050(BD) system. Identification and sensitivity to antibiotics were determined with conventional methods as well as using the automated system VITEK II (bioMerieux). Blood samples to determine CRP levels were obtained as well for all patients.

Results

: At least one pathogen was isolated in 230/9431 vials (2.4%). Gram(+) cocci were isolated in 76% and among those *Coagulase-negative Staphylococci* CoNS in 53.47%. *Streptococci* were isolated in 8.26% while *S. aureus*, *S. pneumoniae* and *S. pyogenes* were isolated in 4.34%, 3.47% and 4.34% respectively. Gram(-) bacteria were isolated in 18.26% of blood cultures. Bacteremias caused by *S. aureus*, *S. pneumoniae*, *S. pyogenes* and Gram(-) bacteria were associated with high mean and median value of CRP 14.9/13.3, 26.23/27.1, 15.6/11.1, 10.7/9.09 respectively. In contrast the values of CRP were considerably lower when CoNS were isolated.

Conclusions

Isolation of Gram(+) cocci and especially CoNS in pediatric patients' blood cultures is very common and should be evaluated with caution. CRP may provide a good marker of true bacteremia vs contamination. Methicillin resistance was recorded in 40% of *S. aureus* and in 45% of CoNS and should be taken into account when considering the choice of antibiotic treatment.

08C. EDUCATION: HIV/AIDS

ESP17-1289

HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION IN CHILDREN ON THE 21ST CENTURY: A PORTUGUESE STUDY

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Background

Rates of HIV-infected children by mother-to-child transmission (MTCT) in Portugal dropped below 2% over the last 10 years. However some high-risk groups, including Sub-Saharan immigrants and injection-drugs-users, are associated with incomplete surveillance leading to failure of MTCT-prophylaxis and later diagnosis. We aim to characterize an HIV-infected paediatric cohort in a Portuguese tertiary hospital.

Methods

Retrospective analysis of HIV-infected children diagnosed from 2001 to 2016.

Results

HIV-infection was diagnosed on 62 children, 53% female, 50% African-born, 60 HIV1. Median age at diagnosis was 31 months (IQR 2-120), being 53 months on African-born children (IQR 2-120). MTCT was reported in 77% and primary resistance to antiretroviral in 17%.

At diagnosis, 13% presented with AIDS; 47% had severe/recurrent infectious disease; 32% had constitutional symptoms and 32% were asymptomatic. Median viral load (VL) was 298193copies/ml (IQR 35664-2413122) and T-CD4 581cells/ μ L (IQR 281-1498).

Median time until undetectable VL was 9 months (IQR 4-29) after initiation of cART, with shorter time in those who initiated treatment after 2009 ($p < 0.001$). We found no relation between VL and time to undetectability.

Currently 47 patients continue follow-up with a median age of 12 years (IQR 9-15), 16 with detectable VL: 6 not treated, 7 poor-adherent and 2 on cART less than 6 months ago.

One died at age 19, after being diagnosed at 17-year-old with CNS-toxoplasmosis.

Conclusions

Despite broader access to diagnosis and MTCT-prophylaxis new HIV-infected children are diagnosed with significant delay and morbidity. A high level of suspicion should be maintained on HIV-infection, and HIV serology should be offered in the first contact of African-born children to the health-care facilities. Adherence issues are limiting a higher success of cART.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1290

RELATIONSHIP BETWEEN VITAMIN D (DEFICIENCY AND SEVERITY OF ACUTE LOWER RESPIRATORY TRACT INFECTION IN HOSPITALIZED CHILDREN IN GENERAL SUEZ HOSPITAL

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Background

Acute lower respiratory tract infection (LRTI) is a major cause of pediatric emergency presentation and mortality in children. Both vitamin D deficiency and LRTI are significant public health problems in developing countries, there is emerging evidence of the potential importance of vitamin D deficiency in susceptibility to acute respiratory infection

This study aimed to improve the outcome of hospitalized children with Acute Lower Respiratory Infections (ALRTI) by preventing vitamin D deficiency

Methods

The cross-sectional study was conducted in pediatric department- general Suez hospital through a period of six month from November 2015 to March 2016. It included forty eight hospitalized patients aged from 2 month to 5 years with acute lower respiratory tract infection, twenty two of them presented with bronchiolitis, and twenty six suffered from pneumonia. All the study groups were submitted to full history taking and full clinical examination stressed on symptoms and signs of respiratory distress and assesse severity of ALRTI., serum level of 25 hydroxy vitamin D was assessed.

Results

70.8% of children with lower respiratory tract infections in Suez general hospital had insufficient / deficient 25-hydroxyvitamin D3 levels.

There was statistically significant negative correlation between vitamin (D) level and severity of acute pneumonia ($r=-0.40908$, $p= 0.03797$), and severity of acute bronchiolitis ($r=-0.0567$, $p= 0.8022$)

That there was highly statistically significant differences in the mean serum levels of vitamin D between breast fed infants and formula fed infants ($P=0.007$)

Conclusions

Improving the nutritional status in children by preventing vitamin D deficiency might influence the management of ALRTI,

Vitamin D supplementation might be considered in children with lower respiratory tract infections in Suez general hospital.

17A. EDUCATION: REFUGEE CHILDREN

ESP17-1296

INFECTIOUS DISEASES IN UNACCOMPANIED MINOR REFUGEES IN SOUTHWEST GERMANY - A COHORT STUDY

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Background

The influx of refugees seeking protection in Europe since 2015 represents a multi-faceted challenge. One dimension has been the expectation of a high prevalence of infectious diseases in this population. In 2015, three German pediatric societies – GTP, DGPI and BVKJ – published recommendations for screening infectious diseases in refugees under 18. Here, we present data from a cohort of unaccompanied minors (UM) who were screened according to these guidelines.

Methods

The screening was based on 1) history taking (centered on infectious disease symptoms); 2) complete differential blood count; 3) serologies for hepatitis B and HIV in UM originating from high-prevalence countries (i.e., >100:100.000 population); 4) tuberculosis testing (i.e., interferon-gamma release assay in children under 15 years of age or chest X-ray in UM over 15 years old).

Results

Over the course of 12 months, (January to December 2016), 556 UM were screened. Eritrea (24%), Gambia (19%), Guinea (18%) and Somalia (10%) were their most common countries of origin. Surprisingly, pathological test results were obtained in 30% of screened UM — an even higher rate than originally anticipated. Elevated eosinophil counts (>500/μl) were the most frequent pathological screening result (19%), followed by the detection of HBs antigen (7%), and a positive tuberculosis screen (6%). Of note, HIV was rare in this cohort; only 2 positive results were obtained (0,003%).

Conclusions

An unexpectedly high prevalence of selected infectious diseases among unaccompanied minor refugees supports the current proposition to implement a standardized screening program. Correct diagnosis and timely initiation of treatment are essential for patients' well-being, as well as for preventing late sequelae and disease transmission.

22A. EDUCATION: OTHER

ESP17-1299

CENTRAL VENOUS CATHETER – RELATED COMPLICATIONS AND RISK FACTORS IN PAEDIATRIC PATIENTS

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Background

The use of central venous catheters (CVC) is associated with adverse events that can be both hazardous to patients and expensive to treat. Our aims were to identify the main complications resulting from the placement of CVC in children and adolescents and to determine possible risk factors.

Methods

We performed a retrospective analysis of clinical processes of all children hospitalized in a paediatric ward from a tertiary hospital, who had a CVC, from January 2011 to December 2015.

Results

A total of 154 CVC were placed in 92 patients (65% male, median age 4Y): peripherally inserted in 55%, tunneled-Broviac in 22% and totally implantable in 23%. Localization was subclavian in 52%, jugular in 25% and femoral in 23%. In 23% cases the procedure was non-programmed. The median duration of catheterization was 23 days (1-2691).

There were complications in 52 cases (34%): 73% infection (65% systemic, 8% local), 23% mechanical, and 3% thrombotic. In cases of systemic infection, the longer duration of catheter insertion (median 21 days) and the younger age (median 35 months) prevailed. The infection was more common when CVC were in the subclavian vein (70%), and had similar results in jugular and femoral vein (15%). Mechanical complications prevailed in children with gastrointestinal disorders (83%), which of 50% had a longer duration CVC.

The CVC was removed in 64% of the cases during the hospitalization, 17% due to complications.

Conclusions

Physicians must be aware of the complications related to CVC placement. Younger age and longer duration of catheters seem to be a risk factor for systemic infection. Mechanical complications were more prevalent in gastrointestinal disease.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-1300

CERVICAL ADENITIS: COULD IT BE ATYPICAL MYCOBACTERIA?

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Background

The diagnosis of nontuberculous mycobacterial cervical adenitis is difficult because of the frequent lack of microbiological evidence. The therapeutic strategy is not consensual: the gold standard is a complete surgical excision, but several authors have proposed a conservative treatment as an alternative. This study described a cohort of twenty patients with nontuberculous mycobacterial cervical adenitis and suggests a management protocol.

Methods

This is a five-year observational retrospective monocentric study. Inclusion criteria were: patients with confirmed microbiologically diagnosis, or patients with BAAR on direct bacteriological examination without microbiologically evidence, or patients with an evocative tuberculosis (TB) skin test without microbiologically evidence, and with negative direct bacteriological examination, or patients with granulomas identified by histopathology examination, without other criteria. Immunocompromised patients were excluded.

Results

The mean age was equal to 28 months. The adenitis was unique (n=19), submandibular (n=15). 68% of the diagnosis were made at an advanced stage (purplish skin, fistulisation). TB skin test was positive for 10 patients. A cytopuncture was performed on 16 patients, identifying *M. avium* (n=8) and *M. intracellulare* (n=4). Two therapeutic regimen were proposed: surgery as first line treatment (n=5) or an initial antibiotherapy (n= 15) followed by surgery (n=7). The main complication was aesthetic sequelae (n=12). The median healing time was 42 weeks (range 25 to 75).

Conclusions

In the absence of consensus, considering our results and the actual knowledge, we suggest a management protocol which starts by a cytopuncture, followed by a medico-surgical consultation in order to evaluate the necessity and the risk of first line surgical treatment. An initial antibiotic regimen or a "wait and see" attitude can be discussed in case of high surgical risk.

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-1301

ABNORMAL HEAD US CANNOT PREDICT HEARING DEFICIT IN OTHERWISE ASYMPTOMATIC NEWBORNS WITH CCMV

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Background

Cytomegalovirus (CMV) is the leading cause of congenital viral infection in the developed world, resulting in long-term disability, namely sensorineural hearing loss (SNHL) and cognitive deficit. The objective of this retrospective study was to evaluate potential factors associated with adverse outcome in a cohort of children with congenital CMV infection (cCMV). Such markers may help identify cCMV children which will benefit from antiviral treatment.

Methods

A total of 46 infants with documented cCMV infection followed in our department, were retrospectively analyzed. Most women (41/45) had primary CMV infection and 36 women received CMV-IG (1-9 doses). We examined whether timing of maternal infection (pregnancy trimester), maternal treatment, head ultrasound findings in the newborn and antiviral treatment of the newborn were associated with outcome (cCMV infection, SNHL). Chi square and multiple regression analysis were used.

Results

Three children were born with symptomatic infection. Four children developed SNHL. Timing of maternal infection and maternal treatment were not associated with outcome ($p=0.45$ and $p=0.98$, respectively). Abnormal head U/S at birth correlated with hearing loss ($p=0.006$). However, when symptomatic newborns were excluded, head US alone could not predict hearing deficit in otherwise asymptomatic newborns ($p=0.37$). Antiviral treatment was administered to all newborns with symptomatic infection and 14/17 of asymptomatic newborns with abnormal head US. Treatment of infants was shown to improve outcome.

Conclusions

Antiviral treatment of newborns with cCMV was associated with better outcome. Asymptomatic newborns with abnormal head ultrasound at birth were offered antiviral treatment. However, this isolated finding was not correlated with later development of sensorineural hearing loss in our cohort. Our study revealed the need of better biomarkers to identify asymptomatic infants with cCMV that could benefit from antiviral treatment.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1302

BACTERIAL INFECTIONS WITH STREPTOCOCCUS PYOGENES IN KINDERGARTENS AND SCHOOL AND THEIR PREVENTION

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Background

The aim of this article is to point out the efforts in the primary health care related to early detection of streptococcal infections in kindergartens and schools, early microbiological confirmation of the reasons, an early etiological treatment which leads to reduced number of complications and small number of hospitalized children. Adequate treatment prevent the occurrence of the Febris rheumatica and acute post streptococcus glomerulonephritis as possible complications.

Methods

Health records of preschool and schoolchildren regular patients at the PHI Dr. Angelovska and Dr. Timovski-Skopje, and obtained laboratory analysis and microbiological results for a period of 2 years (2015-2016) have been processed. Diagnosis based on the anamnesis, clinical picture (situation, throat swab and lab analysis. In our article we have been used analytical and Method of comparison for analysis.

Results

Out of completed 43175 medical checks, 28850 were confirmed with upper respiratory infections. Throat swab was taken from 4215 children. Positive findings were obtained from 1598 samples 37.91%. The most frequently isolated bacteria were: Streptococcus pneumoniae in 415-25.96%, Branchamella catarrhalis in 287-17.95%, Haemophilus influenzae in 314-19.64% the remaining 367-22.96% were caused by other causes and Streptococcus pyogenes in 215 -13.95% of the samples. 75 children were with elevated values of ASO. 151 children had leukocytosis and elevated CRP. 17 children had skarlatiniformen rash. 183 children were treated with Bensatine phenoximetil penicillin 85,11% per os, while 32 with other antibiotics.

Conclusions

Early detection and adequate treatment of streptococcal infections reduces the number of possible complications (Febris rheumatica and acute post streptococcus glomerulonephritis) and reduces the number of hospital treated children.

Availability of microbiological investigations contributes to successful outpatient etiological treatment of children. This reduces the costs of treating children and bacteriological spread of diseases in the institutions for collective residence-kindergartens and schools

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-1304

A TASTEFUL GIARDIA !

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Title of Case(s)

Tasteful Giardia !

Background

Giardiasis can be highly resistant and refractory to several habitual pharmacological treatments. We would outline a very instructive case ...

Case Presentation Summary

A boy of 7 years is admitted for chronic, rebel giardiasis from several months with persistent clinical signs and positive parasitology in feces Prolonged antiparasitic treatment combined to an anthelmintic is then prescribed ; as well as a holistic, nutraceutical approach with propolis, and garlic.

This "special diet" is repeated after 21 days with systematic intrafamily decontamination Clinical amendment is quickly observed, and reinforced by the negative parasitology.

After 12 months, the boy is always free of symptoms...

Learning Points/Discussion

Giardia can hang on very long... A "pot-pourri" therapy, pharma- and nutra-ceutical treatments, seems to be very effective and should be attempted.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1305

INFLUENZA VACCINATION IN CHILDREN WITH CYSTIC FIBROSIS

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Background

Annual influenza vaccination is recommended in cystic fibrosis (CF) patients, since viral infection can cause pulmonary deterioration. We wondered if there is less effectiveness of influenza vaccination in CF patients, because we still encounter influenza infections on a regular basis.

Methods

Observational data on influenza infections in our CF reference centre paediatric patients (0-18 years) confirmed by PCR during 2 seasons (2014/2015, 2015/2016) are given. All children were vaccinated, in the first season with a trivalent inactivated influenza vaccine (Influvac S, containing a A/California/7/2009 (H1N1) pdm09-like strain, a A/Texas/50/2012 (H3N2) like strain and B/Massachusetts/2/2012 (Yamagata lineage virus) like strain) and the second season with a quadrivalent inactivated Influenza vaccine (Alpharix tetra, containing a A/California/7/2009 (H1N1) pdm09-like strain, a A/Switzerland/9715293/2013 (H3N2)-like strain, B/Phuket/3073/2013 (Yamagata lineage virus) and B/Brisbane/60/2008 (Victoria lineage virus)).

Results

In the 2014/2015 influenza season, there were 9 influenza cases reported in 77 paediatric CF patients (11,7%), 7 influenza A cases and 2 influenza B cases. In the 2015/2016 influenza season there were 5 influenza cases reported in 75 paediatric CF patients (6,7%), 2 influenza A and 3 influenza B cases. One patient had an influenza infection in both seasons.

Conclusions

From our data the effectiveness of influenza vaccination does not seem to be less in CF paediatric patients than in the general population (estimated 19% for the 2014-2015 season in the National Influenza Centre Belgium report).

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-1307

LISTERIA MENINGITIS IN A CHILD WITH PRKCD GENE DEFECT

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Title of Case(s)

Listeria meningitis in child with 2 mutations in PRKCD gene.

Background

Listeria monocytogenes (LM) as a cause of meningitis is most commonly seen in neonates, the immunosuppressed and older adults. It is a Gram-positive, facultative intracellular bacterium, and in the immunocompetent host may cause a self-limited febrile gastroenteritis after ingestion of large amounts of the organism.

Protein Kinase C delta (PRKCD) gene defect has been identified in 8 children worldwide and results in varying degrees of infection, autoimmunity and lymphoproliferation. The clinical pictures are of autoimmune lymphoproliferative syndrome (ALPS) type 3, or systemic lupus erythematosus (SLE).

Previous research has shown that PKC δ -deficient mice were highly susceptible to *Listeria monocytogenes* infection with increased bacterial burden, uncontrolled bacterial growth and enhanced histopathology.

Case Presentation Summary

A nine month old presented to the emergency department with diarrhoea, vomiting and significant systemic upset. A full septic screen was performed. Cerebrospinal fluid (CSF) showed 96 white cells (80% lymphocytes) and cultures grew *Listeria monocytogenes*. The child had a background history of intermittent bloody diarrhoea with chronic adenovirus and astrovirus in stool. He was being investigated for cow's milk protein intolerance but was generally thriving. In the subsequent months he developed autoimmune haemolytic anaemia and immune thrombocytopenia followed by enterococcus blood stream infection. Ongoing investigations revealed high IgM (5.9) low IgG and subsequently two heterozygous mutations in the PRKCD gene were found.

Learning Points/Discussion

Listeria meningitis outside of the neonatal period requires immunological investigation. This case shows that the defect in macrophage killing defect identified in prkcd mice, is likely to apply in human PRKCD deficiency. Further work is being done to confirm this.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-1309

ADENOVIRUS DIAGNOSIS DOES NOT RULE OUT KAWASAKI DISEASE

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Background

Adenovirus respiratory infection can present with some clinical signs that mimics Kawasaki disease (KD). Some years ago, it was suggested that adenovirus rapid test kits can be used to confirm adenovirus infection and rule out KD in febrile children. On the other hand, respiratory pathogens are identified in 30% of children with KD and adenoviruses are frequently identified. Development of coronary arterial lesions (CAL) is the only sign that confirms KD without any doubtful.

Methods

Adenovirus diagnostic tests results were reviewed in patients treated for acute phase KD in our institution from 2004 to 2016. Diagnostic methods used in respiratory samples were cell culture, rapid test and polymerase chain reaction (PCR).

Results

We found 75 patients with one or more diagnostic test for adenovirus. Tests were positive in 13 patients (17%). Culture was positive in none, respiratory sample rapid test in 12 patients and PCR in 1 patient. Three of the 12 patients with positive adenovirus rapid test had simultaneous PCR, it was negative in all. All patients but one, fulfills criteria for complete or incomplete KD.

Of the 13 patients with one positive test for adenovirus, 7 developed CAL (54%). CALs were giant aneurisms in two patients, mild to moderate aneurism in 4 patients and transient coronary ectasia in one.

Conclusions

Adenovirus infection tests do not rule out Kawasaki disease. Patients with positive result for adenovirus infection but clinical picture of KD must receive treatment for KD without delay. Patients with KD and positive test for adenovirus infection had a high incidence of severe coronary arterial lesions.

21B. SCIENCE: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-1310

TOXOPLASMA GONDII RELATION TO FOCAL SEIZURES IN LIBYAN CHILDREN

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Background

Toxoplasma gondii (TG) is an intracellular protozoan parasite. Most human infections with TG are asymptomatic, but CNS infection can potentially cause neurologic syndromes. TG has been suggested as a possible etiologic agent of epilepsy of unknown origin.

Methods

A total of 298 children were recruited over one year period. Age ranged from 6 to 17 years. Children with epilepsy (148) were recruited at National Epileptic Centre. Only patients with cryptogenic (92) or symptomatic epilepsy (56) were selected. All had head MRI or CT. . Control non epileptic children (150) were recruited at a tertiary care hospital. Epidemiological data were surveyed with a questionnaire given to each child's parent or legal guardian. Clinical data were obtained from medical records. Blood samples were studied for the presence of anti-TG IgG antibodies (Chorus Toxoplasma-IgG, DIESSE).

Results

There were no significant differences in prevalence of TG between Cryptogenic epilepsy, Symptomatic epilepsy and Control non-epileptic children (35%, 29% and 29% respectively). 22% of patients diagnosed as Cryptogenic epilepsy had moderate intellectual disability. Cryptogenic epilepsy patients without moderate intellectual disability, had a significant higher prevalence of TG seropositivity than Controls (45% vs 29%, $p < 0.05$).

Within epileptic patients, factors related to TG seropositivity (type of epilepsy, type of seizures, control of seizures, age, sex, age at onset) were studied by stepwise logistic regression. Focal seizures were independently related to TG infection (odds ratio 3.3). Patients with focal seizures, cryptogenic epilepsy and without intellectual disability, had anti-TG IgG in 69% of cases.

Conclusions

Focal seizures were related to toxoplasma gondii infection in Libyan epileptic children. Patients with a higher prevalence of toxoplasmosis were those with focal seizures, cryptogenic epilepsy and without intellectual disability.

Clinical Trial Registration (Please input N/A if not registered)

N/A

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1312

INVASIVE MENINGOCOCCAL DISEASE IN NEONATES: ENGLAND, 2011-2015

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Background

Invasive meningococcal disease (IMD) is a major cause of meningitis and septicaemia worldwide, with the highest incidence reported in the first five years of life. IMD is rare in the neonatal period (within the first month of life). Here we describe the epidemiology, clinical characteristics and outcomes of neonates with confirmed IMD in England during 2011-15.

Methods

Public Health England (PHE) conducts enhanced national IMD surveillance in England, confirmed cases since January 2011 are routinely followed up by requesting GPs to complete a short questionnaire for each case.

Results

Between January 2011 and August 2015, there were 18 laboratory confirmed cases of IMD in neonates, accounting for 0.5% (n=3471) of IMD cases in England, with an average annual incidence of 0.5 per 100,000 live-births or 6.5/100,000 neonates. One third (6/18) had an early onset of IMD (<7 days; range 1-6 days) the remainder developed disease after the first week of life. Serogroup B IMD (MenB) was responsible for 83.3% of all cases (15/18). One neonate had reported congenital heart disease and another was born prematurely (34 weeks). Four neonates (22%) – all with MenB disease – required intensive care, including one born prematurely. Septicaemia was the most common clinical presentation (50.0%; 9/18) followed by meningitis (27.8%; 5/18), and the combined presentation of meningitis and septicaemia (16.7%; 3/18). One child died and was diagnosed with non-groupable disease at post-mortem.

Conclusions

In England, *Neisseria meningitidis* is an uncommon cause of bacterial meningitis and septicaemia in neonates, but its annual incidence is similar to toddlers and five times higher than adolescents. Rapid recognition and early treatment with appropriate supportive care is critical to reduce the morbidity and mortality associated with this devastating condition.

22A. EDUCATION: OTHER

ESP17-1313

GONOCOCCAL ORBITAL CELLULITIS

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Title of Case(s)

GONOCOCCAL ORBITAL CELLULITIS

Background

Orbital cellulitis (OC) is a common finding in paediatrics, usually resulting from sinus or dental infections, trauma or conjunctivitis. Here we present a previously healthy adolescent with gonococcal orbital cellulitis, probably secondary to autoinoculation of gonococci from urethral exudate.

Case Presentation Summary

A previously healthy 17-year-old boy presented with a 4-day history of conjunctival hyperemia, purulent discharge and periorbital swelling of the right eye, showing no clinical improvement despite topical chloramphenicol. On the day of admission, he developed ocular pain and photophobia.

On examination, he was afebrile, presented periorbital swelling and proptosis of the right eye, with chemosis, purulent discharge, hyperemia and conjunctival petechiae. The ocular movements were maintained, but painful. He also mentioned purulent urethral discharge for 3 weeks. The CT scan of the orbits revealed post-septal extension of the inflammatory process affecting extra and intra-conical fat.

Though denying unprotected sex, a gonococcal aetiology was hypothesised for both urethritis and OC. He was started on intravenous (IV) ceftriaxone and topical levofloxacin. He was also given a single dose of oral azithromycin for a potential chlamydia coinfection. The cultures from both conjunctival and urethral swabs identified a non-penicillinase-producing strain of *Neisseria gonorrhoeae*. The polymerase chain reaction for *Chlamydia trachomatis* in the urethral discharge was also positive. Blood cultures remained sterile. He was discharged after completing an 8-day course of IV and topical therapy, with regression of ocular inflammatory signs and urethral exudate. He showed no sequels on follow-up after 3 months. HIV and syphilis serologic tests were negative.

Learning Points/Discussion

Gonococcal orbital cellulitis is a rare manifestation in the paediatric age, especially outside the neonatal period and in immunocompetent children. However, this aetiology should not be forgotten, particularly in sexually active adolescents.

21B. EDUCATION: ZONOSIS, VECTOR-BORNE AND EMERGING INFECTIONS

ESP17-1317

MULTIFOCAL OSTEOMYELITIS DUE TO COXIELLA BURNETII IN CHILDREN: CASE REPORT

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Title of Case(s)

Multifocal osteomyelitis due to *Coxiella burnetii*: case report

Background

Q fever is a bacterial zoonosis caused by *Coxiella burnetii* and is a rare cause of multifocal osteomyelitis in children.

Case Presentation Summary

A 13-year-old girl presented with a 3-month history of intermittent night pain of the left shoulder. She reported no local trauma and denied fever or any systemic symptoms. Born in Somalia, she arrived in Belgium 4 years earlier and her medical history was unremarkable. Physical examination was normal except for a soft moderately enlarged left axillary lymph node. There was any inflammatory syndrome in the biology. Tuberculin skin test showed a 12-mm induration, IGRA revealed negative to *M. tb.* antigens. Imagery revealed proximal lesion of the left humeral great trochanter. A PET-CT revealed the presence of multifocal bone lytic lesions and uptake in left pelvis lymph nodes. Histological examination of humeral bone lesion showed the presence of tuberculoid non caseating inflammatory granulomas. Direct smear, PCR and culture revealed negative for *Mycobacterium tuberculosis* and for any other bacteria and fungi. Serological titers for *Coxiella burnetii* revealed: phase I IgM of 1:128, phase I IgG of 1:256. One month later, these titers were as follow: phase I IgM of 1:64, phase I IgG of 1:256. PCR testing for *Coxiella burnetii* revealed weakly positive on lymph node material. Six months later, she remained symptoms free and a control MRI showed resolution of pelvic abnormality and a decrease of the humeral lesion size.

Learning Points/Discussion

Chronic Q fever osteomyelitis is rarely described in children and might be underdiagnosed because of less frequent symptoms than in adult and spontaneous resolution in several cases. The diagnosis should be considered in cases of multifocal osteomyelitis, especially if granulomatous lesions are demonstrated.

22A. EDUCATION: OTHER

ESP17-1318

RECIDIVANT HERPETICUM ECZEMA IN PATIENT WITH SERIOUS ATOPICAL DERMATITIS

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Title of Case(s)

RECIDIVANT HERPETICUM ECZEMA IN PATIENT WITH SERIOUS ATOPICAL DERMATITIS

Background

Atopic dermatitis (AD) is a chronic inflammatory skin disease with incidence of up to 20% of the pediatric population. Up to 30% of children with AD can associate severe complications, mainly related to skin superinfections. Herpeticum eczema (HE) is the cutaneous spread of herpes simplex virus (HSV) in patients with AD. Its diagnosis is essentially clinical and requires early initiation of intravenous acyclovir treatment due to it is a potentially serious complication.

Case Presentation Summary

2-year-old girl with severe AD who entered due to fever, affectation of general condition and worsening of skin lesions. Personal history: repetitive bronchospasms, sensitization to walnut and cow's milk, DA from the first months of life, with poor control despite multiple therapies (corticosteroid, antihistamine, topical vaseline). It was previously treated with topical anticalcineurin inhibitor and oral cyclosporine, without response, presenting numerous exacerbations. Physical examination: Appearance of umbilicated and disseminated papulo-vesiculous lesions in the neck and thorax, which later formed a very painful cellulitis plaque (1st hospital income). One month later, she incomed with edema and swelling of the eyelids with impossibility of ocular opening and periorbital lesions. Cutaneous cultures were positive for HSV-1. She was diagnosed by recidivant HE. Lesions improved after intravenous aciclovir and topical antibiotic to prevent overinfection. Genetic study has been requested to discard filaggrin gene mutations.

Learning Points/Discussion

HE is an acute and severe complication of patients with severe/refractory AD. It is important the early recognition of this entity, since it can associate systemic symptomatology and extensive cutaneous involvement, with risk of bacterial overinfection. In literature, its occurrence is related to cases of severe AD, treatment with calcineurin inhibitors and, more recently, mutations in filaggrin gene.

06B. EDUCATION: DIAGNOSTIC TOOLS

ESP17-1319

AUDIT ON THE USE OF BACTERIAL PCRS IN A PERIPHERAL PAEDIATRIC UNIT IN IRELAND

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Background

Febrile illness is a common childhood emergency department presentation, yet it remains a diagnostic challenge. PCR is a widely used diagnostic tool in suspected serious infections. Combination of culture and PCR identify more pathogens than either of them alone. PCR value is only realized when appropriately applied. Peripheral units without PCR processing facilities face long turn around times and added cost of transporting samples. National guideline from The Irish Meningococcal and Meningitis Reference laboratory was used as standard.

Methods

We collated a list of patients who had bacterial PCR requested on serum and CSF from January 2012 - December 2016. Patient's medical charts were examined and the following information was elicited; demographic data, indications for PCR, turn around time and the impact of results on further management.

Results

Both the amount of PCR samples and positive results doubled over the last 4 years. Overall positivity rate was 2.3%. CSF samples were not compliant with the national guideline in over half of requests. Two thirds of results were received within 72h. All positive PCRs were communicated within 24 hours. Majority of patient's treatment changed or they were discharged following the results. Management of one quarter of patients remained the same as they were already on correct treatment. One tenth of patients were discharged home before the result of PCR was available.

Conclusions

This audit shows potential for rationalization of PCR requests. Improving compliance with National Guidelines will optimize resource management. While we can assess PCRs that were requested and speculate whether they were appropriate, we cannot comment on missed opportunities for PCR requests.

01A. EDUCATION: ANTIMICROBIAL STEWARDSHIP

ESP17-1320

THE USE OF INTRAVENOUS AMOXICILLIN IN INFANTS 0-90 DAYS OF AGE: A CHILDREN'S HOSPITAL EXPERIENCE IN THE UNITED KINGDOM (UK).

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Background

In the United Kingdom (UK), the empiric antibiotics recommendations for all young infants 0-90 days old include a combination of amoxicillin and cefotaxime. However, listeria (resistant to cephalosporins) is rare beyond the neonatal period. Our study aim was to describe the use of amoxicillin in young infants.

Methods

Routinely collected electronic prescribing data for all infants 0-90 days old who were given intravenous amoxicillin as part of a combination therapy between 1 August 2015 and 31 July 2016 in our hospital were analysed.

Results

191 infants were empirically started on intravenous amoxicillin [(n=95, 50%; 0-30 days) and (n=96, 50%; 31-90days)]. The median age (IQR) was 30 days (11-48).

The 96 infants who were 31-90 days of age represent 1.6% of 6009 live-births at the Trust and 4.4% of the 2197 attendances [(n=1105, 50%; 0-30 days) and (n=1092, 50%; 31-90 days)] to the children's emergency department in this age group during the period under review.

Infants 31-90 days old received a total of 912 doses of intravenous amoxicillin [median (IQR) 7 doses (6-12), mean 10 doses] and median length of hospital admission (IQR) was 3 days (2-5).

Assuming this busy children's hospital to be representative of national practice and extrapolating this to the 776 552 UK 2015 live-births suggests that 12425 infants aged 31- 90 days might have received 124250 doses of intravenous amoxicillin per year.

Conclusions

There is a high burden of intravenous amoxicillin use among infants 31-90 days old in the UK equating to half of the infants 0-90 days old receiving this antibiotic. Urgent update of the UK recommendation is necessary in order to bring it in line with current evidence, that of other developed countries and for robust antibiotic stewardship.

19C. EDUCATION: TUBERCULOSIS AND OTHER MYCOBACTERIAL INFECTIONS

ESP17-1322

CONCORDANCE BETWEEN THE TUBERCULIN SKIN TESTING (TST) AND QUANTIFERON-TB-GOLD® (QTF) FOR THE DIAGNOSIS OF TUBERCULOSIS INFECTION IN CHILDREN

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Background

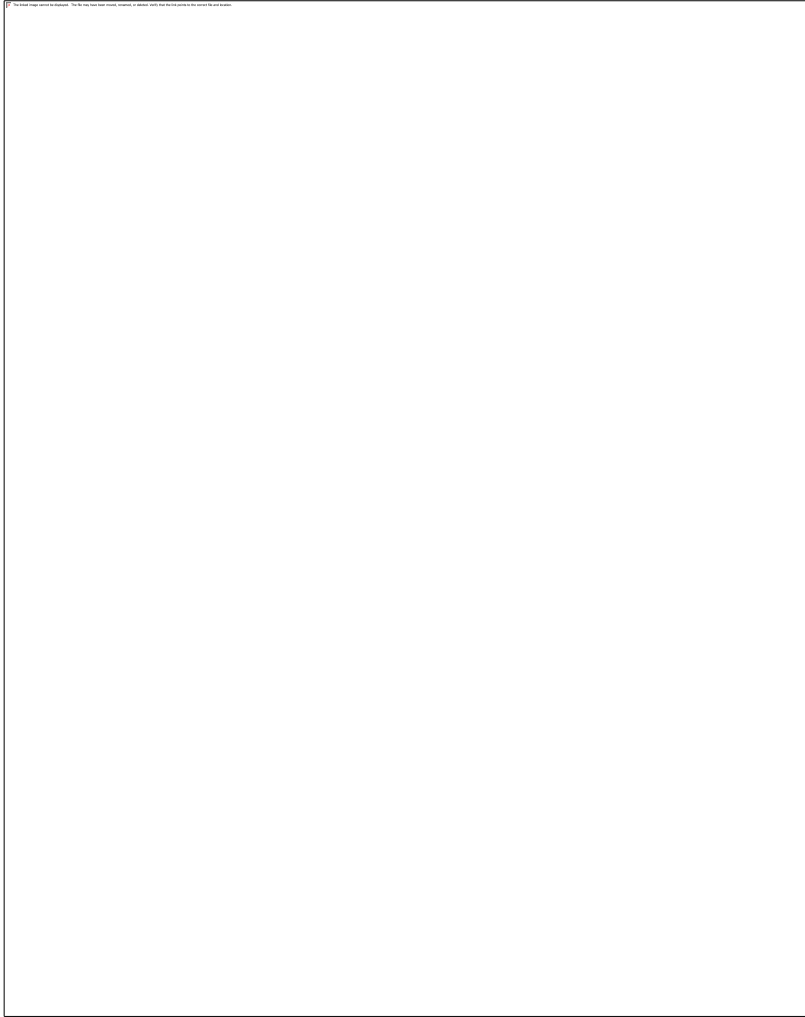
TST is the standard test for the diagnosis of tuberculosis infection, but interferon-gamma release assays (IGRAs) have shown to be a suitable alternative with similar sensitivity and greater specificity. IGRAs are especially useful in BCG-vaccinated children and in those with congenital or acquired immunodeficiencies, who are at high risk of having negative TST. The aim of this study was to compare the performance of TST with QTF in the diagnosis of pediatric tuberculosis infection in our setting.

Methods

Observational, descriptive, retrospective study of children at risk of tuberculosis infection evaluated in our Pediatric Infectious Diseases clinic between March 2011 and September 2016. TST and QTF were performed in all patients with suspected tuberculosis infection per protocol. QTF and TST results were considered concordant if they were both positive (positive concordance, PC) or both negative (negative concordance, NC), and discordant (DC) if the result was different

Results

A total of 364 patients were evaluated. The overall concordance was: 63% PC, 87.9% NC and 17% DC. Children younger than 5 years had a higher proportion of discordant results with PC 51%, NC 85.9% and DC 21% compares to children older than 5 years (PC 70%, NC 89.8%, DC 14%). In children BCG-vaccinated, the proportion of discordant results was the highest (38% PC, 100% NC, 36.7% DC), whereas in immunocompromised patients this proportion was the lowest (PC 25%, NC 83.3%, DC 6.5%).



Conclusions

In our setting, the use of QTF may increase the diagnostic yield of TST in children with suspected tuberculosis infection, especially in those younger than 5 years and BCG-vaccinated. Immunocompromised children may also benefit further from this test. Therefore, QTF may reduce the need for secondary prophylaxis.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-1324

THINKING IN ENTEROVIRUSES: MENINGOENCEPHALITIS WITH PERIPHERAL FACIAL PARALYSIS DEALING WITH A BOY ADMITTED IN A REGIONAL HOSPITAL

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Title of Case(s)

Thinking of enteroviruses: meningoencephalitis and facial paralysis associated

Background

Recently, there have been increasing reports of outbreaks caused by non-polio enteroviruses. Young children are at particular risk of severe infections. Clinical manifestations vary from nonspecific febrile symptoms to a potentially life-threatening illness, such as this case shows.

Case Presentation Summary

A sixteen-month-old boy with fever (38.3°C), petechial rash and vesicular lesions in the soft palate, was referred to our hospital. There was no remarkable past medical history. Blood tests were normal.

On admission, fever persisted, associated with a progressive impairment of his neurologic condition with drowsiness, ataxia and right peripheral facial paralysis. Cerebrospinal fluid (CSF): 68 leukocytes/mm³, 18% polymorphonuclear.

The child was transferred to PICU due to the suspicion of rhombencephalitis, where acyclovir, ceftriaxone, ampicillin and immunoglobulin were started. He developed medulla oblongata involvement with slobber, and corticoids were added.

Blood and CSF bacterial cultures were sterile, CSF PCR (polymerase chain reaction) for VHS1, VHS2, VHH6, VVZ and enterovirus were negative. However, enterovirus A71 was identified by PCR amplification and nucleotide sequencing in the nasopharyngeal aspirate, but not in the rectal swab. According to that, fluoxetine was added, because of the severe initial impairment.

Brain magnetic resonance imaging (MRI) showed alteration of the signal in brainstem and right middle cerebral peduncle and linear leptomeningeal enhancement in spinal cord, suggesting meningoencephalitis. Electroencephalogram and echocardiogram were normal.

The child gradually improved, with disappearance of the fever and the neurologic symptomatology, except for a minor peripheral facial paralysis at discharge.

Learning Points/Discussion

Enterovirus A71 is considered an emerging virus associated with epidemics. The most common neurologic complication is aseptic meningitis, followed by brain stem encephalitis, acute flaccid paralysis and encephalomyelitis. Thus, the consequences are generally more serious than seen with other enteroviruses.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1325

EMERGENCE OF COMMUNITY-ASSOCIATED METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS AS A CAUSATIVE AGENT OF SKIN AND SOFT TISSUE INFECTIONS IN CHILDREN IN NORTHERN SPAIN

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Background

Community-associated methicillin-resistant *Staphylococcus aureus* (MRSA) infections are increasing; a growing concern is the emergence of MRSA infections in patients with no apparent risk factors being the skin and soft tissues infection (SSTI) the most frequent manifestation. The study aim was to determine the incidence of MRSA in hospitalized children with SSTIs in an area in the northern Spain

Methods

A retrospective descriptive study was performed on children (0-14 years of age) hospitalized in Marques de Valdecilla Hospital (Santander, Spain) due to SSTIs during 2011-2015. Epidemiological and clinical characteristics, microbiological isolates, treatment and outcome were analyzed. Data were collected from medical records.

Results

Over the study period 139 SSTIs were identified, occurred in 129 individuals. Only 69 lesions (49.6%) were swabbed for culture and sensitivity. *Staphylococcus aureus* was isolated in 42 of the cases (30.2%), of which 23 were MRSA (23/42, 54.8%). Other isolates were *Streptococcus pyogenes* (3.6%), most after chicken pox infection, and 1 case of *Pasteurella canis*.

Among SSTIs, the MRSA prevalence rate was 4.2%, 3.7%, 14.3%, 6.1% and 48.5% in 2011, 2012, 2013, 2014 and 2015, respectively. Most of MRSA cases were in 2015 (16/23, 69.6%).

Of the MRSA SSTIs, the median age was 2.5 years (IQR 1.5-5.3); 74% were women. The median length stay was 5.5 days (IQR:4.0-6.2) and the median duration of antibiotic treatment was 10 days (IQR: 9-13). Patients with MRSA SSTIs had longer length stay ($p=0.010$) and longer antibiotic treatment duration ($p=0.001$) than patients with no MRSA isolates.

Conclusions

An increased prevalence of community-associated MRSA SSTIs in children was observed in out setting.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1326

ELEVATED CA 125: A NEW PARADIGM OF GENITAL INSULT IN PERITONEAL TUBERCULOSIS ?

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Title of Case(s)

ELEVATED CA 125: A NEW PARADIGM OF GENITAL INSULT IN PERITONEAL TUBERCULOSIS ??

Background

**Genital , specially adnexal, lesions are not uncommon during peritoneal tuberculosis.
We present a peculiar case of an ovarian insult along with ascites**

Case Presentation Summary

A teenager girl aged 13 is admitted for a history of 6-month secondary amenorrhea with fever and pain in the right lumbar region.

A complete and prompt investigation reveals an ovarian cyst at right with localized, reactional ascites ; while biology depicts a marked inflammatory state with highly positive CA 125

TB-Interferon, as well as Tuberculin tests are positive

A further puncture of the peritoneal liquid confirms the presence of mycobacterium tuberculosis

According to the national program, the patient is put under specific antibiotics along with steroids for 6 weeks. After completion of her mandatory 18 month regimen, the teen is free from any clinical, biological or radiological (ultrasonography) abnormality

Regular clinical, serological and sonographic controls denotes a complete remission within 9 months. The patient is progressively transferred to adult gynecology .

Learning Points/Discussion

Monitoring such organ-specific complications of tuberculosis in endemic areas may deserve special attention giving the potential aggression for future fertility.

CA-125 could be explored as a potential biomarker of adnexal insult.

05A. EDUCATION: CONGENITAL DISEASES

ESP17-1327

KNOWLEDGE, ATTITUDE AND PRACTICE OF PRENATAL GENETIC TESTING AMONG PREGNANT WOMEN ATTENDING ANTENATAL CLINICS IN AMUWO-ODOFIN LOCAL GOVERNMENT AREA OF LAGOS STATE

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Background

Although genetic testing has been used as a successful tool in combatting chromosomal abnormalities in countries where it is available and accessible and has contributed to the reduction of maternal and infant mortality, studies done in Nigeria show that it has not yet been incorporated into the routine antenatal screening done in many antenatal clinics in Nigeria making this service unavailable to most women.

Pregnant women should be aware of these tests as they are the most affected by decisions concerning the health of their unborn children.

Methods

This was a descriptive cross-sectional study among 327 pregnant women who attended antenatal clinics at three different healthcare facilities in Amuwo-Odofin which were selected by convenience.

Consecutive sampling methodology was used to recruit the respondents and data was collected using assisted self-administered questionnaires which tested their knowledge of genetic diseases, knowledge of prenatal genetic testing, attitudes to testing and use of tests.

Data was analyzed using Epi info 7.2 statistical software. Chi-square tests and Fisher's exacts were used to test association. P value of <0.05 was considered statistically significant.

Results

Respondents were mostly in the age range of 29-38 years (56.9%), were married (99.3%) and had had post-secondary education (42.2%).

Majority (43.7%) of the respondents were experiencing their first pregnancy, (94.8%) had no previous pregnancies with a genetic condition and no relatives with a genetic disease (97.3%). The respondents had poor knowledge of genetic diseases and prenatal genetic testing (91.4%). Majority (83.8%) of the respondents had poor attitudes to prenatal genetic testing. Only 4.9% of the population had good practice of prenatal genetic testing.

Conclusions

Participants had poor knowledge, negative attitudes and poor practice of prenatal genetic testing. Therefore, more education is encouraged.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-1329

A CASE OF EBV-ASSOCIATED PANCYTOPENIA AFTER MMR VACCINATION

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Title of Case(s)

A case of EBV-associated pancytopenia after MMR vaccination

Background

Pancytopenia is often a diagnostic challenge. Infections and vaccines are possible etiologies. We report the case of pancytopenia during an Epstein Barr Virus (EBV) infection after a vaccine.

Case Presentation Summary

A 12-months-old, previously healthy child presented with fever, a petechial rash, a hemorrhagic blister and severe epistaxis, six hours after measles-mumps-rubella (MMR) and anti-meningococcal-C vaccination. His mother had a rash of unknown etiology and he did not have any other contact with infections and received no medication. No other symptom or alteration on clinical examination. The blood count showed severe pancytopenia. He was treated with ceftriaxone, IV immunoglobulin and platelet transfusion. Abdominal ultrasound, coagulation studies, coombs test, serum immunoglobulins and autoimmune screening were normal, blood and bone marrow (BM) cultures negative. Bone marrow aspirate and biopsy only showed reactive changes. Polymerase chain reaction for EBV in blood and marrow was positive (4.6×10^5 copies/mL). Ten days later, the pancytopenia resolved and the patient was discharged.

Learning Points/Discussion

EBV, most usually associated with lymphoproliferative diseases presented here with pancytopenia. Previous vaccination might have contributed to the severity of this case.

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-1333

THE MISSING 40,000: EVALUATING PROGRESS OF UNIVERSAL COVERAGE OF ISONIAZID PREVENTIVE THERAPY (IPT) AMONG ELIGIBLE CHILDREN EXPOSED TO TB PATIENTS IN NIGERIA

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Background

: IPT is a key public health intervention for the prevention of TB among children exposed to bacteriologically confirmed TB patients. The implementation of IPT in children is considered difficult in p 2L484oor resource settings due to incomplete screening and contact investigation. Hence, Isoniazid Preventive therapy for children is generally underutilized. In 2015, the NTPLCP introduced task shifting policy and simplified TB screening algorithm for general health care workers. The objective of the study is to evaluate progress in universal access of children to IPT after these policy interventions.

Methods

Reports of the Nigeria National Tuberculosis and Leprosy Control Program (NTBLCP) for 2014 and 2015 were analyzed and compared. Data was analyzed using descriptive and inferential statistics.

Results

In 2015, 9,018 (87%) were screened for TB among which 7,380 (82%) were found to be eligible for IPT and only 6,254 (85%) were eventually placed on IPT. A total of 9,018 exposed under 6 years were screened for TB compared with 8,229 screened for TB in 2014. Under 6 years children placed on IPT also rose from 3,811 in 2014 to 6,254 in 2015. The 6,254 children on IPT represented only 13% of the projected figure of 47,000 children who needed IPT in 2015 leaving over 40,000 unreachable.

Conclusions

The NTPLCP in Nigeria has made progress from 2014-2015 towards improving access to IPT for eligible children less than 6 years. However much effort still need in expanding contact tracing intervention to all households with children exposed for improved screening and identification of eligible children for IPT.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-1335

FEVER AFTER A JOURNEY

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Title of Case(s)

FEVER AFTER A JOURNEY

Background

Malaria is a tropical disease that can be detected in our environment due to international journeys. Every child with fever after a journey to endemic regions should undergo thick blood smear testing.

Case Presentation Summary

Two year black child with high fever(39.3°C)lasting 7days, decay and progressive poor performance status. Born in Spain, but recently returned from his first trip to Nigeria. Sample for blood analysis and thick blood smear was obtained, showing positive result for *Plasmodium falciparum*(3% parasitaemia), severe thrombocytopenia(7000 platelets/microliter), hemoglobinemia11.3 g/dl and elevation of acute phase reactants. Initial treatment consists of fluids, platelet transfusion and intravenous Quinine (despite his situation does not fulfill severe malaria criteria), since a subsequent worsening is suspected (young infant, primary infection, not previously immunized and no adequate pre-exposure prophylaxis). Within the first hours, he shows haemodynamic instability, metabolic acidemia, decrease in hemoglobin concentration and liver dysfunction. He requires admission to the Pediatric Intensive Care Unit, oxygen administration, a central venous line for vasoactive drugs, invasive blood pressure measurement and urinary catheterization. Neurologically, he alternates phases of irritability and drowsiness, with significant improvement from day4. Serial electrocardiography helps discard toxicity due to Quinine; complete blood count and determination of parasitemia (maximum level of 10%, decreasing to 3% and turning negative 3days after admission) are also tested. After two days with intravenous Quinine (which was initiated in the absence of better alternative treatment in our hospital), it is changed with intravenous and subsequently oral Artemether. Favorable posterior outcome.

Learning Points/Discussion

Black children born in our environment are highly susceptible to severe malaria, since they lack previous immunity, they travel to the countries of origin without or with inadequate prophylaxis and relatives are not conscious of potential risk.

02B. EDUCATION: ANTIMICROBIALS: RESISTANCE AND PHARMACOLOGY

ESP17-1337

THE POTENTIAL ROLE OF FOSFOMYCIN IN NEONATAL SEPSIS CAUSED BY MULTIDRUG RESISTANT BACTERIA

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Background and Objective

Fosfomycin's broad-spectrum activity, including against multi-drug resistance strains, has led to renewed interest in its use in recent years. Neonatal sepsis remains a substantial cause of morbidity and mortality at a global level, with multidrug resistant Gram-negative bacteria (MDRGNB) playing an increasing role.

Data on fosfomycin use in neonates are limited. We summarise current knowledge of the pharmacokinetics and clinical outcomes for use of fosfomycin in neonatal sepsis.

Methods

A Pubmed search was conducted using the search criterion "fosfomycin AND neonat*" to review data on fosfomycin therapy in neonates. We then cross-referenced this with recent evidence on the susceptibility of multidrug resistant strains to fosfomycin to evaluate the extent to which fosfomycin combination therapy might be effective in resistant organisms.

Learning Points Discussion

Four studies describing the PK of IV fosfomycin, primarily in full term neonates, were found between 1977-2009. In addition three studies were retrieved that described the successful use of fosfomycin in Gram-negative neonatal sepsis:

its use as monotherapy for a cohort of 43 neonates with *E. coli* enterocolitis, combination therapy with tobramycin/gentamicin and one case report of meropenem combination therapy for successful treatment of intracranial *Citrobacter* infection.

Conclusions:

1. The effects of prematurity or body weight on the pharmacokinetics of fosfomycin are currently difficult to describe because of very sparse data. Clearly, additional PK data are needed in newborn infants with varying gestational and postnatal ages to improve this lack of information
2. The exact role of fosfomycin in different combination therapies needs to be investigated
3. Formulations appropriate for use in the newborn infant need to be developed

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-1338

HOSPITAL ADMISSIONS DUE TO INFLUENZA A (H1N1) VIRUS INFECTION: 7 YEARS AFTER THE FIRST PANDEMIC

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Background

Pandemic Influenza A (H1N1) virus emerged on Portugal in October 2009 and ever since has been in circulation. Our aim was to characterize prolonged (>72hours) hospital admissions due to H1N1 infection.

Methods

Retrospective analysis of the hospital admissions due to H1N1 infection, confirmed by Rt-PCR, in a Pediatric Ward between July 2009 and December 2016.

Results

Forty eight patients were admitted, 52% male, 50% under 2 years of age. Two peaks were registered: 2009 (12 cases, 25%) and 2016 (21 cases, 44%). There were no admissions in 2010 and 2012. The main clinical manifestations were fever (93%), respiratory (92%), gastrointestinal (23%) and neurological (10%) signs and symptoms. There were comorbidities in 67%, mainly chronic respiratory disease (69%), namely asthma (55%). The main reasons for admission were hypoxemia (88%) and feeding problems (56%). Admissions had a median duration of 8 days (3–38). Pneumonia was the most frequent (92%) diagnosis. There were two cases of encephalitis. Oseltamivir was received by 88%, oxygen therapy by 90%, and 15% had invasive ventilation. The main complications were presumed bacterial superinfection (67%), atelectasis (8%) and pleural effusion (6%). There was one case of septic shock and 3 cases of seizures. Twelve (25%) were admitted to the intensive care unit, 9 with other comorbidities. Although there were no deaths, there are two patients with neurological sequelae. Most children that belong to a risk group for this infection had not been vaccinated.

Conclusions

The highest number of cases occurred in the 2015-2016 season, showing that H1N1 virus remained in circulation. It can cause a high level of morbidity especially in chronic patients. Diagnosis must be suspected so that early anti-viral therapy and measures to control the infection can be introduced.

22A. SCIENCE: OTHER

ESP17-1339

REDUCING THE RISK OF INFECTIOUS DISEASES IN POST-DISASTER SITUATIONS

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Background

In post-disaster situations contaminated drinking water is a common cause of infectious diseases with the children.

Methods

The study involves 4 populated from Skopje region in the Republic of Macedonia affected by flash flood on August 6, 2016. Affected were villages: Stajkovci, Aracinovo, Smilkovci and Cento with 39784 residents. In the resulting floods 22 humans including 3 children died and more than 1000 people were evacuated from their homes. One 16 month child still missing. Died children were from the age of 2, 8 and 12 year old. Analytic and descriptive methods have been used for data processing.

Results

In the summer of 2016 large flash flood occurred in Skopje region with a total of 39 784 inhabitants, of which 32% are children. Floods killed 22 people including 4 children (18,18 %). Frequent fall out of floods, especially when they occur in the heat of the summer, are water-borne diseases. Immediately after the natural disaster preventive measures were taken to reduce the occurrence of an infectious disease. Prohibit the use of drinking water, the population was divided bottled water and water tanks. The inhabitants were trained about some hygienic and epidemiological measures. Flooded houses were cleaned and disinfected. Dead livestock was remove and terrain was clean. Due to the timely take measures from the competent authorities' diarrhea and vomiting symptoms appeared only 39 people- 0.1 %, and hepatitis A later appeared only 3 people.

Conclusions

Risk assessment is essential in post-disaster situations and the rapid implementation of control measures. All governmental bodies or public entities are strongly encouraged to address the health risks and hazards in national, regional and community flood management plans and to make appropriate effort to raise public awareness of such risks.

Systematic Review Registration (Please input N/A if not registered)

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1341

ADMISSIONS DUE TO PERTUSSIS IN A REGION OF SPAIN BEFORE AND AFTER VACCINATION OF PREGNANT WOMEN AS A PUBLIC HEALTH STRATEGY: AN OBSERVATIONAL STUDY.

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Background

Since 2011, the annual incidence of pertussis in Spain has remained above the average levels of the last 25 years, despite having high rates of vaccination coverage. New strategies have been designed to try to protect infants younger than 6 months. In this study we analyze the hospitalizations for whooping cough in the main hospitals of the Canary Islands before and after the beginning of the strategy of vaccination of pregnant women in 2015.

Methods

Multicentric, ambispective, observational study including patients admitted with confirmed pertussis by PCR from nasopharyngeal samples between 2011 and 2016. Epidemiological and clinical data were collected and analyzed. The expected hospitalization rates were compared according to the regional incidence of pertussis before and after the start of vaccination in pregnant women.

Results

214 patients under 12 months with PCR positive from three hospitals were recruited. The average age was 2 months (IQR 1-3). 2015-2016 Tdap coverage in pregnant women was 70%, but only 26% of admitted infants had received the vaccine during pregnancy. 87% of infants had less than 2 doses of DTaP. For infants born in 2016, the immunization during pregnancy was statistically related with protection: OR 0.28, 95% CI (0.1-0.8). Prematurity was not statistically associated with PICU admission: OR 1.5, (0.59-3.84). 80% of confirmed pertussis did not meet the clinical case criteria proposed by WHO or CDC.

Conclusions

A high percentage of infants admitted with confirmed pertussis do not meet the classic clinical case criteria. Vaccination of the pregnant woman seems to protect infants from being hospitalized for pertussis.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1342

PNEUMOCOCCAL CONJUGATE VACCINE EVALUATION METHOD FOR RESOURCE-LIMITED SETTINGS: THE LAO PDR EXAMPLE

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Background

The World Health Organization has pneumococcal conjugate vaccine (PCV) impact evaluation guidelines, yet few low-income countries (LICs) can employ the methodologies outlined. In Lao PDR, the 13-valent PCV (PCV13) was introduced in 2013. We describe PCV13 impact methods to augment existing guidelines and describe preliminary findings.

Methods

Hospital-based acute respiratory infection (ARI) and carriage surveillance: In a 3y prospective study of 2-59m old children admitted with ARI, clinical features and PCV13 status are recorded, and a nasopharyngeal (NP) swab is taken. Vaccine effectiveness (VE) against hypoxic ARI was calculated using odds ratios, which were estimated using logistic regression models, adjusted for age, season and time since PCV13 introduction. PCV13 carriage rates were calculated by month.

Community pneumococcal NP carriage surveys: Pre- and two years post-PCV13 carriage surveys of healthy infants too young to be vaccinated and toddlers 12-23m old were undertaken. NP swabs are examined by *lytA* qPCR, with molecular serotyping performed by microarray.

Results

There were 438 children with ARI and 13.5% were hypoxic. Hypoxic ARI was less common in PCV13 vaccinated than unvaccinated children (10.8% vs 19.9%, $p=0.01$). The unadjusted and adjusted PCV13 VE against hypoxic ARI were 0.52 (95%CI 0.14-0.73, $p=0.012$) and 0.35 (95%CI -0.23-0.65, $p=0.185$), respectively. PCV13 carriage

rates are declining in vaccinated children with ARI. Pre-PCV13 carriage rates of PCV13 types were 6.3% and 32.8% in the infants and toddlers, respectively. Post-PCV13 results are pending.

Conclusions

We expect evidence of PCV impact in Laos PDR using this feasible approach for LICs.

Clinical Trial Registration (Please input N/A if not registered)

N/A

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-1343

OCCURRENCE OF PARVOVIRUS B19 INFECTION AMONG PREGNANT WOMEN IN LAGOS, NIGERIA

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Background

Infections with Human Parvovirus B19 have been associated with fetal loss, acute arthritis and arthralgia as well as chronic anemia in immunodeficient persons. Pregnant women infected with B19V have 30% chance of transmission to their foetuses. This study was carried out to ascertain the occurrence of current or recent infections with B19V among pregnant women in Lagos.

Methods

In this study, a commercially available Enzyme linked Immunosorbent Assay Kit (Parvovirus B19 RIDASCREEN biopharma. Germany) was used to analyze 93 serum samples from pregnant women in Lagos aged between 18 and 35 years.

Results

A total of ninety three (93) samples were analysed and 35 samples (37.6%) were positive for virus specific IgM antibody. B19V IgM seropositivity was found among the 26-30 years age group in which 20 samples (44.4%) tested positive. The lowest B19V seropositivity was found among the 16-20 years age group in which no positive sample was recorded. High frequencies of 50% and 30% were recorded among women in their 2nd and 3rd trimesters respectively.

Conclusions

Active infection of B19V among pregnant women exist in Lagos, and the high incidence of this infection among the women in their first and second trimesters of pregnancy may have some serious implications on the outcomes of these pregnancies. Hence, the need to take practical steps to ensure that transmission of B19V is curbed.

22A. EDUCATION: OTHER

ESP17-1344

AETIOLOGY OF URINARY TRACT INFECTION AND ANTIMICROBIAL SUSCEPTIBILITY OF BACTERIA ISOLATED FROM DERBYSHIRE YOUNG INFANTS

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Background

Urinary tract infection (UTI) is a common bacterial infection in young infants. Data on antibiotic resistance of the uropathogens is important for appropriate empiric therapy. Our aim was to use routinely reported laboratory data to define the aetiology and antimicrobial susceptibility in young infants <90 days old over a six-year period.

Methods

Records of all significant positive urine culture in children who were ≤16 years of age by 31 Dec 2016 were extracted. The urine samples were either sent from the General Practitioner (GP) surgery within Derbyshire or the Children's hospital clinical areas from 1 January 2011 to 31 December 2016. Data from young infants <90 days were analysed.

Results

There were 480 episodes of confirmed UTI, median age (IQR) 28days (16-53). Most 424 (88%) were sent from the hospital and 56 (12%) were from the GP.

The causal bacteria were *E. coli* 189 (39%), coliforms 133 (28%), *enterococci* 122 (25%), other bacteria 36 (8%) [Gram negative n=25 and Gram positive n=11]. 54 (44%) of the infants with enterococci UTI were 31-89 days of age.

E. coli samples resistance to frequently used antibiotics were; amoxicillin 42/95 (44%), trimethoprim 47/196 (24%), co-amoxiclav 26/196 (13%), gentamicin 6/196 (3%) and nitrofurantoin 5/196 (3%). For other Gram negative bacteria, 79/87 (91%), 52/194 (19%), 36/194 (19%) and 11/194 (6%) were resistant to amoxicillin, co-amoxiclav, nitrofurantoin and trimethoprim respectively. Only 2/122 (2%) of the enterococci samples tested were resistant to nitrofurantoin.

Conclusions

This comprehensive data covers both in and outside hospital UTIs. Gram negative bacteria especially *E. coli* remain the leading cause of UTI in Derbyshire young infants whilst enterococcus is responsible for a quarter of cases. Knowledge of this and the resistance pattern will help clinicians in empiric antibiotic choice.

17A. EDUCATION: REFUGEE CHILDREN

ESP17-1346

HEALTH ASSESSMENT OF REFUGEE CHILDREN IN THE ISLAND OF CHIOS, GREECE

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Background

Almost half of the world's refugees are children. These children do not receive the usual health care, they do not follow the vaccination scheme nor growth and cognitive development control and also feedings practices are altered. We aimed to assess the health status of children refugee population living in Chios by a paediatric team.

Methods

A prospective study was performed during two months in Chios Island (Greece) from two refugee camps and shelters adapted for vulnerable people. The official camp has host 1400 people, but currently it is estimated 3.600 refugee people living in the Island, of which 38% are children. A census with code identification of the paediatric population was created. A team formed by a paediatrician and a paediatric nurse collected socio-demographic and clinical information and assessed health status in refugees children.

Results

During November and December 2016, 813 outpatient visits of 527 refugees children were recorded in Chios island, being 441 (54.2%) males. Median of age was 6 years (IQR 3-10) and mean weight was 21.2 kg (± 0.6). Main symptoms were cough 330/793 (41.6%) and fever 159/794 (20,0%). 49 (6.2%) referred diarrhoea. 88/794 (11.1%) had any kind of malnutrition, being 15(88 (17.1%) severely malnourished. Behaviour disorders was another prevalent reason of consultation (data will be shown in the conference).

Conclusions

Health care for children in refugee camps must organize activities that allow a strict follow-up of the child, so as not to lose growth and psychosocial evaluation. Children are vulnerable and pathologies such as malnutrition and behavior disorders (enuresis, impulsivity, depression) may go unnoticed but there is a well-targeted care. Surveillance could be a toll for detect children with special risk that could benefit from specific psychological support

02A. EDUCATION: ANTIMICROBIAL RESISTANCE

ESP17-1347

TRENDS IN ANTIBIOTIC RESISTANCE PATTERNS IN CHILDREN HOSPITALISED FOR FEBRILE URINARY TRACT INFECTIONS IN A GERMAN PAEDIATRIC TERTIARY HOSPITAL: A SINGLE CENTRE RETROSPECTIVE ANALYSIS

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Background

Early and appropriate antimicrobial treatment of febrile urinary tract infections (UTI) in children can reduce renal damage. Local antimicrobial resistance data is necessary to optimise empiric therapy.

The aim of this audit was to review local antibiotic resistance rates of urinary tract pathogens in hospitalised children, and to evaluate the appropriateness of the initial antibiotic treatment by comparing the data of two study periods (2007-2009 and 2013-2015), before and after changing the empiric antibiotic regimen for febrile UTI from cefotaxim to ampicillin/gentamicin in 2011.

Methods

We performed a single centre retrospective audit. All records of hospitalised children meeting the criteria of culture-proven febrile UTI were reviewed. Patients were divided into two groups according to the two study periods, and compared for demographic features, underlying conditions, urine sampling methods, and antimicrobial susceptibility of identified pathogens.

Results

290 hospitalised children (137 in period one, 153 in period two) with a total number of 308 episodes of culture-proven febrile UTI were included. In both study periods *E.coli* was the predominantly isolated pathogen (78.5% and 72.5%, respectively).

While the resistance of all isolates (*E.coli* and Non-*E.coli*) to gentamicin remained stable at around 11% through both study periods, resistance to ampicillin/sulbactam decreased from 45.3% to 30.3% ($P<0.01$) and to ampicillin/gentamicin from 7.4% to 1% ($P<0.01$). For cefotaxime the overall resistance rate remained at around 16%. ESBL activity was found in less than 4% of samples.

Conclusions

Our results support the appropriateness of the currently used local empiric antibiotic treatment regimen with ampicillin plus gentamicin for most hospitalised children with febrile UTI. A general trend of both *E.coli* and non-*E.coli* isolates to lower resistance rates for commonly used antimicrobials was observed. Local antimicrobial stewardship initiatives might contribute to this trend.

11D. EDUCATION: INFECTIONS IN IMMUNOCOMPROMISED AND TRANSPLANT RECIPIENTS

ESP17-1349

18F-FDG PET/CT FOR EVALUATION OF TREATMENT RESPONSE IN A MICOBACTERIAL DISSEMINATED INFECTION DUE TO INTERLEUKIN-12 RECEPTOR SS-1 (IL-12RSS1) DEFICIENCY

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Title of Case(s)

¹⁸F-FDG PET/CT FOR EVALUATION OF TREATMENT RESPONSE IN A MICOBACTERIAL DISSEMINATED INFECTION DUE TO INTERLEUKIN-12 RECEPTOR β -1 (IL-12R β 1) DEFICIENCY

Background

IL-12R β 1 deficiency predisposes to infections by intracellular pathogens. Diagnosis, treatment and follow-up of these infections remain challenging; whilst ¹⁸F-FDGPET/CT arise as a useful tool.

We report the case of a patient with IL-12R β 1 deficiency a disseminated mycobacterial infection. Multiple combinations of antimycobacterial agents and IFN gamma were used. Serial PET/CT scans were used to monitor treatment response and to support therapeutic decisions

Case Presentation Summary

6-year-old girl with IL-12R β 1 and a disseminated mycobacterial infection by *M.genavense* (intestinal, mesenteric and retroperitoneal involvement), identified by positive bacilloscopy and PCR for Mycobacterium complex from intestinal biopsy without antimicrobial susceptibility data and negative cultures.

Empirical treatment with anti-mycobacterial (oral rifampicin, ethambutol, clarithromycin, levofloxacin for 4 months; later modified to oral rifampicin and clarithromycin and intravenous ciprofloxacin and amikacin for 9 months) combined with subcutaneous IFN-gamma-1b (50-80 mg/m² three times a week) was administered without clinical response.

Persistence of active infection despite previous treatment (administered for 13 months) was confirmed by PET/CT. Intravenous clarithromycin, amikacin, ciprofloxacin, linezolid and cefotixin were started with IFN-gamma-1b (200-250mg/m² 3-times-week), with improvement verified by PET/CT 3 months after.

In the following 24 months 6 PET/CT scans were performed for monitoring treatment response. The third PET/CT, performed 14 months after last treatment course, showed worsening of infection leading to the addition of rifampicin. Improvement and normalization of PET/CT was seen 5 months after. The clinical and radiological improvement, allowed the progressive discontinuation of the treatment with no further relapses.**Learning**

Points/Discussion

Management of mycobacterial infections are a challenge in patients with primary immunodeficiencies. PET/CT might be a useful tool for diagnosis and evaluation of treatment response in those scenarios

22A. EDUCATION: OTHER

ESP17-1352

AETIOLOGY OF URINARY TRACT INFECTION AND ANTIMICROBIAL SUSCEPTIBILITY OF BACTERIA ISOLATED FROM DERBYSHIRE CHILDREN AGED 3 MONTHS TO 16 YEARS 2011- 2016: AN OBSERVATIONAL STUDY.

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Background

Urinary tract infection (UTI) is the most common bacterial infection in children. Knowledge of the antibiotic resistance of the bacteria causing UTI is important for appropriate empiric therapy. Our aim was to use routinely reported laboratory data to define the aetiology and antimicrobial susceptibility in Derbyshire children over a six-year period.

Methods

Records of all significant positive urine culture in children who were ≤16 years of age by 31 Dec 2016 were extracted. The urine samples were either sent from the General Practitioner (GP) surgery within Derbyshire or the Derbyshire Children's hospital clinical areas from 1 January 2011 to 31 December 2016. Data from children 3 months-16 years were analysed.

Results

There were 7439 episodes of UTI during the period. The median age (IQR) was 5.5 years (3.3-8.1). Most 5970 (80%) were sent by a GP and 1469 (20%) were from hospital.

E. coli 5713 (77%), enterococci 827 (11%), coliforms 523 (7%), proteus spp. 170 (2%), other Gram negative bacteria 113(2%) and other Gram positive bacteria 93 (1%) were identified.

Amongst *E. coli* samples tested, resistance to frequently used antibiotics were: amoxicillin 1713/3384 (51%), trimethoprim 1966/5915 (33%), co-amoxiclav 610/5913 (10%), cephalexin 446/5911 (8%), gentamicin 289/5916 (5%) and nitrofurantoin 114/5911 (2%). For coliforms, resistance to amoxicillin 221/296 (75%), trimethoprim 114/559 (20%), nitrofurantoin 96/559 (17%), co-amoxiclav 84/559 (15%) and gentamicin 2/559 (4%) were observed. Only 8/829 (1%) of the enterococci samples tested were resistant to nitrofurantoin.

Conclusions

Most UTI diagnosed in Derbyshire children are from outside the hospital with *E. coli* and coliforms the most common. *E. coli* and coliforms resistance to Amoxicillin and trimethoprim is high whereas enterococcus resistance to nitrofurantoin is very low. GPs and hospital clinicians should use this knowledge to offer appropriate empiric therapy.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-1354

KAWASAKI & EPSTEIN BARR VIRUS: UNMASKING THE VEIL?

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Title of Case(s)

Kawasaki & Epstein Bar Virus: Unmasking the veil ?

Background

The Kawasaki adeno-cutaneo-mucosal syndrome is an old-new subject of perpetual debate about its etiology. We present a boy with concomitant positive EBV serology .

Case Presentation Summary

An infant is referred for stomatitis with cheilitis, fever > 40 ° C, asthenia, irritability ; evolving for 4 to 5 days. Clinical examination revealed only multiple cervical micro-adenopathies. There were no conjunctivitis, no skin rash, no reactivation of the BCG scar.

Heart ultrasound was normal ; while the biology revealed hyperleukocytosis with very high VS and CRP.

A treatment based on Aciclovir - Cefalexin with local care is first decided. After 15 days, the child presents a typical convalescence desquamation of fingers and toes; along with thrombocytosis. The final diagnosis of Kawasaki syndrome is then retrospectively established.

A panel of viral serologies was performed returning: HSV (-), CMV (-), but EBV (+),

Learning Points/Discussion

The etiology of Kawasaki syndrome remains obscure. Epstein Barr Virus has been among the most frequently cited factors for almost 30 years. The prevalence of this syndrome is maximal before the age of 5 years; as well as Infectious Mononucleosis EBV is also incriminated in a myriad of hyperinflammatory disorders like fulminant hepatitis or severe macrophage activation syndrome.

Prospective, multicentric registries could unveil the real impact of this virus.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1357

OSTEOARTICULAR INFECTIONS IN CHILDREN: DESCRIPTIVE AND COMPARATIVE STUDY OF THE PAST 8 YEARS IN A THIRD LEVEL HOSPITAL

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Background

Background. Osteoarticular infections (OAI) cause an important morbidity and sequelae in children. Aim: Evaluate clinical characteristics of children with OAI admitted to a tertiary hospital in Madrid, and determine possible differences between septic arthritis (SA) and osteomyelitis (OM).

Methods

Methods. Medical charts from children with OAI manage according to a established protocol between 2008-2015, were reviewed. Different variables, such as demographics, diagnostic tools, treatment, complications and sequelae were analyzed. Children with SA were compared with those having OM (with/without associated SA (OM-SA)).

Results

Results. One hundred and sixteen children (74 OM (10 OM-SA), 42 SA) were evaluated. Median age was 13 months in SA and 27 months in OM ($p=0.008$); 64% males. Days of symptoms before admission were 2 (IQR:1-5) in SA and 5 (2-17.5) in OM ($p < 0.01$); especially pain (95.2% SA/81.1% OM; $p=0.034$) and fever (73.8% SA/54.9% OM; $p=0.036$). X-ray was abnormal in 37.8% of cases (43.3% OM/25% SA; $p=0.13$), and MRI more sensitive than scintigraphy for OM (95% vs 75.4%; $p=0.0008$. OR:9.45[2.1-43.4]). CRP was higher in SA (4.4 mg/dl vs 2.1 mg/dl; $p < 0.003$). A microorganism was isolated in 45.3% of cases (OM 67.1% vs SA 33.3%; $p < 0.01$). 1st/2nd G cephalosporins were the most frequently used antibiotics: IV cefuroxim in SA (51% vs 26%; $p=0.05$) and cefazolin in OM (31% vs 15%; $p=0.05$). Sixteen percent and 14% of children developed complications and sequelae, respectively (no differences between OAI). However, OM-SA had a more severe clinical course, with higher rate of complications and sequelae (50% vs 8%; $p < 0.01$ and 50% vs 7.8%; $p < 0.01$, respectively).

Conclusions

Conclusions. Children with SA were younger, had more symptomatology and higher levels of inflammatory parameters, and yielded more often a microorganism than OM. Main antibiotics used were cephalosporins. OM-SA had the highest rate of complication and sequelae.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1358

PECULIARITIES OF RESPIRATORY SYNCYTIAL BRONCHIOLITIS IN INFANTS

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Title of Case(s)

Peculiarities of respiratory syncytial bronchiolitis in infants

Background

Acute lower respiratory infection is the leading cause of global child mortality. Respiratory syncytial virus (RSV) is believed to be the most important viral pathogen causing acute lower respiratory infection in young children. Respiratory Syncytial Virus (RSV) is the most important factor of the death of infants among all virus infections. In the first year of life, 50% of children infected with RSV, and 40% patients developed an infection of the lower respiratory tract. During the first two years of life every child at least once suffers from RSV infection. RSV is responsible for 50-80% of cases of bronchiolitis.

Case Presentation Summary

Fifty one children (median age 2,7 months) admitted to the pediatric department with RSV bronchiolitis were enrolled in the study. The highest morbidity was observed in January-March. Twenty three children (45,2%) hospitalized in severe condition, twenty six infants (50,9%) suffered from moderate bronchiolitis. Initially ten children (19,6%) were hospitalized in the PICU, six infants (11,7%) were mechanically ventilated (median 3,5 days), seven patients treated with oxygen (median 1,3 days). White cell count (50,6% children), neutrophil count (64,5% infants) were increased. Nineteen children (37,3%) had complications of congestive heart failure and treated with diuretics and cardiac glycosides.

Learning Points/Discussion

Up to 45% of children with RSV bronchiolitis characterized by severe condition, and half of them were hospitalized in the PICU, which increased risk for bacterial co-infection.

22A. EDUCATION: OTHER

ESP17-1359

NEONATAL URINARY INFECTION AND MICROORGANISMS ASSOCIATED: EXPERIENCE IN OUR CENTER

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Title of Case(s)

NEONATAL URINARY INFECTION AND MICROORGANISMS ASSOCIATED: EXPERIENCE IN OUR CENTER

Background

Neonatal urinary tract infection (UTI) is one of the most common bacterial infections. The associated clinic is non-specific. The spectrum of associated microorganisms is variable, depending on several factors such as prematurity, previous hospitalization or associated renal malformation.

METHODS: Retrospective descriptive study of the epidemiological, analytical, microbiological and antibiotic characteristics used in the neonatal UTI of our hospital in the last 5 years.

Case Presentation Summary

Twenty-eight patients were reviewed, 5(17.9%) were female and 23(82.1%) males, 5(17.9%) of which were preterm with a mean EG of 30 weeks (25-32). The median age at diagnosis was 13.5 days of life (1-30). 2(7%) patients were prenatally diagnosed by a renal ectasia confirmed postnatally by echography. In the blood analysis requested at diagnosis, the mean absolute white blood cell count was 13,984/mm³, and the mean absolute neutrophil count was 3865/mm³. E. coli was the most frequent pathogen observed in urinary cultures, 14(50%) patients, against E. faecalis in 4(14%), 2(7%) C.parasilopsis, 2(7%) K. pneumoniae, 2(7%) S. Aureus, 1(3.5%) Proteus mirabilis, 1(3.5%) Raoultella Planticola, 1(3.5%) E. Cloacae and 1(3.5%) with negative culture. The treatment included the combination of Ampicillin and Gentamicin in 6 patients (21%), 10 (35%) Gentamicin, 10(35%) Cefotaxime and Amphotericin B in 2 patients (7%). The mean number of days of antibiotic therapy was 8 days (7-12). Renal function was conserved in all patients.

Learning Points/Discussion

As literature shows, in our series that the vast majority of patients presented a UTI due to an E. coli infection. The early diagnosis prevents the development of renal function alterations and improves the prognosis. We must know this entity to be able to adapt the treatment and avoid complications such as sepsis.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-1360

BENIN MAY BE RED FOR MALARIA BUT TRAVELLING CHILDREN BRING HOME CHIKUNGUNYA TOO! AN UNUSUAL CASE OF VIRAL MENINGITIS

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Title of Case(s)

An unusual case of viral meningitis: Benin may be red for malaria, but travelling children bring home chikungunya too!

Background

The differential diagnosis for fever in a returning child traveller poses a diagnostic challenge for clinicians. Epidemiological knowledge guides initial investigations and empiric therapy. Although it is essential to rule out malaria in a child with a relevant travel history, this should not detract from finding the real pathogen. We report a case of imported chikungunya virus in a 5-year-old child who had returned from holiday in Benin. There were 295 UK cases of imported chikungunya in 2014, 10 in children, 8 contracted in Africa.

Case Presentation Summary

A 5 year old girl, UK resident, presented to hospital on two consecutive days with persistent fever, lethargy and headache. She had returned from Benin the previous day, following a three-week holiday. A blood test in Benin diagnosed her with 2.5% falciparum malaria parasitaemia. She reported full compliance to 3-days oral artemether-lumefantrine, completed the day before presentation. On examination she was lethargic, complaining of headache with mild signs of meningism. Her white cell count was 24, neutrophilia of 22 and CRP 3. Three malaria screens were negative. Investigations revealed CSF lymphocytosis (bacterial culture, HSV/Enterovirus/VZV and 16sDNA PCR negative) and multiple negative pre-antibiotic blood cultures. Extensive discussions resulted in empiric iv ceftriaxone and no anti-malarial therapy. Her stay was notable for persistent fevers, headache and transient hypertension with bradycardia. She was discharged within 1-week afebrile. Serum sent to the Rare Imported Pathogens Laboratory was later found to be chikungunya virus IgM positive.

Learning Points/Discussion

Chikungunya virus infection should be considered in a febrile child returning from Sub-Saharan Africa with viral meningitis.

Malaria should not detract from a wider differential.

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1361

HEPATITIS B AND C IN ALBANIAN CHILDREN DURING YEARS 2000-2015

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Background

Hepatitis B and C are very serious diseases particularly in children. Incidence of Hepatitis B after introducing of respective vaccine was decrease from 14% to 6%. In our country the vaccine HEP B was applied in 1996 for the first time.

The aims of the study was to show the epidemiological data, transmission route and evolution of those diseases in our patients.

Methods

This was a retrospective study performed in our department during years 2000-2015. In this study were enrolled 45 children from 1 to 14 years. We have shown the personal register for each patient and were seen ages, sex, transmission route, vaccinal status for Hep B and prognoses. The diagnosis was based in serological test and in the recent years and with PCR.

Results

The average ages was 9 years old with 2 children under one year following by children up to 7 years old with 33 cases or 73, 3%, from them 32 or 71, 1% were male. 31 patients or 68, 9% had Hepatitis C and 14 or 31, 1% had Hepatitis B. The transmission route was blood transfusion, vertical route and post-surgery treatment respectively 40%, 24, 4% and 11, 1%. In 11 patients or 24, 4 the transmission route was unknown. The underlying diseases for the patients that had taken blood transfusion, in the most of them, were oncohaematologic disease.

Conclusions

In our country incidence of Hepatitis C remain still with high prevalence, particularly, in the patients that take blood transfusion. So it was very important a permanent and strong control of blood product.

04E. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: RESPIRATORY TRACT INFECTIONS

ESP17-1363

BRONCHIOLITIS OBLITERANS ORGANIZING PNEUMONIA (BOOP) SECONDARY TO INFLUENZA AH1N1 INFECTION IN A COSTA RICAN INFANT: FIRST REPORT FROM CENTRAL AMERICA

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Title of Case(s)

An uncommon complication due to a common pathogen...

Background

BOOP is an obstructive, rare pulmonary entity associated with high morbidity. Although influenza A H1N1 ARTIs in children have been increasingly described, few BOOP cases have been reported, mostly associated with transplantation or in the adult population. We report the first Central American case of BOOP triggered by Influenza AH1N1 in an immunocompetent Costa Rican girl.

Case Presentation Summary

A previously healthy 11-month-old girl was transferred from a regional hospital to our institution with a 3-day history of catarrhal symptoms that worsened over the last 24 hrs, when she developed progressive cough, wheezing and difficulty to breathe. She worsened clinically, required assisted mechanical ventilation for 9 days with subsequent need of supplementary oxygen by nasal cannula. Initial chest radiograph showed bilateral opacities compatible with pneumonia. Respiratory secretions were positive for Influenza AH1N1. Oseltamivir treatment was not available for her. A chest CT-scan evidenced a patchy infiltrate pattern, air trapping, pneumomediastinum and bilateral pneumothorax compatible with BOOP; no histologic confirmation was performed. She was started on a 1-month high-dose systemic steroid, with slow clinical improvement. On discharge, radiological changes persisted and she went home with supplementary oxygen.

Learning Points/Discussion

Influenza A H1N1 virus can produce life-threatening complications such as BOOP, with its secondary complications and sequelae. This case illustrates the importance of influenza vaccination for healthy children after 6 months of age and the need of oseltamivir availability in severe cases as the one described here.

06B. SCIENCE: DIAGNOSTIC TOOLS

ESP17-1364

THE SENSITIVITY AND SPECIFICITY OF THE LOOP MEDIATED ISOTHERMAL AMPLIFICATION (LAMP) TEST FOR HIV DIAGNOSIS IN ADULTS AND CHILDREN: A SYSTEMATIC REVIEW

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Background

Reverse Transcriptase Loop Mediated Isothermal Amplification (RT-LAMP) is a molecular rapid diagnostic test that can be used to confirm HIV infection. It is quick, easy to perform and does not require complex, dedicated equipment and laboratory space. For this test to be of potential public health significance in the early infant diagnosis (EID) of HIV, it would need to be comparable to the performance (sensitivity & specificity) of RT-PCR for HIV infection diagnosis.

Methods

A systematic literature review was conducted to identify and collate the outcomes of studies reporting the sensitivity and specificity of RT-LAMP when compared to HIV RT-PCR.

Results

7 studies with a total of 408 samples tested were identified. All studies had a specificity of 100% and a mean sensitivity of 99% (CI 95%: 93 -100). 2 studies had English abstracts with the full report in Chinese so these were not included in the quality appraisal. 4 of the papers appraised were of high and 1 was of moderate quality.

Conclusions

RT-LAMP's diagnostic accuracy for HIV is comparable to RT-PCR in lab samples, more research is required to assess its contribution to clinical diagnostic algorithms.

Systematic Review Registration (Please input N/A if not registered)

N/A

15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1365

NASOPHARYNGEAL CARRIAGE OF S.PNEUMONIAE AFTER PCV13 INTRODUCTION: REVIEW OF THE CURRENT LITERATURE

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Background and Objective

The 13-valent conjugate pneumococcal vaccine (PCV13) was introduced by most countries' National Immunization Program in 2010, having significant impact on the nasopharyngeal (NP) carriage, serotype distribution and antimicrobial resistance of *Streptococcus pneumoniae* (SP) among healthy and ill children. The aim of the current study is to review the current literature from vaccination introduction until now focusing on data concerning healthy pediatric population.

Methods

A review of the literature in English was undertaken with searches in Pubmed database using the key words 'vaccination', 'pneumococcal', 'nasopharyngeal', 'colonization', 'carriage', 'PCV13'. All clinical studies evaluating pneumococcal colonization of healthy children were included. Duplicate publications were identified and removed. Lower date limit was set the year of vaccination introduction and the search was continued until 31st of January.

Learning Points Discussion

Of 228 potentially relevant articles, 26 fulfilled the inclusion and exclusion criteria. The impact of the 13-valent conjugate vaccine (PCV13) on *S.Pneumoniae* nasopharyngeal colonization is presently under debate. Some studies revealed a stable pneumococcal colonization after the introduction of PCV13. On the contrary, several studies reported a reduction of carriage with SP after the introduction of PCV13. The effect of PCV13 on the carriage of vaccine- included serotypes is however more clear. The majority of carriage studies showed that PCV13 vaccination reduces the carriage of PCV13 serotypes in children < 5 years worldwide, apart from 19A serotype that lacks evidence of similar decrease. In many studies, the observed high level antibiotic resistance (mainly penicillin and erythromycin) leads to awareness among the pediatrician society.

15A. SCIENCE: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1366

DECLINE IN PNEUMOCOCCAL DISEASE IN YOUNG CHILDREN, AND DECLINE IN PNEUMOCOCCAL CARRIAGE IN ALL AGES, FOLLOWING PCV10 INTRODUCTION IN FIJI

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Background

Fiji introduced PCV10 in 2012. These are the first results from an Asia-Pacific middle-income country, showing PCV10 effects on carriage and disease.

Methods

All-cause pneumonia, probable bacterial and laboratory confirmed meningitis and IPD: Hospitalisations and laboratory data from 2007-2015 were extracted from national datasets and laboratory registers. Time series analyses were calculated for pneumonia, and incidence rates and IR ratios (IRR) were calculated pre/post PCV10 for meningitis and IPD.

Carriage: Pre-PCV10 (2012) and three annual post-PCV10 cross-sectional pneumococcal nasopharyngeal carriage surveys were undertaken in 4 age groups. Pneumococci were detected by *lytA* qPCR, with serotyping performed by microarray.

Results

Preliminary results are shown. There was a 38.6%, 7.7%, and 2% decline in all-cause pneumonia hospitalisations for children aged 1-11m, 12-23m, and 2-4y, respectively. IRR for probable bacterial and laboratory confirmed meningitis for children aged 1-11m, 12-23m, and 2-4y, were 0.86 (95% CI 0.66-1.12), 0.51 (95% CI 0.27-0.91) and 0.30 (95% CI 0.15-0.56), respectively. IRR for IPD for children aged 1-11m, 12-23m, and 2-4y, were 0.58 (95% CI 0.27-1.13), 0.44 (95% CI 0.15-1.07) and 0.97 (95% CI 0.39-2.18), respectively.

The pneumococcal carriage crude prevalence ratios pre- and 2 y post PCV10 were 0.47 (95% CI 0.37 - 0.60), 0.65 (95% CI 0.55 - 0.75), 0.63 (95% CI 0.54 - 0.72), and 0.64 (95% CI 0.42 - 0.97) for 5-8 w old infants, 12-23 m old toddlers, 2-6 y old children, and their caregivers, respectively.

Conclusions

Pneumococcal disease has declined in children post-PCV10. Full effects have yet to manifest.

Clinical Trial Registration (Please input N/A if not registered)

N/A

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1369

SUBDURAL EMPYEMA WITHOUT AN IDENTIFIED AGENT

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Title of Case(s)

Subdural empyema without an identified agent

Background

Subdural empyema is a life-threatening infection and its clinical presentation pose a diagnostic challenge and represents a neurosurgical emergency. Is a rare complication of sinusitis in children and delayed diagnosis rapidly increases its fatal prognosis.

Case Presentation Summary

Previously healthy 17-year-old male developed a fever of 39.5°C, with 5-days-evolution, associated with: productive cough; persistent and progressive aggravation of frontal headaches, cervicalgia, drowsiness and incoherent speech. During the physical exam he was disoriented, with difficulty in carrying out orders, terminal neck stiffness and slight hyperaemia of the oropharynx. Infectious parameters and pleocytosis were analytically present. Cranial CT showed image suggestive of left subdural hygroma and an MRI showed signs of complicated meningitis with subdural empyema probably starting in maxillary and left frontal-ethmoidal sinusitis. The neurosurgical and otorhinolaryngological intervention had no interurrences. Antibiotic therapy was initiated with Ceftriaxone, Vancomycin and Metronidazole in association to an 8-day methylprednisolone cycle. In spite of the progressive clinical and laboratory improvement, a 1 month post-operative CT-scan identified an increase in the collection, compatible with medial-frontal epidural empyema, as well as a small collection, with identical characteristics, right frontal-parietal. He was submitted to a new intervention with drainage of purulent content and probable osteomyelitis site. Therapy was altered to Ceftazidime, maintaining Vancomycin and Metronidazole, having completed 6 weeks after the 2nd surgery. All blood, CSF and drainage cultures were negative. The patient was discharged without sequels.

Learning Points/Discussion

Cerebral empyema is a rare and serious entity. In this case, no microbial agent has been identified despite clinical, macroscopic and complementary tests suggesting bacterial etiology. Despite the severe and sudden presentation, and the recurrence of empyema, a good resolution was observed in the short term.

13B. EDUCATION: INVASIVE VIRAL INFECTIONS

ESP17-1370

GASTROINTESTINAL MANIFESTATIONS OF CYTOMEGALOVIRUS INFECTION IN IMMUNOCOMPETENT INFANTS

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Title of Case(s)

GASTROINTESTINAL MANIFESTATIONS OF CYTOMEGALOVIRUS INFECTION IN IMMUNOCOMPETENT INFANTS

Background

Cytomegalovirus (CMV) infection in immunocompetent infants is usually asymptomatic or a cause of a mild illness, which does not require antiviral treatment.

We describe two cases of CMV infection with gastrointestinal involvement.

Case Presentation Summary

Case1A one-month-old female term infant, with low birth weight and poor weight gain, started with bloody diarrhoea and vomiting 24 hours after introduction of infant formula. For suspicion of cow's milk protein allergy, exclusive breastfeeding was resumed with cow's milk protein restriction on the mother's diet. Four days later the symptoms restarted and she was admitted at the local hospital. Extensive hydrolysed formula was given with clinical improvement. She was readmitted two days later due to severe dehydration, vomiting and profuse diarrhoea. The investigation revealed hyperchloremic metabolic acidosis, hyponatremia, hypoalbuminemia, hypoproteinemia, anemia and acute nephritic syndrome. CMV PCR was positive in the blood (2633 copies/mL). The Guthrie card was negative for CMV. The mother had negative IgM and positive IgG (199.8 U/mL). Intravenous ganciclovir therapy was started with subsequent clinical improvement.

Case2A 7-month-old healthy female infant, exclusively breastfed till the age of 5 months, was admitted due to 3 weeks of vomiting (1-3 times per day) and non-bloody diarrhoea. Upon admission, she had moderate dehydration and mild metabolic acidosis. Blood analysis showed an elevation of liver enzymes (3-4 times higher) and hypoalbuminemia. After admission, she started low-grade fever. There was progressive improvement on supportive measures over one week. CMV serology was consistent with recent infection (IgM 1,330 U/mL, IgG 15,7U/mL).

Learning Points/Discussion

Although gastrointestinal manifestations are rare in CMV infection in immunocompetent infants, they should be considered in cases of prolonged diarrhoea, or severe diarrhoea that does not improve with the standard treatment.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-1372

INVESTIGATION AND CONTROL OF AN OUTBREAK OF MULTIDRUG-RESISTANT ACINETOBACTER BAUMANNII INFECTION IN A NEONATAL INTENSIVE CARE UNIT

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Background

Multi-drug resistant *Acinetobacter baumannii* is a rapidly emerging pathogen in the health care setting where can cause high mortality epidemics, especially in intensive care units. Here we report an outbreak of MDR *A. baumannii* in our neonatal intensive care unit and discuss the different findings that arise during investigation.

Methods

A case-control study was performed in our 60-bed neonatal intensive care unit (NICU) between February and March 2016. Cases were defined as patients infected with MDR *A. baumannii*, controls were patients without *A. baumannii* isolation during the outbreak period. Demographic characteristics, clinical and microbiological findings were retrospectively analyzed.

Results

A total of 13 patients were infected during this outbreak. Five patients had a bloodstream infection, four patients had a central line-associated bloodstream infection and four patients had a ventilator-associated pneumonia. When the risk factors were examined the use of umbilical catheter was higher in the case group. All the patients were in the same NICU room and of the environmental samples, one sample obtained from the ventilatory flow sensor yielded growth of MDR *A. baumannii*. We observed that water tanks of the humidifier in incubators were not used in accordance with the infection control instructions. Samples from water tanks yielded growth of *Burkholderia spp.*, *Klebsiella spp.* and *Pseudomonas spp.* An area was defined for cohortation of patients colonized, with a separate nursing team. Standard infection control precautions, environmental cleaning and disinfection procedures were reinforced by repeated educational sessions. The outbreak lasts two months and mortality rate was %31 (4/13).

Conclusions

Outbreaks requires a multifaceted intervention program. Investigation of potential sources of infection and review of control measures can also identify deficiencies that can potentially create a source for the next outbreak in the unit.

19A. EDUCATION: TUBERCULOSIS IN CHILDREN

ESP17-1379

DIAGNOSIS OF TB-MDR IN PEDIATRICS.... A NEW CHALLENGE IN GUATEMALA

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Title of Case(s)

DIAGNOSIS OF TB-MDR IN PEDIATRICS.... A NEW CHALLENGE IN GUATEMALA

Background

TB stills a major problem in Public Health for Guatemala. According to WHO in 2014 TB incidence was 58 per 100,000 population. Notified cases between 0-14 years was 4.8 per 100,000 children (9.9% of all cases). The proportion of notified PTB estimated to have MDR-TB was 3% of new cases and 26% with re-treatment but none pediatric cases were reported.

Case Presentation Summary

Our hospital confirmed the first cases of pediatric TB-MDR in the country. Case 1 required mediastinal lymph node biopsy through open chest surgery in a 7-year-old girl with rheumatoid arthritis during her third re-treatment for TB. MDR-TB was suspect due to persistent fever, presence of enlarged lymph node through chest CT and rheumatologic signs that required an increase in prednisone and onset of methotrexate. Culture confirmed ***M. tuberculosis*** resistant to INH and R. The patient received cycloserine (C), ethionamide (E), pyrazinamide (P), kanamycin (K) and levofloxacin (L) 6 months as inpatient follow by CEPL for 18 months in her home. Case 2, a 13-year-old female with positive AFB on sputum smear and history of close contact with PTB adult. After 2 months of treatment and persistent smear microscopy TB-MDR was suspected. Sputum culture revealed resistant to INH, R and S. The patient initiated CEPKL and smear microscopy turns negative at the end of 4 weeks of treatment. Both patients completed 24-months therapy with marked improvement.

Learning Points/Discussion

TB and R resistant assay should be done for assessment especially in children with paucibacillary disease to hence possibility of proven diagnosis instead of waiting for culture.

13B. SCIENCE: INVASIVE VIRAL INFECTIONS

ESP17-1380

MOLECULAR CHARACTERIZATION AND EPIDEMIOLOGICAL PROFILE OF INFECTION BY INFLUENZA A IN 2015 AND 2016 IN SAO PAULO

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Background

Influenza A virus is responsible for important clinical presentations of acute respiratory infection (ARI). These patients may develop a controlled reaction, which lasts for about a week, with classic symptoms as cough, nasal congestion, dyspnea, coryza, among others, or may evolve into clinical patterns of pneumonia, bronchitis or even Severe Acute Respiratory Syndrome (SARS). The influenza virus is highly known for their ease of dissemination and its ability to promote antigenic changes, which promotes different molecular subtypes, such as H1N1, H1N1-pam and H3N2. 115 deaths were recorded due to influenza, in the first quarter of 2016, a much larger number than the 36 deaths confirmed in the full year of 2015. In addition, the State of São Paulo is the main focus of the epidemic, recording 80 deaths in the year.

Methods

The samples were extracted by automated method and analyzed using techniques of molecular subtyping, such as Real Time PCR and Conventional PCR, in samples of patients who spontaneously demanded care at the University Hospital of the University of São Paulo (HU-USP) with Acute Respiratory Infection symptoms.

Results

Out of 1128 samples of patients who demanded care at the hospital in 2015, 38 (3.38%) were positive by Real Time PCR for Influenza A virus. Other positive samples by Immunofluorescence made at the University Hospital of São Paulo in 2016 will be tested. All samples are analyzed to trace the epidemiological profile of the epidemic.

Conclusions

Knowing the molecular characterization of the virus epidemic is important for its particularly known ease of dissemination and its ability to promote antigenic changes. Furthermore, a trace of epidemiological profile is a primordial subject in the issue of Public Health.

Clinical Trial Registration (Please input N/A if not registered)

N/A

05D. EDUCATION: CONGENITAL AND PERINATAL INFECTIONS

ESP17-1381

BLUEBERRY MUFFIN BABY; A RARE PRESENTATION OF CONGENITAL INFECTIONS

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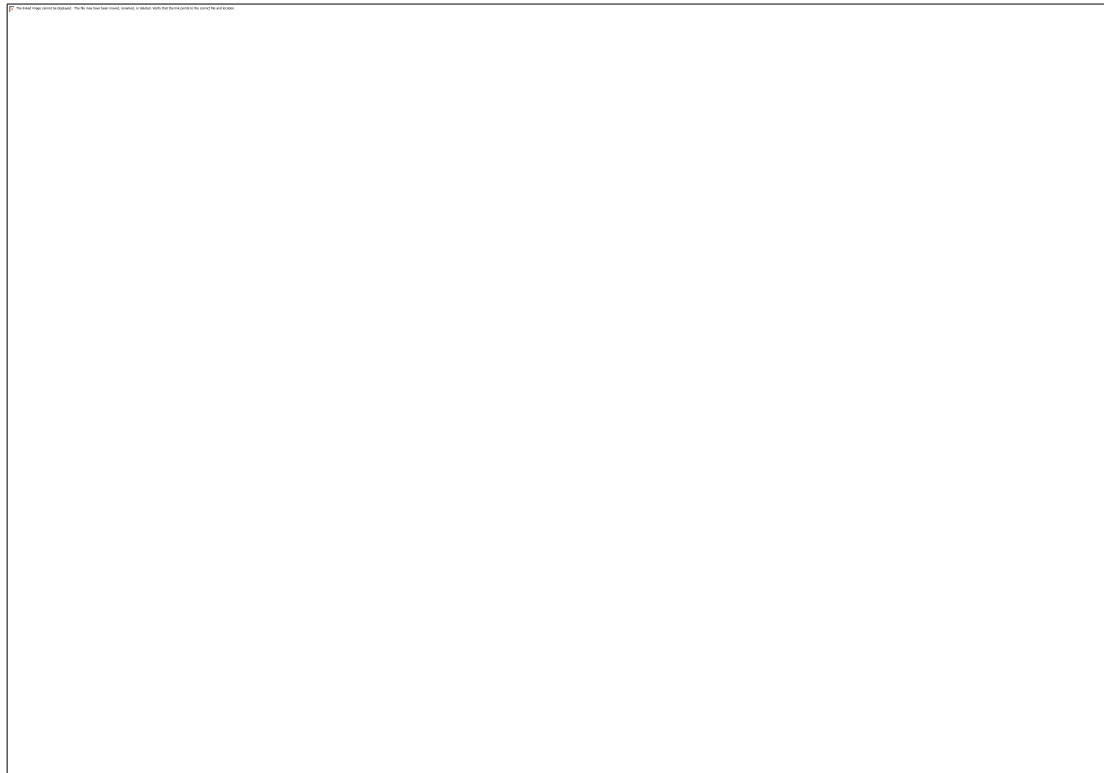
Title of Case(s)

Blueberry muffin baby. A rare presentation of congenital infections

Background

Blueberry Muffin Baby is a rare neonatal cutaneous syndrome characterized by non-blanching, violaceous, magenta-colored macules, papules, nodules and plaque lesions reflective of extramedullary hematopoiesis. The lesions are usually generalized but more commonly present on the trunk, head, and neck. We present a case of a newborn admitted at birth for presenting disseminated violaceous cutaneous nodules.

Case Presentation Summary



A male neonate was born at 38 weeks' of an unfulfilled pregnancy by vaginal delivery to a 25-year-old woman. On examination, there were widespread purplish maculopapular lesions and petechiae over the face, trunk and extremities. Liver was 1 cm palpable below the right costal margin, with firm consistency and sharp margin, spleen was 2 cm palpable below the left costal margin. Laboratory investigation showed thrombocytopenia and

coagulopathy. Direct Coombs test was negative. Cytomegalovirus (CMV), rubella and toxoplasma IgM values were negative while IgG values were positive. Blood CMV PCR test resulted 1.8×10^4 copy/mL and intravenous ganciclovir started in the fifth days of life. Eye examination and cranial imaginations were normal but he couldn't passed hearing tests. Trombocytopenia and coagulopathy improved after starting the therapy and rashes were completely strained in 2 weeks.

Learning Points/Discussion

Blueberry muffin lesions usually present at birth may rarely occur after second day. Newborn haemolytic diseases such as ABO and Rh incompatibility, and hereditary spherocytosis are among the best known causes. In a baby without anemia, the most common cause of these lesions are congenital rubella and cytomegalovirus infections. It should also be kept in mind that newborn neuroblastoma, congenital leukemia, and alveolar rhabdomyosarcoma may also represent with similar lesions but different histological findings.

18D. EDUCATION: TROPICAL DISEASES, TRAVEL MEDICINE AND PARASITIC INFECTIONS

ESP17-1383

INTESTINAL AND HEPATOBILIARY ASCARIASIS IN SEVERELY MALNOURISHED INFANT

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Title of Case(s)

INTESTINAL AND HEPATOBILIARY ASCARIASIS IN SEVERELY MALNOURISHED INFANT

Background

Ascariasis, the most common geohelminthiasis in the world, is one neglected tropical disease affecting mainly developing countries. It is associated with poor basic sanitation and poverty, with around 20,000 deaths being reported each year worldwide. It is caused by *Ascaris lumbricoides*, which has a bowel and tissue cycle (liver and lung), causing malnutrition, Loeffler's syndrome, intestinal and hepatobiliary obstruction with or without cholangitis. Coinfection with *Trichuris trichiura* is common. We present a case of severe and complicated infestation.

Case Presentation Summary

Infant living in extreme poverty area, has expelled parasites anally and orally for a year; a week before medical examination, she experienced vomiting, fever, constipation, bloating and abdominal pain. Diagnosed with severe malnutrition, severe dehydration, septic shock of intra-abdominal origin, hepatomegaly, neurodevelopmental retardation and psycho-affective deprivation. Her labs showed leukocytosis with neutrophilia, moderate iron deficiency anemia, moderate hypoalbuminemia, normal liver function, but ruled out immunodeficiency. Thoracoabdominal x-rays showed partial intestinal obstruction without Loeffler's syndrome. Abdominal ultrasound presented multiple ascaris knots in the small bowel, hepatobiliary ascariasis with calcified and abscessed hepatic granulomas. After undergoing 10-day piperazine treatment, she expelled ascaris knots anally again, stool microscopy by Beaver method shows 1'372,000 eggs per gram of stool (epg) of *Ascaris lumbricoides* and 512,000 (epg) of *Trichuris trichiura*. She finished therapy with pamoate of pirantel-oxantel, albendazole and ampicillin- sulbactam. The family nucleus was dewormed too.

Learning Points/Discussion

Helminth infections in children causes poor growth, malabsorption, anemia and cognitive delay. Chemoprophylaxis is very useful and short-term effective, but uncontrolled setting allows re-infestation. Public health interventions are required for its long-term control.

05A. EDUCATION: CONGENITAL DISEASES

ESP17-1384

INCIDENCE AND OUTCOME OF CHILDREN CONGENITALLY-INFECTED WITH CMV FROM A TERTIARY HOSPITAL IN MADRID.

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Background

Congenital cytomegalovirus infection is the leading cause of non-genetic sensorineural hearing loss. The aim of this study was: 1) to analyze its incidence in our hospital; 2) to describe the epidemiological, clinical, diagnostic and therapeutical characteristics of this cohort, comparing it to the existing literature; 3) and to assess possible risk factors related to a worse clinical outcome.

Methods

A retrospective longitudinal study was performed on children diagnosed with congenital CMV infection between July 2008 and February 2016 in the Pediatrics Department of 'Gregorio Marañón' Hospital. A database created with RedCap software was completed by reviewing the patients and their mothers' medical records. SPSS (version 21.0; IBM *SPSS statistics*) was used for statistical analysis.

Results

A significant association ($p=0.03$) between congenital CMV infection before 18 weeks of pregnancy and neurocognitive impairment was found. A higher incidence of neurological sequelae among symptomatic children at 6 months of age ($p=0.001$) and at 12 months of age ($p=0.038$) was found, as well as more cases of hearing loss at 6 months of age ($p=0.003$). A viral load above 2000 copies/mL was significantly linked to symptoms at birth ($p=0.033$).

Conclusions

Newborns with higher viral loads were more likely to develop symptomatic infections at birth. Hearing loss at birth was one of the main risk factors for the development of hearing and neurocognitive sequelae. As a result, early diagnosis of congenital CMV infection could play a major role to improve prognosis of the disease.

11A. EDUCATION: INFECTIONS IN THE ONCOLOGY PATIENT

ESP17-1385

POTENTIAL RISK FACTORS TO DEVELOP A SEVERE INFECTION IN CHILDREN WITH FEBRILE NEUTROPENIA SECONDARY TO CHEMOTHERAPY: EVALUATION OF MISSING EPISODES FROM A PREVIOUS PROSPECTIVE STUDY.

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Background

Febrile neutropenia (FN) is a frequent complication after chemotherapy in children with cancer, which may lead to serious medical complications and high morbidity and mortality rate.

The objectives of the study were to determine the epidemiological and clinical characteristics, as well as to evaluate predictive risk factors for developing a potentially severe infection (PSI) in a cohort of children with FN, and to compare this cohort with a similar one prospectively collected in the same pediatric unit.

Methods

A retrospective study of FN episodes during a period of 5 years. Medical charts of 138 children diagnosed with neoplastic diseases on chemotherapy were reviewed in order to identify those children with FN not having been enrolled in a previous prospective study for various reasons. Demographic data, previous medical history, clinical symptomatology, diagnostic tests, treatment, outcome and follow-up were obtained.

Results

A total of 48 FN episodes were recorded, of which 18 (37.5%) were classified as PSI. Possible risk factors to develop a PSI were maximum CRP ($p=0.012$), days with neutrophil counts <500 cells/mm³ ($p=0.003$) and platelets $<50,000$ /mm³ ($p=0.033$). Comparison with the previously studied cohort revealed differences in maximal CRP ($p=0.022$), neutrophil days <500 cells/mm³ ($p=0.009$), platelet days $<50,000$ /mm³ ($p=0.019$) days of admission ($p=0.003$), and the diagnosis of respiratory infections.

Conclusions

Elevated CRP levels, platelet count $<50,000$ /mm³ and neutrophils <500 cells/mm³ were predictors of severity in FN episodes. Children missed from the prospective study tended to have higher risk factors to develop PSI and debut with more severe disease.

03D. EDUCATION: COMMUNITY ACQUIRED INFECTIONS: INVASIVE BACTERIAL INFECTIONS (NON-RESPIRATORY)

ESP17-1386

BACTERIAL MENINGITIS IN CHILDREN. RISK FACTORS OF ADVERSE OUTCOME.

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Background

Bacterial meningitis in children is nowadays an infrequent disease in Spain. The incidence of this disease has decreased, mainly due to routine vaccination. However, the mortality rate and the development of long-term sequelae remain high.

Methods

We have conducted a retrospective cohort study of children with bacterial meningitis. Patients were treated at a tertiary care hospital over a 16-year period. Only patients with bacteriological confirmed diagnosis were considered. Patient's baseline characteristics, bacterial aetiology and basic CSF and blood tests were recorded.

Results

We identified 70 patients who meet inclusion criteria. Mean age was 9 month. M/F 57%/43%. More frequent bacteria were *Streptococcus pneumoniae* (47%), *Neisseria meningitidis* (37%) and *Streptococcus agalactiae* (10%). In 21 cases serogroup of *Neisseria meningitidis* was identified (B: 90%; C 10%).

Six patients died (8.6%). Outcome for 29% of patients was death or long-term sequelae. A delay in diagnosis, low leukocyte count in cerebrospinal fluid (CSF) and pneumococcal etiology were associated with poorer outcome.

Mortality rate was higher in patients with sepsis, shock or intracranial hypertension. Hearing impairment, related to pneumococcal meningitis, was the most frequent sequela. Hydrocephalus and stroke are associated with motor deficits.

On the multivariate analysis pneumococcal etiology, C-reactive protein above 250 mg/dL and leukocyte count in CSF below 1.000 cells/ μ L were independent predictors of death or permanent sequelae.

Conclusions

Mortality and sequels of bacterial meningitis in children remains high. The main risk factor is an infection caused by *Streptococcus pneumoniae*. Patients with poor prognosis would be candidates for the application of new therapeutic interventions.

07B. EDUCATION: HEALTHCARE-ASSOCIATED AND SURGICAL INFECTIONS

ESP17-1390

REGISTERED NURSES' KNOWLEDGE, ATTITUDES, PRACTICES REGARDING THE SPREAD OF NOSOCOMIAL INFECTIONS AND THE IMPACT OF ORGANIZATIONAL SUPPORT

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Background and Purpose of the Study: Nosocomial infections (NIs) are new localized or systemic infections that develop in patients receiving medical care in healthcare facilities. NIs are recognized in hospitalized patients world-wide and are prevalent in all age groups. The infections are not present or incubating during a patient's admission into the healthcare facility and are identified at least forty-eight to seventy-two hours following the patient's admission. They are caused by pathogens such as bacteria, viruses and parasites present in the air, surfaces or equipment and are often transmitted by indirect and direct contact. The burdens of NIs include prolonged duration of hospitalization for patients resulting in increased costs of healthcare and, in some cases, deaths. It has been documented in the literature that at the time of their graduation from their professional education, healthcare professionals have sufficient knowledge to practice patient safety and infection control guidelines. However, the evidence suggests otherwise since healthcare workers are implicated in the transmission of NIs. With nurses having the most contacts with patients; understanding of their knowledge, attitudes and practice patterns with regard to the spread of NIs may provide one approach by which this health care issue would be addressed. **Methods:** This exploratory, cross-sectional and descriptive study was conducted using on-line survey responses from 352 registered nurses. Data was analyzed with descriptive and inferential non-parametric statistics. **Results:** The participants demonstrated high levels of knowledge regarding the spread of nosocomial infections, adherence to recommended guidelines of infection control practices, and positive attitudes. The results of correlation analysis indicated a significant positive correlation between organizational support and respondent's knowledge and weak but significant positive correlations between organizational support and respondents' attitudes and practices in respective categories. **Conclusion:** Findings in this study suggest that nursing education, concerted efforts of infection control, and organizational support play pivotal roles toward reducing the spread of NIs.

14B. EDUCATION: NON-INVASIVE GASTROINTESTINAL AND MUCOSAL INFECTIONS

ESP17-1392

ACUTE KIDNEY INJURY IN CHILDREN WITH ACUTE GASTROENTERITIS

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Introduction: This study was done in Children's Medical Center Hospital affiliated with Zahedan University of medical science , Iran.

Materials and Methods: The patients were 203 children who were admitted for gastroenteritis and we detected acute kidney injury in them. All of the patients were admitted and managed in the Emergency Department, and were evaluated for symptoms of AKI including dehydration, renal function tests, electrolytes, and urine output.

Results: In this study 203 patients were studied that 95(46%) were female and108 (53.2%) male.The median age of the children with gastroenteritis was 68/2±07/2(ranging from 2 months to 12 years). Acute kidney injury (AKI) was present in 63 (31%) patients at admission with 35 (17.2%) patients in the grade 1 category (AKIN) , 12(5.9%) and 16(7.9%) respectively .Thirty four (54%) children had moderate and 21 patients had severe dehydration . Acute kidney injury had developed in infant lesser than 1 years and severe dehydration ($p<0.05$) At presentation, 24 patients (15%) had serum BUN levels between 30-75 and creatinine levels in the range of 0.9-2.1mg/dl. Patients had received ORS , frequency of AKI was lower than other patients..After adequate fluid therapy, 30 children had polyuria of 6.4 (range 4-9) cc/kg/min. Twenty-three patients (16.4%) had hyponatremia and 41 patients (29.2%) had hypernatremia. Nine children (6.4%) suffered from hypokalemia. Some children had received ORS at home 8(12.7%) . All of them were managed in the emergency ward and discharged with normal GFR without any electrolyte abnormalities. The patients were followed for 3-6 months and all of them had normal renal function at the end of the study.

Conclusions: Early diagnosis and urgent management of gastroenteritis and dehydration can prevent AKI.

Keywords: Acute Kidney Injury;Child;Gastroenteritis

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15A. EDUCATION: PUBLIC HEALTH: CLINICAL EPIDEMIOLOGY

ESP17-1394

PREVENTION, MANAGEMENT, AND RISK FACTORS FOR DIARRHOEAL DISEASE IN CHILDREN UNDER FIVE YEARS IN CAPE TOWN

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Background

Cape Town's health facilities are stretched by the volume of cases of diarrhoea during the summer months, particularly with severely dehydrated children, who require complex inpatient management and follow up by Environmental Health Practitioners.

Objectives:

1) To identify risk factors leading to the index presentation and review triage, management, referral, and follow-up of the patient, and 2) To identify missed opportunities for identifying children with chronic or treatable illnesses.

Methods

A retrospective cohort study of children under 5 who presented to a primary care facility in Khayelitsha, Cape Town, with severe diarrhoea between November 1st 2015-April 30th 2016, who were subsequently referred to secondary care, and followed up post-discharge.

Results

We recruited 87 children. A significantly higher number of caregivers had no income than in Khayelitsha overall (65% vs 18.8%; $p < 0.001$), and children living in informal housing had nearly twice the odds of developing diarrhoea (OR 1.94; CI 0.85-4.44). HIV-exposed, uninfected children were younger (Median 9.44 months in exposed vs 17.36 months in unexposed; $p = 0.0015$), and were more likely to be malnourished (WAZ score < -2 ; 13 cases exposed vs 8 cases unexposed ($p = 0.04$)). Environmental Health Practitioners were able to trace 33.3% of children, but 65% attended clinical follow up appointments.

Conclusions

This cohort of children with diarrhoeal disease complicated by severe dehydration was a particularly socially deprived group, and two thirds of the cohort were untraceable post-discharge. The increased rate of malnutrition and younger age of presentation in HIV-exposed, uninfected children was an unexpected finding, but there is emerging evidence for immunological differences in infants exposed to HIV *in utero*.

04A. EDUCATION: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-1396

COMPARISON OF ADVERSE EVENTS FOLLOWING WHOLE CELL AND ACELLULAR PERTUSSIS VACCINES: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background

Evidence suggests that giving a priming first dose of whole-cell (wP) pertussis vaccine before completing schedule with acellular (aP) vaccine induces more effective immunity than using aP alone. A major limitation of wP is severe adverse events following immunisation (AEFI). We conducted a systematic review to compare AEFI of the two vaccines.

Methods

10 electronic databases were searched (as described in a published peer-reviewed protocol) for studies describing vaccination with wP or aP. Data on AEFI were extracted from qualifying studies and the frequencies of the two compared. Narrative description was followed for prevalence if studies had insufficient homogeneity while meta-analysis was conducted for 2-armed studies.

Results

24 studies met inclusion criteria (n=512 526). High heterogeneity amongst the studies did not allow for pooling of prevalence. AEFI with first dose of wP ranged from 20% to 75%, while those with aP ranged from 0% to 40%. Point prevalence of AEFI for the second and third doses of wP ranged from 0% to 77% and 0% to 67% respectively.

7 RCTs (n=2 639) compared first doses of wP and aP. Use of wP was significantly associated with AEFI [injection site swelling RR 5.6 (95% CI 3.0-10.7), injection site tenderness RR 4.0 (95% CI 2.4, 6.5), fever > 38°C RR 12.3 (95% CI 6.6-22.8), drowsiness RR 1.4 (95% CI 1.1, 1.8), loss of appetite RR 5.1 (95% CI 2.8, 9.5) and vomiting RR 1.7 (1.0, 3.1)]. Persistent crying, seizures and hypotonic-hyporesponsive episodes occurred only with wP.

Conclusion

AEFI with wP were significantly increased and similar with all 3 primary schedule doses. Despite the effectiveness of wP, strategies to prime with these vaccines must seriously take the cost of AEFI into consideration.

04A. EDUCATION: PREVENTION OF PERTUSSIS IN INFANTS – THE ONGOING CHALLENGE

ESP17-1397

FACTORS ASSOCIATED WITH INCREASED RISK OF BORDETELLA PERTUSSIS DISEASE IN A COHORT OF HOSPITALIZED AFRICAN CHILDREN

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Background: Despite the resurgence in high-income countries, risk factors for pertussis in children in low and middle-income countries (LMIC) remain poorly understood. This study assesses risk factors for confirmed pertussis in African children with severe LRTI.

Materials and Methods: *Bordetella pertussis* infection was confirmed by PCR (IS481+/hIS1001-) on respiratory samples prospectively collected from inpatient children at a South African hospital in Cape Town over a one-year period. History and clinical details were documented.

Results: 460 children with a median age of 8 (IQR 4-18) months were studied. *Bordetella pertussis* infection was confirmed in 32 (7.0%) of the children. Risk of confirmed pertussis was significantly increased if infants were younger than 2 months [aRR 2.37 (95% CI 1.03-5.42)]. Children with HIV exposure (aRR 3.53[95% CI 1.04-12.01]) or HIV infection (aRR 4.35[95% CI 1.24-15.29]) were also at increased risk. Mild (aRR 2.27 [95% CI 1.01-5.09]) or moderate (aRR 2.70 [95% CI 1.13-6.45]) under-nutrition in the children were associated with higher risks respectively. The highest risk was seen in children whose caregivers had *Bordetella pertussis* detected from nasal swabs (aRR 13.82 [95% CI 7.76-24.62]). Completion of the primary vaccine schedule (3 or more doses) was protective (aRR 0.28 [95% CI 0.10-0.75]). There was no association between risk of pertussis and household air pollutants.

Conclusions: HIV exposure or infection as well as detection of maternal nasal *Bordetella pertussis* and poor nutrition are associated with increased risk of pertussis in African children, especially in young infants. Completed primary vaccination was associated with reduced risk. There is an urgent need to improve primary pertussis vaccine coverage in LMIC and scale it up to include pregnant women, especially those with HIV infection.

Acknowledgements: Sanofi Pasteur provided funding.

Table Risk factors for confirmed *Bordetella pertussis* infection (N=460)

Risk factor	Risk n/N (%)	Relative Risk (95% Confidence Interval)	
		Crude	Adjusted*
Age			
≥ 2 months old	26/419 (6.2)	1	1
< 2 months old	6/41 (14.6)	2.36 (1.03-5.40)	2.37 (1.03-5.42)
Nutritional status			
Normal	19/351 (5.4)	1	1

Mild under-nutrition	8/64 (12.5)	2.31 (1.06-5.05)	2.27 (1.01-5.09)
Moderate under-nutrition	5/33 (15.2)	2.80 (1.12-7.02)	2.70 (1.13-6.45)
Severe under-nutrition	0/12 (0.0)	NA	NA

HIV status

Unexposed uninfected	19/349 (5.4)	1	1
Exposed uninfected	10/92 (10.9)	2.00 (0.96-4.15)	3.53 (1.04-12.01)
Exposed infected	3/19 (15.8)	2.90 (0.94-8.96)	4.35 (1.24-15.29)

Pertussis vaccine doses

None	5/28 (17.9)	1	1
One	4/57 (7.0)	0.49 (0.11-1.35)	0.39 (0.11-1.33)
Two	5/58 (6.9)	0.47 (0.14-1.51)	0.33 (0.09-1.19)
Three and more	19/308 (6.2)	0.33 (0.13-0.81)	0.28 (0.10-0.75)

Caregiver *B. pertussis*

PCR negative	22/455 (4.9)	1	1
PCR positive	10/15 (66.7)	13.48 (7.84-23.21)	13.82 (7.76-24.62)

Home cigarette smoking

No smoker	21/298 (7.0)	1	1
Home smoker	11/162 (6.8)	0.96 (0.48-1.95)	0.98 (0.49-1.98)

Bio-fuel use

No bio-fuel	29/442 (6.6)	1	1
Use of bio-fuel	3/18 (16.7)	2.54 (0.85-7.57)	2.40 (0.73-7.91)

n/N (%) = stratum specific proportion (percent). * Multivariable models adjusted for age, sex, HIV status, socio-economic status, breast-feeding and number of household members with cough. Risk ratio 95% confidence intervals that do not cross the null value of 1 are shown in **bold**

MTP Viewing Abstracts

03B. EDUCATION: OPTIMAL APPROACH OF MENINGOCOCCAL DISEASE

ESP17-0009

MENINGOCOCCAL DISEASE IN CHILDREN: 11 YEARS OF ACTIVE SURVEILLANCE IN A MEXICAN HOSPITAL, AND THE NEED FOR VACCINATION

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Background

In Mexico, Meningococcal Disease (MD) is considered to be a rare disease, however, several studies done using active surveillance have proved the opposite, with an outbreak in Tijuana, Mexico (2013).

Methods

Since October-2005 until September-2016, active surveillance looking for all patients admitted with suspected MD < 16 years of age was performed at the Tijuana General Hospital (TGH). Confirmation of MD was done by conventional culture from a sterile fluid. For all *Neisseria meningitidis* isolates, serogroup identification was performed by the Pastorex meningitis kit (Alere, Ltd[®], Stockport, UK). Descriptive data was analyzed using Excel[®]. Comparative analysis was performed using VassarStat[®].

Results

There were 51 MD cases. Median age was of 36 months (3 days – 15 years), with 21 (41.18%) < 2 years old. Median days of illness was of two (1-14). At admission, 47 (92.15%) had meningitis, 24 (47%) purpura, 4 (7.84%) conjunctivitis, and 2 (3.92%) pleural effusion. Serogroup distribution was as follows: C-32 (62.74%), Y-12 (23.53%), B-5 (9.8%), and Ignored-2 (3.92%). Median hospitalization days was of 10 (1 hour – 44 days). Overall mortality was of 13 (25.49%). At admission, presence of thrombocytopenia, leukopenia and purpura were significantly associated with mortality. Among survivors (n=38), 13 (34.2%) developed sequelae, Yearly MD attack rates were of 7.61 and 2.69 per 100,000 population in children < 2, and < 16 years of age, respectively.

Conclusions

1. MD is endemic in Tijuana, Mexico.
2. Based on attack rates, and the presence of an outbreak, meningococcal vaccination should be seriously considered in the region.

03B. EDUCATION: OPTIMAL APPROACH OF MENINGOCOCCAL DISEASE

ESP17-0014

MENINGOCOCCAL NEONATAL PURULENT CONJUNCTIVITIS/ SEPSIS, AND ASYMPTOMATIC CARRIAGE OF *N. MENINGITIDIS* IN MOTHER'S VAGINA AND BOTH PARENT'S NASOPHARYNX. CASE REPORT

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Title of Case(s)

MENINGOCOCCAL NEONATAL PURULENT CONJUNCTIVITIS/ SEPSIS, AND ASYMPTOMATIC CARRIAGE OF *N. meningitidis* IN MOTHER'S VAGINA AND BOTH PARENT'S NASOPHARYNX. CASE REPORT

Background

Neonatal conjunctivitis is usually associated with vagina's infection by *Chlamydia sp.*, *N. gonorrhoeae* and/or other bacteriae during delivery. Meningococcal neonatal conjunctivitis is an extremely rare disease. We report a case of neonatal meningococcal sepsis/conjunctivitis, and asymptomatic carriage of *N. meningitidis* from both parents (vagina and nasopharynx).

Case Presentation Summary

As part of our active surveillance for Meningococcal Disease at the Tijuana, Mexico, General Hospital (TGH), we identified a newborn with meningococcal conjunctivitis and sepsis. *N. meningitidis* was isolated by conventional culture, and serogroup identification was performed by the Pastorex meningitis kit (Alere, Ltd[®], Stockport, UK). A 3 days old newborn was admitted at TGH with a one day history of conjunctivitis and poor feeding. Clinical examination confirmed severe blepharitis and profuse purulent discharge, as well as tachycardia (180x'), tachypnea (60x'), and irritability. CBC revealed 55,000 white blood, 78% neutrophils, and normal hemoglobin and platelets. CSF cytochemical analysis was normal. Gram stain from conjunctival exudate revealed intracellular Gram negative diplococci, we presumed the baby had gonorrheal conjunctivitis, however, serogroup Y, *N. meningitidis* was isolated both from conjunctival exudate and blood. Additionally, isolation of serogroup Y, *N. meningitidis* was obtained from mother's vagina and both parent's nasopharynx. The baby continued with 7 days of IV ceftriaxone and discharged with no sequelae.

Learning Points/Discussion

Meningococcal neonatal conjunctivitis and sepsis is an extremely rare disease, and apparently secondary to asymptomatic carriage from mother's vagina and/or sexual partner's nasopharynx.

10A. EDUCATION: IMAGING IN CNS INFECTIOUS DISEASES

ESP17-0112

LINEZOLID THERAPY FOR BRAIN ABSCESS CAUSED BY METHICILLIN-SENSITIVE STAPHYLOCOCCUS AUREUS. FIRST CASE REPORT

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Title of Case(s)

Linezolid therapy for brain abscess caused by methicillin-sensitive *Staphylococcus aureus*: First case report.

Background

Brain abscesses (BA) caused by methicillin-sensitive *Staphylococcus aureus* (MSSA) are preferably treated with semi-synthetic penicillins such as oxacillin. However, there is limited data regarding their penetration into BA fluid. Linezolid has excellent penetration into brain tissue. Recent reports have described successful use of linezolid in patients with BA caused by methicillin-resistant *Staphylococcus aureus*. Here, we report the first case of BA caused by MSSA treated successfully with linezolid after failure of intravenous oxacillin for 3 weeks and repeated aspirations.

Case Presentation Summary

A previously healthy 3-year-old girl was admitted to our hospital with a two-week history of fever and headache. Clinical examination revealed right-sided hemiparesis. Her laboratory investigations demonstrated leukocytosis. Magnetic resonance imaging (MRI) showed a left occipitoparietal multiloculated brain abscess (Fig.1). Urgent left temporal Burr-hole aspiration was performed and an antibiotic regimen of ceftriaxone, vancomycin, and metronidazole was started. MSSA was isolated from pus culture. Therefore, antibiotic therapy was changed to oxacillin. She continued to have fever and elevated C-reactive protein (CRP) for 10 days after starting oxacillin, thus the second aspiration was done and gentamycin was added. Repeated MRI two weeks later showed development of ventriculitis. Therefore, oxacillin and gentamycin were switched to intravenous linezolid. Within 5 days, her fever subsided and CRP normalized. Follow-up radiological imaging revealed brain abscess regression. Intravenous linezolid was continued for 6 weeks with no relapse detected after a one-year follow-up.

Learning Points/Discussion

Linezolid may represent an efficacious treatment for MSSA-related brain abscesses, particularly in patients not responding to the recommended antibiotic regimen.

04C. EDUCATION: BRONCHIOLITIS

ESP17-0170

EVALUATION OF 244 CASES OF BRONCHIOLITIS ADMITTED IN A TERTIARY HOSPITAL OF BANGLADESH.

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Background

Bronchiolitis is one of the commonest cause of hospitalization in under two years of children. It is more common during the month of October to January. According to a multi centered large study in our country it reveals that 21% of admission in under five children is due to Bronchiolitis. This study is designed to observe care seeking behavior of parents, Age, Sex distribution of patients, clinical features, duration of hospital stay & to assess management outcome. Bronchiolitis is a clinical diagnosis characterized by coryza, cough & respiratory distress in a previously healthy child. Obstruction of the lower respiratory tract due to inflammation of the bronchioles & thus there is hypoxaemia. Commonest organism RSV.

Methods

It is a cross sectional study done in Community Based Medical College Hospital, Mymensingh, Bangladesh in pediatric ward during the period of January to December in 2014.

Results

Total admission was 1300 & out of which 244 (19%) cases were clinically diagnosed as Bronchiolitis, 67% were male & 33% were female child ageing 2 months to 24 months, mean age 7.25 months, average duration of stay in hospital 2.5 days, more than 65% were late to come to hospital for treatment purpose. Management outcome good. This study findings correlates with others study findings.

Conclusions

As it is a very common ailment of children, need admission for management as humidified oxygen is the main stay of treatment thus it deserves manufacturing an effective vaccine against the disease as early as possible.

03C. EDUCATION: SEVERE S. AUREUS INFECTIONS: IS IT A MATTER OF RESISTANCE OR TOXINS?

ESP17-0176

COMMUNITY ASSOCIATED METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS(CA-MRSA) INFECTION PRESENTING AS BILATERAL SPONTANEOUS PNEUMOTHORAX IN AN ADOLESCENT BOY

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Title of Case(s)

Community associated Methicillin Resistant Staphylococcus Aureus(CA-MRSA) infection presenting as bilateral Spontaneous Pneumothorax in an adolescent boy

Background

Staphylococcus aureus is a major cause of infections in both hospital and the community, causing diseases ranging from mild skin infections to fulminant septicemia and has become increasingly resistant to methicillin. Community-associated MRSA (CA-MRSA) infections in both outpatients and inpatients are increasing in prevalence among adults and children. Skin and soft tissue infections, such as abscesses or cellulites, remain the most common manifestations of CA-MRSA infections. Less commonly, CA-MRSA can cause severe diseases, such as necrotizing pneumonia, osteomyelitis, and septicemia. We report such a case in a 16 year old adolescent boy.

Case Presentation Summary

A 16 year old child presented to our emergency department with fever and pain chest for last 7 days and difficulty in breathing for 2 days. On examination child was having a respiratory rate of 50 breaths per minute with subcostal and intercostal retractions, pulse rate was 120/mt with bounding peripheral pulses and a BP of 100/50 mmHg, CFT of approximately 4 seconds. Past history revealed an incision and drainage done over some swelling on right middle finger at home. Xray chest done in emergency revealed bilateral pneumothorax for which bilateral intercostals drainage was done. In view of shock and impending respiratory failure child was intubated and put on ventilatory support. Blood culture showed the growth of Staph Aureus which was a methicillin resistant strain. Child was discharged on day 14.

Learning Points/Discussion

Clinicians should be aware of possible serious CA-MRSA infections in persons without previously recognized risk factors. We suggest that the widespread use of antibiotics may have contributed to the remarkably high resistance rates of CA-MRSA. We need to develop appropriate prevention, referral, detection, and treatment guidelines for outpatients.

04C. EDUCATION: BRONCHIOLITIS

ESP17-0188

VOMITING FOR MORE THAN 2.5 DAYS IS INDEPENDENTLY ASSOCIATED WITH POOR EVOLUTION IN BRONCHIOLITIS

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Background

Bronchiolitis is a leading cause of acute illness and hospitalization among young children. The group of children with subsequent clinical deterioration after hospitalization remains poorly defined in the literature. We aimed to identify factors present upon admission that are associated with worse evolution among children hospitalized with bronchiolitis.

Methods

This prospective cohort was conducted at the pediatric ward of the Children's Hospital, Salvador, Brazil, from May 2015 to July 2016. Inclusion criteria comprised age <2 years, admission to hospital due to bronchiolitis, and written informed consent. Clinical data, physical findings upon admission and outcome were registered. Multi-variable logistic regression analysis in a model adjusted for age was used to assess association between Intensive Care Unit (ICU) treatment/length of hospital stay (LOS)≥5 days (outcome variables) and factors detected upon admission (predictor variables).

Results

The study group comprised 172 patients, out of which 5 (2.9%;95%CI:1.1%-6.3%) were transferred to ICU and 69 (40.1%;95%CI:33.0%-47.6%) had LOS≥5 days. Overall, the median age was 5.2 months (IQR:3.6-8.2) and the median duration of vomiting was 1 day (IQR:1-3); prematurity <30 weeks (3.5%), <37 weeks (14.5%) were reported and severe malnutrition (4.7%) and crackles (27.9%) were found. Severe malnutrition (OR 21.53;95%CI 1.43–323.66), prematurity <30 weeks (OR 13.85;95%CI 1.23–155.89) and duration of vomiting (OR 1.92;95%CI1.16–3.17) were independently associated with ICU transfer. Prematurity <37 weeks (OR 3.89;95%CI 1.55–9.79) and crackles (OR 3.11;95%CI 1.45–6.70) were independently associated with LOS ≥5 days. The area under the ROC curve for duration of vomiting to predict transfer to the ICU was 0.92(95%CI 0.81–1.04) being the cutoff with best performance 2.5 days (sensitivity 100%; specificity 79%).

Conclusions

Children admitted with bronchiolitis reporting vomiting ≥2.5 days should receive maximal attention.

04C. EDUCATION: BRONCHIOLITIS

ESP17-0240

CONCURRENT MENINGITIS IN INFANTS WITH BRONCHIOLITIS

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Background

Concomitant meningitis in infants with bronchiolitis is known to occur but is extremely rare. These children frequently present with apneas and undergo investigations including cerebrospinal fluid (CSF) analysis to exclude meningitis. Empiric broad spectrum antibiotics are routinely given until CSF culture results are received.

Objective: The purpose of this study was to determine the prevalence of coexistent meningitis in children less than 1 year of age with nasopharyngeal aspirate (NPA) polymerase chain reaction (PCR) confirmed viral bronchiolitis.

Methods

All children less than 1 year of age admitted to PICU from January 2014 to January 2017 with a NPA PCR confirmed viral bronchiolitis were included in the study. Data were collected through a retrospective review of the medical records and the frequency of meningitis was determined.

Results

A total of 143 children less than 1 year of age were identified with NPA positive PCR tests. Mean age at presentation was 4.2 months (range 2 days to 12 months). The most common virus isolated was RSV (52%), followed by Rhino virus (34%), Metapneumovirus (8%) and other viruses (6%). Of the 143 children, lumbar puncture for CSF analysis was performed in 40 children (28%), who presented with apneas. CSF analysis revealed normal cell counts and no positive cultures. All were treated with broad spectrum empirical antibiotics that were stopped after culture results.

Conclusions

Our study shows no infants with NPA PCR positive bronchiolitis presented with concurrent meningitis. More studies are required to rationalize the investigations in children presenting with apneas in confirmed bronchiolitis.

10A. EDUCATION: IMAGING IN CNS INFECTIOUS DISEASES

ESP17-0262

STATISTICAL AND CLINICAL ANALYSIS OF MENINGOCOCCAL INFECTION IN CHILDREN

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Background

Meningococcal infection is an important factor of morbidity and mortality in children despite the fact that the etiological agent, virulence determinants and anti-infective immunity mechanisms are well studied. The results of genome-sequencing analysis of more than 1000 strains of *Neisseria meningitidis* are available for doctors and scientists. According to NCDC in Georgian non-vaccinated population 226 cases were registered during the last 11 years. Among those 149 patients (66% of all cases) underwent treatment in our center.

Methods

We retrospectively studied the case reports of the patients admitted at the Infectious Diseases Center with the diagnosis of meningococcal infection in 2005-2015. We characterized clinical features and defined the statistics of the severe meningococcal infection

During recent years severe meningococcal infection has been registered sporadically in contrast to localized epidemics a decade ago. In Georgia.

Results

We studied case reports of 110 survived and 15 non-survived children. The majority of survived patients (61%) was hospitalized on the 1st – 2nd day of the illness. Non-survivors (76%) were admitted at the clinic similarly. The age of the patients: < 1 y. -21%, 1-6 y. -47,5% and 6-18 y. - 15,5%. Lethal outcome: <1 y. lethality 19%, 1-6 y.- 8,5% and 6-18 y.-13,5%. In 94,5% of survivors meningococemia with the early symptoms of hemorrhagic rash and fever was detected at the admittance,

Conclusions

The numbers show that the 47% of all patients were 1-6 years old although the lethality in this age group was the lowest (8,5%).

Rare forms: meningococcal pneumonia – 2,5%, meningococcal arthritis – 2%, meningococcal myocarditis – 0,7%. Survivors had average 12 in-hospital days, whereas 95% of non-survivors –one in-hospital day. The lethal outcome was not determined by delayed treatment.

12A. EDUCATION: INVASIVE FUNGAL INFECTION IN IMMUNOCOMPROMISED CHILDREN

ESP17-0284

PHARMACOKINETICS OF POSACONAZOLE IN THE PROPHYLAXIS AND TREATMENT OF INVASIVE FUNGAL INFECTIONS IN IMMUNOCOMPROMISED CHILDREN

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Background

Posaconazole, is used in prophylaxis and treatment of invasive fungal infections (IFI). There is still no consensus on the dosage in children. Guidelines recommend 18 and 24 mg/kg/d for both prophylaxis and treatment, with target drug levels (DLs) higher than 0.70 and 1,25ug/mL, respectively. Posaconazole is also related with drug interactions. Then the purpose is to determine the posaconazole dosage to achieve effective DLs for both prophylaxis and treatment of IFI in children and identify their safety profile.

Methods

Retrospective analysis in immunocompromised children who received posaconazole (suspension) from January 2012 to October 2016, in the Oncology and Bone Marrow Transplant Units at Hospital Calvo Mackenna, Santiago, Chile. Pharmacokinetic and safety profile variables were obtained.

Results

Six patients with acute lymphoblastic leukemia (ALL) and 78 drug levels were reviewed. Mean doses of posaconazole of 17,1 and 20,7 mg/kg/d for both prophylaxis and treatment were used, resulting in a DLs means of 0.86 and 1,37 ug/mL, respectively. In prophylaxis, 40/67 (60%) showed DLs \geq 0.70 ug/mL, receiving a mean dose of 19mg/kg/d. In treatment 5/11 (46%) presented DLs \geq 1.25 ug/mL, receiving a mean dose of 23mg/kg/d. 2 children presented severe neuropathy because of interaction between vincristine and posaconazole and a trend toward the increase of cyclosporine levels was observed. No adverse reactions were observed in this cohort.

Conclusions

Therapeutic drug monitoring is relevant in children receiving posaconazole. Dosages of 19 and 23 mg/kg/day for prophylaxis and treatment achieved appropriate DLs in the immunocompromised children included in this analysis. Although we did not observe any ADR, the recommendation is to periodically evaluate drug interactions and consider adjustments of medications, including vinca alkaloids and CsA, especially in this susceptible population.

18C. EDUCATION: CASES IN TROPICAL INFECTIONS

ESP17-0298

SIBLINGS WITH FEVER AND EOSINOPHILIA RETURNING FROM SUB-SAHARAN AFRICA

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Title of Case(s)

Siblings with fever and eosinophilia

Background

Schistosomiasis is a common parasitic infection in Africa. Our case-series describes a family with members suffering from acute and chronic schistosomiasis. The clinical symptoms of acute schistosomiasis are unspecific and self-limiting. With increasing numbers of people migrating from African countries, schistosomiasis will become a more common infection in Europe. Pediatricians need to be aware of schistosomiasis, and a General Screening in people arriving from endemic countries should be discussed.

Case Presentation Summary

Two 6 and 8 year old siblings presented with fever 6 weeks after a visit to their mothers home village in western Kenya. Both had been swimming in Lake Victoria. Besides fever, the physical exam was unremarkable. Hypereosinophilia was present in both children. We ordered serology and microscopic analyses of 24h-urine and stool samples of both children and the mother. Relevant findings are summarized in Table 1)

Patient	Fresh water contact in endemic area	Clinical symptoms	Eosinophilia/ µl	Schistosoma Serology:	<i>S. mansoni</i> eggs in stool
daughter	First contact	Fever, cough	5400	positive	positive
son	First contact	Fever, cough	9500	positive	positive
mother	several contacts	non	100	positive	positive

The siblings were sick with fever and hypereosinophilia, which is indicative of an acute infection (Katayama syndrome). In contrast, the asymptomatic mother was most likely infected earlier in life, hence presenting with chronic Schistosomiasis.

All patients were treated with Praziquantel 40 mg/kg/qd for 3 consecutive. In addition prednisolone (1mg/kg/qd for 5 days) was given to the children with acute infection to prevent a hypersensitivity reaction.

Learning Points/Discussion

1. Schistosomiasis is a common parasitic disease
2. Clinical symptoms of acute Schistosomiasis are unspecific. The medical history (fresh-water contact in endemic area) is crucial
3. Should we introduce systematic screening to migrants and refugees from endemic areas?

11C. EDUCATION: INFECTIONS IN CHILDREN TREATED WITH CHRONIC IMMUNOSUPPRESSIVE THERAPY

ESP17-0319

INCREASED PREVALENCE OF MUCOCUTANEOUS AND HSV1 INFECTIONS IN NEUTROPENIC CHILDREN WITH CANCER

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Background

Background: Paediatric cancer patients (PCP) mostly present bacterial, opportunistic and mixed infections. The type of infections of PCP patients in the presence or absence of neutropenia is poorly studied. Our aim was to evaluate infections' type and pathogens in PCP patients with and without neutropenia.

Methods

37 PCP patients with 70 febrile episodes were evaluated at fever's onset and 48h later with complete blood count, C-reactive protein (CRP), cultures of biological fluids, polymerase chain reaction (PCR) and antibody titers.

Results

In our study population, 30/70 (42.85%) infections were bacterial, 13/70 (18.57%) viral, 3/70 (4.28%) fungal, 16/70 (22.85%) fever of unknown origin (FUOs), 18/70 (25.7%) opportunistic and 12/70 (17.14%) mixed infections. The frequency of Gram-positive infections (60%) was higher than that of the Gram-negative ones (40%). Neutropenia, mostly severe (78%), was detected in 42/70 (60.0%) febrile episodes, mainly in patients with haematological malignancies (OR=2.81, p=0.059). Neutropenic patients had higher prevalence of mucocutaneous infections (47.6% vs 7.14%, p=0.004) than the non-neutropenic ones, while HSV1 infections occurred only in the neutropenic group (14.3%). The frequency of bacterial, opportunistic, mixed infections was similar in the 2 groups. However neutropenic patients had 59% greater likelihood than the non-neutropenic ones to have mixed infections [OR=1.59 (95%CI=0.35-7.11), p=0.54].

Conclusions

Cancer patients exhibited a high prevalence of bacterial (42.85%), opportunistic (25.7%) and mixed infections (17.14%). Patients with haematological malignancies and neutropenia presented higher frequency of mucocutaneous and HSV1 infections than the non-neutropenic ones, with no difference in the frequency of bacterial, opportunistic and mixed infections.

03B. EDUCATION: OPTIMAL APPROACH OF MENINGOCOCCAL DISEASE

ESP17-0329

CEREBROSPINAL FLUID PLEOCYTOSIS FOLLOWING MENINGOCOCCAL B VACCINATION

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Title of Case(s)

Cerebrospinal Fluid Pleocytosis following MenB vaccination

Background

01 September 2015, UK infants were offered a reduced two dose primary immunisation schedule of MenB vaccine at 2 and 4 months followed by a booster at 12 months. Because of high rates of fever post-vaccination, parents were advised to give their infants three doses of prophylactic paracetamol.¹ Previous studies have shown some inflammatory response to vaccines², the extent of this is unclear and little is known about CSF inflammatory response, we aim to describe a case of CSF pleocytosis following MenB vaccination in an infant

Case Presentation Summary

11 weeks old otherwise well infant presented to our ED with 24 hours history of fever(40.4C) following his first dose of immunisation. Prior to this admission, He was treated for GBS sepsis at 8 weeks of age with a 7 days course of ceftriaxone. Then, He had a full septic work up then with a peak CRP of 92 and a clear CSF but positive blood culture. However, on this admission, no significant findings on examination. He had a full septic work up with a CRP112 and Neutrophil13. The CSF showed 29 polymorphs, 7 lymphocytes, 82red cells and no organism. The CSF culture and PCR including bacterial and viral were all negative. His blood culture, urine, throat swabs and NPA were also negative. His temperature settled after 48 hours and remained well in the hospital. He was discharged after 2 weeks course of ceftriaxone. His follow up was unremarkable

Learning Points/Discussion

There is currently lack of data to inform the management of this increasing number of infants presenting to ED following menB vaccination. In addition, a detailed surveillance is needed to further assess the health and economic impact of this vaccine.

12A. EDUCATION: INVASIVE FUNGAL INFECTION IN IMMUNOCOMPROMISED CHILDREN

ESP17-0345

INVASIVE *PYTHIUM INSIDIOSUM* INFECTION IN A CHILD WITH BONE MARROW APLASIA

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Title of Case(s)

INVASIVE *PYTHIUM INSIDIOSUM* INFECTION IN A CHILD WITH BONE MARROW APLASIA

Background

Pythium insidiosum is an oomycete which can cause life-threatening infectious disease in tropical and temperate areas. Although no treatment with proven efficacy exists, combined surgery, antimicrobials and immunotherapy have been used to successfully treat this infection. We report the first case of invasive facial infection in a child in Spain.

Case Presentation Summary

A 6-year-old boy with bone marrow aplasia showed left midface swelling, fever and ischemic necrosis of the oral mucosa of the upper jaw. A CT-scan revealed left maxillary and ethmoid sinusitis with preseptal cellulitis. Histological examination of tissue samples showed fungal hyphae and mucormycosis was suspected. Despite of therapy with antimicrobials, amphotericin-B and posaconazole swelling increased. *Pythium insidiosum* was identified by nucleic sequence analysis of colonies cultured from surgical biopsy. Terbinafine was added to treatment for synergistic effect. Several deep surgical debridements were performed, but infection progressed. Immunotherapy with *Pythium insidiosum* antigen was administered. After the fourth dose of immunotherapy, he experienced a significant increase in swelling of facial and orbital tissues with each dose of immunotherapy. However, it seemed that infection was restrained because *Pythium* didn't grow on cultures from biopsies. After 3 months of immunotherapy no more doses were given because of very intense inflammatory reactions with local necrosis. A hematopoietic stem cell transplantation had to be performed to treat his bone marrow aplasia, but 5 days later he suffered a significant increase in facial and orbital edema and finally he died.

Learning Points/Discussion

Immunotherapy was probably important restraining the infection and should become part of the therapy of pythiosis. The unattainability of radical surgical removal of the compromised tissues and deep immunodepression probably contributed to the fatal outcome.

04C. EDUCATION: BRONCHIOLITIS

ESP17-0351

RISK OF ASTHMA AT 6 YEARS AFTER SEVERE BRONCHIOLITIS IN INFANTS OVER 9 MONTHS OF AGE

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Background

Severe bronchiolitis is one of the most important risk factor to develop recurrent wheezing in childhood. The age of the infant at the time of bronchiolitis has also been implicated as a possible risk factor for the development of asthma.

Our aim was to evaluate whether the age at the time of bronchiolitis is associated with increased frequency of asthma at 6-8 years.

Methods

We included all children currently aged 6-8 years and previously hospitalised during the seasons 2008-2011 due to acute bronchiolitis. Parents were contacted by phone. Data were collected using the validated International Study of Asthma and Allergies in Children (ISAAC) questionnaire. In accordance with the ISAAC criteria, Asthma was defined as wheezing in the previous 12 months.

Results

The prevalence of asthma (wheezing in the previous 12 months) at 6-8 years was 16%(33/202) among those who suffered bronchiolitis at < 9 months vs. 28.6%(12/42) in the ≥ 9- month group (OR=1.7, 95%CI=1, 3.0, p-value=0.05). A slight male predominance was observed (OR= 1.8, 95% CI =1.0, 3.1, p-value=0.002). The older group reported more limited speech due to wheezing in the last 12 months(OR= 4.2, 95% CI =1.2, 14.7, p-value=0.012), and wheezing during exercise also in the last 12 months(OR=4.8 95% CI= 1.6, 14.1, p-value=0.002) compared to the <9-months group.

Rhinovirus infection was more frequently identified in infants older than 9 month at bronchiolitis than in the younger group (p=0.01). No other differences could be detected among both groups.

Conclusions

Children hospitalized with bronchiolitis at ≥9 months of age are at increased risk of developing asthma at 6 years of age when compared to those infants with bronchiolitis at younger age.

04C. EDUCATION: BRONCHIOLITIS

ESP17-0361

ROLE OF VIRAL COINFECTIONS IN THE DEVELOPMENT OF ASTHMA IN CHILDREN

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Background

It is not clearly established if coinfections are more severe than single viral respiratory infections. It is also unknown whether bronchiolitis with viral coinfections is associated with a greater risk of long-term asthma than simple viral infections. Our aim was to compare the prevalence of asthma at 6-8 years of age in children previously hospitalized with bronchiolitis, with simple or dual/multiple viral infection.

Methods

We included all children currently aged 6-8 years and previously hospitalised during the seasons 2008-2011 due to acute bronchiolitis, with positive viral detection. Two hundred and forty four parents could be contacted by phone (52 coinfections and 192 single-infections). Data were collected using the validated International Study of Asthma and Allergies in Children (ISAAC) Questionnaire. In accordance with the ISAAC criteria, Asthma was defined as wheezing in the previous 12 months.

Results

In the multivariable analysis (logistic regression), the variables independently associated with recurrent wheezing were: viral coinfection (OR = 2.627, IC95%: 1.045-5.216), atopic mother (OR=3.347, IC95%: 1.21- 9.225), and passive smoking (OR = 2.335, IC95%: 1.045-4.882). The affirmative answer to the question ISAAC 2: "Wheezing in the last 12 months" was significantly more frequent in coinfections (p=0.01), males (p=0.02), children with atopic dermatitis (p=0.03), food allergy (p=0.01), allergic rhinitis (p < 0.001), smoking during pregnancy (p=0.05), and older age during bronchiolitis (p=0.04). In the multivariable analysis (Logistic Regression), the presence of wheezing in the last 12 months was independently associated with coinfection, allergic rhinitis, male sex and older age during bronchiolitis (p=0.001).

Conclusions

Coinfections are independently associated with development of recurrent wheezing and with affirmative response to question 2 of the ISAAC Asthma Symptom Questionnaire, which is the one that in the validation studies has shown a better correlation with the current prevalence of asthma.

03C. EDUCATION: SEVERE S. AUREUS INFECTIONS: IS IT A MATTER OF RESISTANCE OR TOXINS?

ESP17-0363

COMPLICATED OSTEOMYELITIS BY MRSA WITH ENDOCARDITIS AND PULMONARY SEPTIC EMBOLI

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Title of Case(s)

COMPLICATED OSTEOMYELITIS BY MRSA WITH ENDOCARDITIS AND PULMONARY SEPTIC EMBOLI

Background

Acute osteomyelitis presents complications in a low percentage of cases. The most prevalent microorganisms are *S. aureus*, *K. kingae* and *S. pyogenes*. The prevalence of MRSA in our region is up to 13%. We report a case of humerus osteomyelitis associated with cardiac complications and pulmonary diseases.

Case Presentation Summary

Seven-year-old boy who consults for fever and humeral pain of 48 hours of evolution. He shows great inflammation of the shoulder and functional impotence. Blood tests showed leukocytosis of 23,500 (91% neutrophils) and CRP 10mg/dL. The x-ray of the joint was normal.

Was treated initially with cefuroxime, an arthrocentesis was performed and he was transferred to our center. The synovial fluid and blood cultures were positive for *Staphylococcus aureus* resistant to methicillin (MRSA) with positive Phanton-valentine toxin. At that time, we adjusted the antibiotic treatment. CT of the joint was performed and confirmed the osteomyelitis with myositis and showed bilateral pulmonary lesions corresponding to septic emboli. We performed an echocardiography confirming the endocarditis, which would explain the lung lesions.

We completed a total of two weeks of gentamicin and one month of bitherapy with vancomycin and rifampicin. At the week of discharge the patient consults due to pain and functional impotence of same joint. An x-ray showed a complete pathological fracture of the third proximal humeral with bone changes secondary to previous osteomyelitis.

Learning Points/Discussion

We are facing a case of invasive MRSA, with bone, cardiac and pulmonary disease. It is challenging treatment to cover all the septic foci. Pathologic fracture is a complication observed in up to 5% of osteomyelitis by MRSA in long bones.

11C. EDUCATION: INFECTIONS IN CHILDREN TREATED WITH CHRONIC IMMUNOSUPPRESSIVE THERAPY

ESP17-0367

LEGIONELLA PNEUMOPHILA PNEUMONIA IN TWO INFANTS TREATED WITH ACTH: SHOULD WE BE WORRIED?

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Title of Case(s)

LEGIONELLA PNEUMOPHILA PNEUMONIA IN TWO INFANTS TREATED WITH ACTH: SHOULD WE BE WORRIED?

Background

Infantile spasms (IS) (West syndrome) represent an age-specific form of an intractable epileptic disorder, often treated with adrenocorticotrophic hormone (ACTH). *Legionella pneumophila* (*L. pneumophila*) is a rare cause of pediatric pneumonia. ACTH is rarely related to *L. pneumophila* infection.

Case Presentation Summary

A 14months and 9 months oldInfants were treated with ACTH for cryptogenic IS. Both were diagnosed with severe pneumonia, presenting within one month after starting ACTH treatment.

Viral respiratory tests were negative. CXR demonstrated a large lobar pneumonia consistent with bacterial pathogen. Both had positive tests for legionella antigen and were treated successfully with levofloxacin. The first case was community acquired and the second was considered Health care related. Active surveillance for Legionella in water sources in the hospital was negative. Both patients returned to their basic health condition.

Learning Points/Discussion

ACTH treatment may be associated with severe and rare infections. These two cases of legionella pneumonia stress the need for close observation of patients receiving prolonged ACTH therapy, especially during the first weeks.

04C. SCIENCE: BRONCHIOLITIS

ESP17-0398

SERUM 25-HYDROXYVITAMIN D LEVEL IN CHILDREN WITH RECURRENT VIRUS-INDUCED WHEEZING

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Background

Vitamin D plays role in lung development and is a protective factor against respiratory infection. The aim of this study was to assess the association between serum 25-hydroxyvitamin D (25(OH)D) concentration and risk of early-onset and recurrence of wheezing during the first five years of life.

Methods

This was a prospective study that included a total of 129 children, aged 2-36 months (14,4 mo; SD 8,08), recruited from the Clinic of Pediatrics Alexandrovska. Each of them had at least one episode of wheezing. Recurrent wheezing was defined as 3 episodes within 6 months (n=100), and one wheezing as only one episode of wheezing till 2 years of age(n=29). The children were followed up to 5 years age. Serum 25OHD concentrations were measured during the acute wheezing illness.

Results

Mean 25(OH)D concentrations were $24,19 \pm 11,32$ ng/ml and $27,14 \pm 9,78$ for the first and recurrent wheezing group respectively. Vit D deficiency (serum 25(OH)D <20ng/ml) had 28 children (22%), insufficient (serum 25(OH)D 21-29 ng/ml) were 63 (49%), and normal values (serum 25(OH)D >30 ng/ml) were detected in 38 (29%) of the children. Twenty-seven percent of patients with persistent wheezing during the follow up had vitamin D levels in the deficient range and 20 % had vitamin D levels under < 20 ng/ml in the asymptomatic group. Our data confirm the relationship between early age of wheezing and vitamin D deficiency: age of first wheezing 8,75 mo for children with serum 25(OH)D <20ng/ml, 8,24mo with serum 25(OH)D 21-29 ng/ml, and 10,95mo for those with normal values (serum 25(OH)D >30 ng/ml), $p=0,01$.

Conclusions

The present study demonstrates significant association between vitamin D status and age of first wheezing in infants, but not with persistence of symptoms.

Clinical Trial Registration (Please input N/A if not registered)

N/A

03B. EDUCATION: OPTIMAL APPROACH OF MENINGOCOCCAL DISEASE

ESP17-0412

INVASIVE MENINGOCOCCAL DISEASE (IMD) WITH MENINGOENCEPHALITIS, ARTHRITIS, MYOSITIS AND PLEURAL EFFUSION

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Title of Case(s)

INVASIVE MENINGOCOCCAL DISEASE (IMD) WITH MENINGOENCEPHALITIS, ARTHRITIS, MYOSITIS AND PLEURAL EFFUSION

Background

Extracranial complications of *Neisseria meningitidis* infection are uncommon in normal children. We describe a case of IMD with meningoencephalitis, septic arthritis, myositis and pleural effusion.

Case Presentation Summary

A 10-year-old boy previously healthy was referred from a local hospital for suspected bacterial meningitis. He had a two-day history of neck stiffness, fever, drowsiness and vomiting. There were no skin rash or respiratory symptoms. A brain CT-scan was normal. Attempt to perform a lumbar puncture failed and cefotaxime was started after taking a blood culture.

On admission to our hospital, the patient had a temperature of 37,8°C, other vital signs were normal and presented marked drowsiness and disorientation. Blood and CSF cultures and CSF Gram stain were negative. Polymerase chain reaction (PCR) on CSF was positive for *Neisseria meningitidis* and latex agglutination test was positive for serogroup B.

Fever developed on day 3 of treatment, and the right hip had limitation of internal rotation and active and passive range of motion was severely limited because of pain. Brain MRI revealed increased signal intensity involving periventricular white matter and bilateral fronto-parietal enhancement. Hip MRI showed joint effusion with swelling of the obturator internus, externus and gluteal maximus muscles. Arthrotomy and drainage of the right hip yielded grossly purulent fluid. Joint-fluid culture was negative, but Gram stain identified gram-negative diplococci and PCR was positive for meningococcus. Due to persistent fever, repeat arthrotomy was performed. Chest x-ray showed a small pleural effusion. Patient is currently stable, on day 18 of cefotaxime treatment.

Learning Points/Discussion

This observation illustrates an unusual presentation of IMD and emphasizes awareness of atypical manifestations, which may pose diagnostic problems, leading to delay in treatment, prolonged hospitalization and morbidity.

04C. EDUCATION: BRONCHIOLITIS

ESP17-0430

UK GENERAL PRACTITIONER MANAGEMENT OF VIRAL BRONCHIOLITIS: IMPACT OF THE 2015 NICE GUIDELINE

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Background

The UK NICE bronchiolitis guideline was published in June 2015 to provide guidance for primary care and hospital doctors. Previous studies have shown the publication of national bronchiolitis guidelines only result in small improvements in care. The aim of this study was to assess the impact of the NICE guideline on GPs management.

Methods

In April 2016, an electronic, structured questionnaire was sent to UK General Practitioners (GPs) and recruited by MedeConnect, the market research division of Doctors.net.uk. A sample of 1000 GPs stratified by UK geographic region was requested. The questionnaire asked demographic questions and questions to investigate the impact of the 2015 NICE guideline on clinical practice in the primary care setting.

Results

1009 GPs completed the questionnaire. 351 (35%) were aware of the guideline and had read some of it and 256 (25%) had changed their practice. Of those, 129 (50%) now routinely monitor oxygen saturations, 119 (46%) no longer routinely prescribe medications they would have previously, 79 (31%) now routinely provide written advice for parents and 14 (5%) have changed their practice in other ways. 150 (59%) GPs oxygen saturation threshold for hospital referral remained the same, 80 (31%) decreased their threshold and 26 (10%) increased their threshold. Overall there was minimal change in GP hospital referral patterns; 79 [8%] referred fewer infants and 82 [8%] referred more.

Conclusions

Overall 25% of GPs changed their management of viral bronchiolitis after the publication of the NICE guideline, although only 35% were aware of the guideline and had read it. Future similar guidelines should be publicised as widely as possible to ensure increased knowledge and change in practice. Also, different approaches to generation of guidelines may be required to change practice.

04D. EDUCATION: ENT INFECTIONS: MANAGEMENT OF COMPLICATIONS

ESP17-0440

STREPTOCOCCUS PNEUMONIA SENSITIVITY TO ANTIBIOTICS IN CHILDREN WITH ACUTE MIDDLE PURULENT OTITIS

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Background

Acute otitis media (AOM) is one of the most common diseases in childhood; occurs as a complication of respiratory, bacterial and viral infections of the respiratory tract, is more common in children aged 3 months to 3 years. Acute inflammation of the middle ear can be caused by various pathogenic microorganisms and their combination. The sensitivity of the AOM pathogens to antibiotics varies considerably in different regions.

Methods

In order to determine the sensitivity *S.pneumoniae*, discharge from the ear of children from 1 year to 15 years with otitis to antimicrobials were examined 91 children hospitalized to otorhinolaryngological department of the clinic.

Results

Analysis of the bacterial etiology of acute otitis media in children has shown to change in recent years the structure of pathogens. In our study, the leading role of *S. pneumoniae* was confirmed in acute otitis media, its share was 45%. Resistance level of circulating strains of *S. pneumoniae* to macrolide antibiotics exceeded 30%, which makes their use no rationally when pneumococcal infections confirmed.

Conclusions

Based on these data the study of the stability of *S. pneumoniae* to antibiotics can be formulated as recommendations for antimicrobial therapy of pneumococcal infections. The continuing high sensitivity of *S. pneumoniae* to amoxicilini can be recommended drug of first choice in acute bacterial infections of pneumococcal etiology in children.

Increasing the level of resistance of the strains of pneumococcus to macrolides indicates any inappropriate routine use of macrolides for the treatment of pneumococcal infections. Determination of sensitivity to antibiotics of pathogens showed that *S.pneumoniae* retains high sensitivity to amoxicilini, cefazoloni, cefuroxime and ciprofloxacini.

04C. EDUCATION: BRONCHIOLITIS

ESP17-0456

EPIDEMIOLOGY OF BRONCHIOLITIS AND SEASONALITY OF RESPIRATORY SYNCYTIAL VIRUS IN SAO PAULO CITY, BRAZIL

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Background

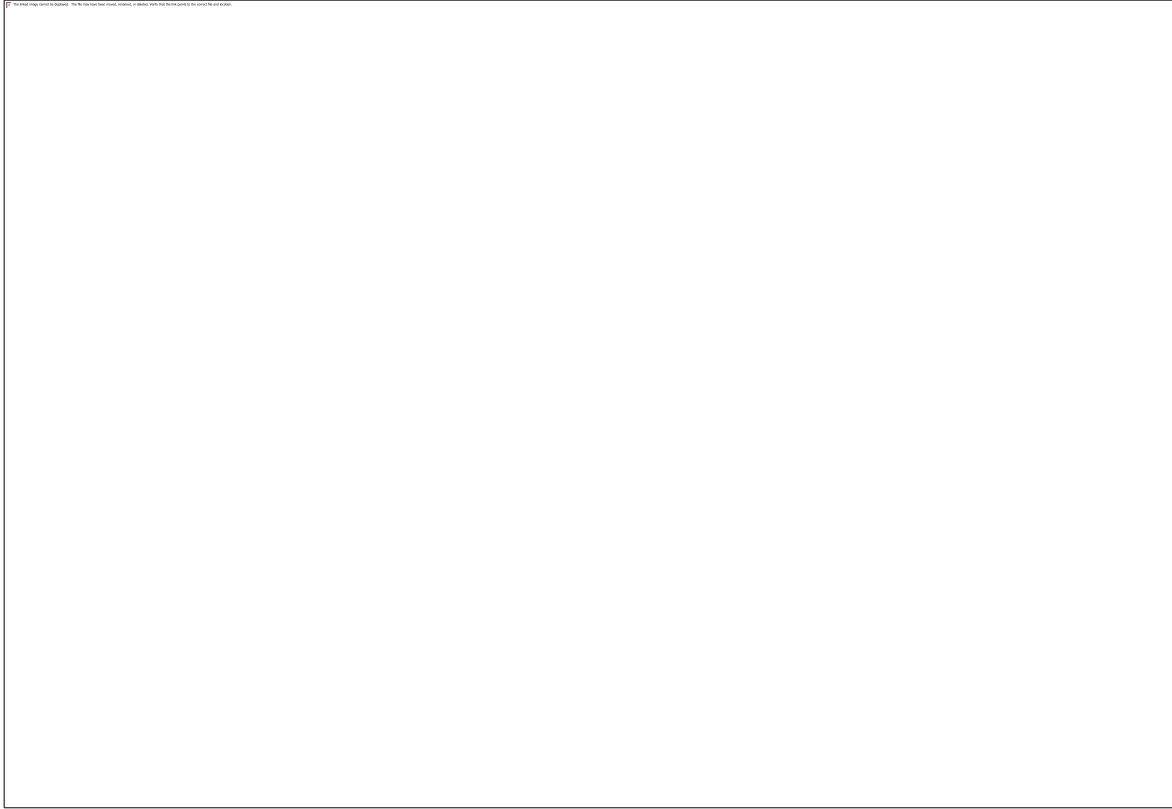
Respiratory syncytial virus (RSV) is the most important etiology of bronchiolitis among infants worldwide. Therefore, it is important to recognize the seasonality, epidemiology and risk factors for severe RSV bronchiolitis in different locations. This study aims to describe the epidemiology of bronchiolitis-associated hospitalizations and seasonality of RSV in a secondary hospital, located in São Paulo city, Brazil.

Methods

Retrospective medical records review of infants ≤ 12 months old with bronchiolitis hospitalized in Hospital Universitário da Universidade de São Paulo, an urban teaching hospital located in São Paulo city, Southeast of Brazil, in 2015. Bronchiolitis was defined as the first wheezing episode. We collected data for demographic, clinical, virologic, the presence of underlying medical conditions and length of stay (LOS).

Results

In 2015, a total of 569 infants ≤ 12 months old were admitted to our pediatric ward. Bronchiolitis accounted for 209 hospitalizations (36.7%). RSV was the main etiology, identified in 134 cases of bronchiolitis (64.1%). RSV bronchiolitis peak in April and May (Figure 1). The male: female ratio for bronchiolitis was 1.5:1; the median age was 3.0 months (± 2.6). The prevalence of possible risk factors for severe bronchiolitis was: prematurity (gestational age ≤ 36 weeks) –16.3%; passive smoking–27.2%; age less than 12 weeks–49.3%; not receiving exclusive breastfeeding–44%. The median LOS was 3.0 days (range: 1.0-60 days); 32 infants (15.3%) required admission to the pediatric intensive care unit. No infant died with bronchiolitis.



Conclusions

Bronchiolitis is the leading cause of hospitalizations during the first year of life. RSV is the most common etiology, and the peak incidence was during the mid-autumn, after the rainy season. Severe bronchiolitis typically affected young infants ≤ 12 weeks old.

04C. SCIENCE: BRONCHIOLITIS

ESP17-0469

BRONCHIOLITIS TREATMENT CHANGES IN LAST YEARS: FROM INHALED DRUGS TO RESPIRATORY SUPPORT.

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Background

Bronchiolitis treatment has changed in last years. Bronchodilators, epinephrine, hypertonic saline (HS) and antibiotics are generally not useful. Nasal continuous positive airway pressure (nCPAP) is currently the gold standard for respiratory support for moderate to severe acute viral bronchiolitis, although oxygen delivery via highflow nasal cannula (HFNC) is increasingly used.

The objective of our study is to analyze inhaled drugs, non-invasive respiratory support and antibiotics used in our hospital.

Methods

Two non-consecutive epidemic periods were included: first epidemic 2012-2013 (Ep1) and second epidemic 2015-2016 (Ep2).

Clinical characteristics, respiratory support, inhaled treatment received and antibiotic therapy were collected.

Data were presented as medians (IQR) and frequencies (%). Both periods were compared by chi-square test (included Fisher exact test) and Man-Whitney U test; with significance level: $p < 0.05$.

Results

218 children were admitted with diagnosis of bronchiolitis: 82 in Ep1 and 136 in Ep2. 78% caused by Respiratory syncytial virus, similar both epidemics.

Severity of Wood-Downes Score was higher in Ep2, 4.9% vs 11.1%, $p: 0.044$ and average of length of hospital stay was longer: 4 days (2.5-6.0) vs 5 (3.7-7.0), $p: 0.001$.

Inhaled treatment with adrenaline and HS has decreased in Ep2, (53.7% vs 3.7%, $p < 0.001$) and (39.2% vs 9%, $p < 0.001$), respectively. There were no changes in salbutamol use.

HFNC use was more frequent in Ep2, 5.8% vs 48.5%, $p < 0.001$, with no differences in nCPAP use (4.9% vs 13.3%, $p < 0.062$) neither in duration of oxygen therapy. There were no differences in antibiotic use.

Conclusions

Bronchiolitis treatment has changed in our hospital last years, decreasing inhaled drugs as adrenaline and HS and increasing HFNC use, with no changes in nCPAP utilization. Differences between severity of illness may influence in the respiratory support used and duration of hospital stay

Clinical Trial Registration (Please input N/A if not registered)

08B. SCIENCE: HIV IN ADOLESCENTS

ESP17-0477

CD4/CD8 RATIO IN HIV INFECTED CHILDREN WITH LONG TERM IMMUNE RECOVERY AND MAINTAINED VIRAL SUPPRESSION

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Background

HAART is associated with marked immune-reconstitution improving the prognosis of HIV-infected children. Despite long-term virological suppression, not all children achieve complete immunological recovery due to persistent immune-activation.

CD4/CD8 ratio has been described to identify patients with higher immune-activation despite ART. Scant data are available on the evolution of the CD4/CD8, as a marker of immune-activation in HIV-infected children with long-term immune-recovery and maintained viral suppression.

Methods

Children initiating first-line HAART in whom virological suppression was achieved and maintained for more than 5 years were selected out from the Spanish Cohort of HIV-infected children.

Patients were divided in two groups: CD4/CD8 > 1 or < 1 at last observation. We compared both groups studying factors associated with immune-activation by univariate and multivariate analysis.

Results

146 HIV infected children were included (77% Caucasian, 46% male and 19% CDC class C). Age at diagnosis: 0.6 (IQR: 0.2 - 2.1) years old. Age at HAART initiation: 2.3 (IQR: 0.5 - 6.2) years old. 44 (30%) had received mono-dual therapy previously. HAART duration was 9.8 (IQR 8.1 - 13.2) years and undetectable viral load 9.5 (7.8, 12.5) years.

33% had a CD4/CD8 < 1. In multivariate analysis, CD4/CD8 < 1 were associated with lower nadir OR: 1.002 (CI 95% 1.000-1.004), older age OR: 1.16 (CI 95% 1.000-1.360) and exposed to mono-dual therapy OR: 0.16 (CI 95% 0.003-0.720).

Conclusions

In our cohort of perinatally HIV-infected children, long-term immune recovery is observed after 10 years of initiating and maintaining suppressive HAART.

Despite of maintained virological suppression, 1/3 of the patients had a CD4/CD8 < 1. Lower nadir, higher actual age and previous exposure to suboptimal therapy are independently associated with higher immune activation (CD4/CD8 < 1).

Clinical Trial Registration (Please input N/A if not registered)

10A. EDUCATION: IMAGING IN CNS INFECTIOUS DISEASES

ESP17-0485

A RARE CAUSE OF STIFF NECK

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Title of Case(s)

A RARE CAUSE OF STIFF NECK

Background

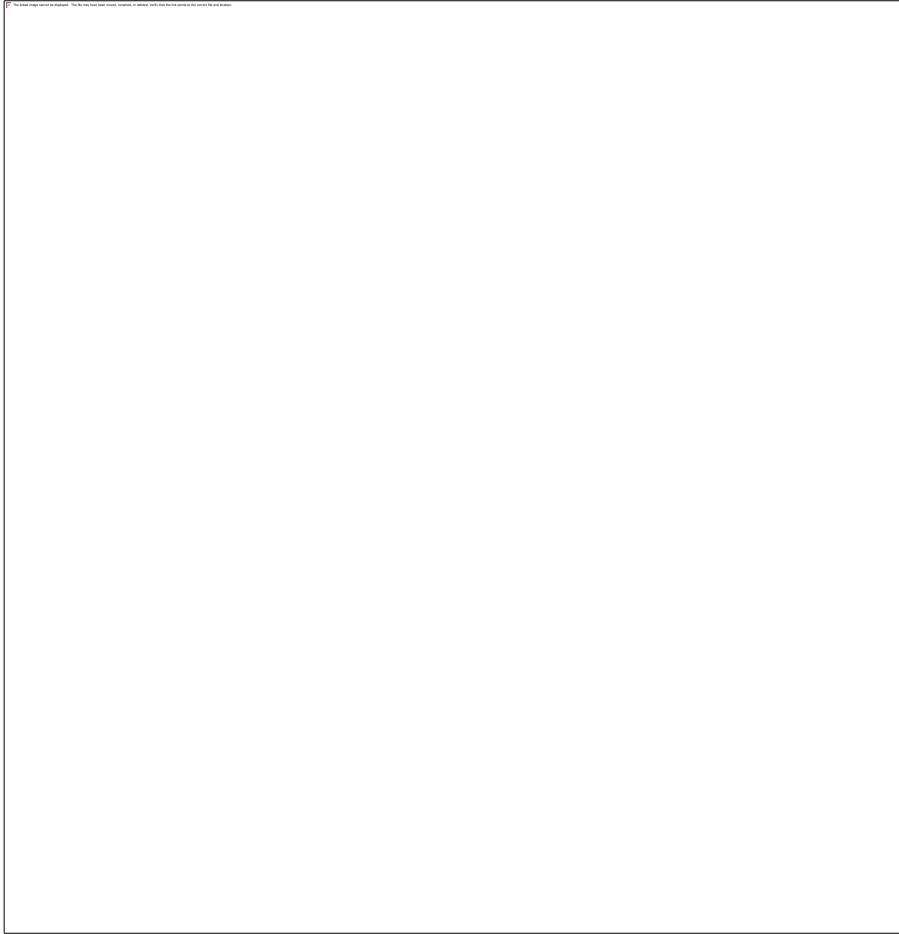
Acquired torticollis usually results from injury or inflammation of the sternocleidomastoid (SCM) or trapezius muscles, but can also be caused by life-threatening and serious conditions.

Case Presentation Summary

We report the case of a 14-year-old boy, with several admissions to the Emergency Department for cervical pain, with a diagnosis of torticollis, without satisfactory improvement with symptomatic treatment. No history of trauma or physical exertion. About 1 month before he had a lip infection after placing a piercing without aseptic conditions and without treatment. On admission, he complaint of pain on palpation of the trapezius, SCM and cervical spinous processes, with limitation on cervical rotation.

He performed cervical CT with suggestive alterations of the C4-C5 spondylodiscal infiltration process and epidural soft tissue thickening (Flemings/Empyema?) and cervical MRI with signs of C4 and C5 bone permeation associated with pre-vertebral and intra-channel capturing soft tissue complex. Chest CT without alterations. Slightly increased initial Sedimentation Rate and Reactive C-Protein. He was admitted to the Pediatric Service and treated with Ceftriaxone and Vancomycin. He presented progressive improvement of pain and limitation of cervical mobility, being discharged after 45 days of antibiotic therapy without deficits and with imaging improvement. The etiological agent was not isolated: tuberculosis was excluded, negative blood cultures and serologies. Given the location, it was not possible to biopsy the lesion. The immunological study had slightly

decreased IgG, with a subsequent normal subclass study.



Learning Points/Discussion

Spondylodiscitis is a rare entity with difficult diagnosis on pediatric patients. A high level of suspicion is necessary due to insidious clinical evolution. The etiology and pathophysiology are controversial and treatment of infectious spondylodiscitis without agent identified requires prolonged broad spectrum therapy.

18C. EDUCATION: CASES IN TROPICAL INFECTIONS

ESP17-0514

WHEN YOU GOT BITTEN BY THE TRAVEL BUG. CASE SERIES OF SKIN LESIONS IN PAEDIATRIC RETURNING TRAVELERS

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Title of Case(s)

"WHEN YOU GOT BITTEN BY THE TRAVEL BUG". CASE SERIES OF SKIN LESIONS IN PAEDIATRIC RETURNING TRAVELERS.

Background

Cutaneous larva migrans (CLM) is an endemic parasitic **disease in tropical and subtropical regions**. **However, cases acquired in other temperate climates have been reported recently. It is an emerging infection in returning travelers.** Here we report three cases of **imported CLM in children**.

Case Presentation Summary

Unrelated 16-year-old, 3-year-old and 2-year-old girls were referred to the hospital with the suspicion of allergic rash after returning from a trip to Spain, Turkey and Thailand, respectively. Typical for CLM erythematous, serpiginous, creeping skin eruptions extending from a red papule appeared on the arm, foot sole and buttocks, respectively, and progressed from a few days to weeks before consultation. The lesions were itchy and the patients did not report other symptoms. All children were walking barefoot and playing or lying on beaches (most likely contaminated with infected animal faeces) but they were not exposed to injuries or animal bites. Their medical history was unremarkable, immunizations were up-to-date, and they were not taking any medications. Clinical examination did not reveal any abnormalities other than the rash. Topical and oral treatment with

albendazole was prescribed. All of the patients recovered without complications, the lesions resolved without

recurrence.

Learning Points/Discussion

With significant growth in international travel, skin diseases became the 2nd leading cause of diagnoses among ill returning travelers. Although, CLM is a self-limiting disorder that naturally resolves within weeks (as the larvae remain confined to the epidermis), antihelminthic therapy is recommended to ease the symptoms and prevent secondary bacterial infections. Residents and tourists traveling to endemic areas should have proper footwear and use protective mats when lying on sand/soil where animals are permitted.

12A. EDUCATION: INVASIVE FUNGAL INFECTION IN IMMUNOCOMPROMISED CHILDREN

ESP17-0516

DISSEMINATED HISTOPLASMOSIS WITH CUTANEOUS MANIFESTATIONS

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Title of Case(s)

DISSEMINATED HISTOPLASMOSIS WITH CUTANEOUS MANIFESTATIONS

Background

Histoplasmosis is an endemic disease present in many countries of the American and African continents, India and the Far East. *H. capsulatum* is an environmental saprophyte that can be isolated from soil, when the latter is contaminated with bird or bat excrement. A distinctive disseminated infection occurs in patients with conditions that affect cellular immune ability, namely congenital or acquired immunodeficiencies.

Case Presentation Summary

Case 1: 11-year-old female patient with a maternal history of recurrent oral and vaginal candidiasis, histoplasmosis plus a not easily-managed hypothyroidism. Personal history of candidiasis from birth, pulmonary histoplasmosis at the age of 5, and hypothyroidism. She comes with a 4-month history of a facial folliculitis. Skin biopsy: compatible with mycotic elements binding to *H. capsulatum*. Immunological study: STAT-1 mutation.

Case 2: 10-year-old male patient, AIDS C3 with poor adherence to antiretroviral treatment and few controls in the last years. He comes to consultation with fever, fatigue, cough, hyporexia, prurigoid papular lesions located on the face, and vasculitic lesions in the upper and lower limbs. Skin biopsy: pathology results and cultures compatible with *H. capsulatum*, CD4 123 (14%).

Case 3: 15-year-old female patient, AIDS C3, with few controls and poor adherence to antiretroviral treatment. She comes to consultation with fever, fatigue, hyporexia and moderate respiratory distress. Presence of vasculitic cutaneous lesions located on the face. Skin biopsy: pathology results and cultures compatible with *H. capsulatum*, CD4 30 (1.5%).

Learning Points/Discussion

Cutaneous histoplasmosis can manifest itself in a variety of clinical forms in immunodeficient patients and should be a diagnostic consideration in patients coming from endemic areas. It is often the expression of disseminated histoplasmosis. Prompt diagnosis lead to an early indication of the appropriate treatment.

10A. EDUCATION: IMAGING IN CNS INFECTIOUS DISEASES

ESP17-0547

DIARRHEA ASSOCIATED PNEUMOCOCCAL MENINGITIS WITH COMPLICATING HYDROCEPHALUS IN A CHILD: A CASE REPORT FROM A RESOURCE-LIMITED SETTING

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Title of Case(s)

Diarrhea associated pneumococcal meningitis with complicating hydrocephalus in a child: a case report from a resource-limited setting

Background

Streptococcus pneumoniae is the most common and intimidating cause of childhood meningitis. Its delayed diagnosis may be associated with ramifications such as hyponatremia, hypernatremia etc with fatal outcome.

Case Presentation Summary

A previously healthy 9 month old Bangladeshi female infant was diagnosed with diarrhea, pneumonia and convulsion due to hypernatremia. Pneumonia was confirmed by respiratory distress and radiological findings. Routine cerebrospinal fluid study detected pneumococcal meningitis. Ampicilin, Gentamicin and Dexamethasone were promptly started. On hospitalization day 3, convulsion re-appeared with worsening of consciousness level. Antibiotics were switched to Ceftriaxone and Vancomycin, although, ultrasonography of brain revealed no abnormality. Contrast-enhanced CT scan of head was performed and revealed dilated ventricles with diffused enhancement of meninges and basal cisterns, demonstrating meningitis with ventriculomegaly. Ceftriaxone was replaced by Meropenem to control fever. MRI of brain confirmed the progression of hydrocephalus. Emergency ventriculo-peritoneal (VP) shunt operation was performed with continuation of antibiotics for 21 days. After 3 months, follow-up MRI showed reduction of ventricular size with functioning VP shunt in situ with no neurological deficit.

Learning Points/Discussion

Childhood pneumococcal meningitis may be associated with diarrhea, pneumonia and other related complication. Appropriate antibiotic therapy alone may not be sufficient enough to avert complications. Communicating hydrocephalus is potentially an ominous ramification of meningitis even though ultrasonography result is normal. Rapid diagnosis is imperative to attain good outcome. Evidence advocates further research to detect the risk factors of meningitis in diarrheal children that may help in early diagnosis and management in order to reduce meningitis related fatal outcome.

12A. EDUCATION: INVASIVE FUNGAL INFECTION IN IMMUNOCOMPROMISED CHILDREN

ESP17-0590

A CASE OF INTRAABDOMINAL ABSCESS DUE TO ASPERGILLOSIS

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Title of Case(s)

A Case of Intraabdominal Abscess due to Aspergillosis

Background

Aspergillus species are common fungi, some of which can cause a wide variety of clinical manifestations ranging from colonization to severe and invasive disease. Herein we present an unusual case of Aspergillus abscess in an oncologic patient.

Case Presentation Summary

A seventeen year-old girl who had pancreas carcinoma for 4 months was admitted with abdominal pain and fever. She was operated (whipple) one month ago. Her body temperature was 38.8°C. Abdominal tenderness was present. White blood cell count was 2721/mm³, absolute neutrophil count was 1950/mm³, and C-reactive protein was 77 mg/dl. Cefoperazone-sulbactam was started. Because of persistent fever, teicoplanin and amikacin were added. 25x80 mm size local fluid was detected in the left lobe localization of the liver in the abdominal ultrasonography. Abdominal tomography showed approximately 74x58 mm and 59x42 mm size with contrast enhancement and intense contents the locular abscess collection in the liver (Figure 1). The abscess puncture was done with ultrasonography. There was yeast in the Gram stain, and no leucocytes in the Wright stain. *Candida glabrata* grew in abscess culture and caspofungin (50 mg/m²/dose) was added. But pathologic examination reported a multiple septated hyphae and spore structures which branching angle (45) in fibrinous zone considering Aspergillus (Figure 2). Caspofungin was stopped and liposomal amphotericin B (3 mg/kg/d) was started. Liver enzymes and direct bilirubin were elevated and hepatic encephalopathy developed. On the 18th day of liposomal amphotericin B treatment she was died.

Learning Points/Discussion

Although Aspergillus infections are known to be frequently seen in patients with hematologic malignant or hematopoietic stem cell transplantation; this diagnosis should be kept in mind in patients with solid organ tumors with a history of intra-abdominal surgery.

18C. EDUCATION: CASES IN TROPICAL INFECTIONS

ESP17-0602

ACALCULOUS CHOLECYSTITIS IN A PAEDIATRIC PATIENT WITH PLASMODIUM FALCIPARUM INFECTION: A CASE REPORT AND LITERATURE REVIEW

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Title of Case(s)

ACALCULOUS CHOLECYSTITIS IN A PAEDIATRIC PATIENT WITH PLASMODIUM FALCIPARUM INFECTION: A CASE REPORT AND LITERATURE REVIEW

Background

Acute acalculous cholecystitis (AAC) is an uncommon severe, inflammatory disease in children that can be associated with some infections. We report an ACC in a girl with malaria and review published paediatric cases.

Case Presentation Summary

A 5-year-old girl, originally from Equatorial-Guinea presented at Paediatric Emergency department immediately after landing in Madrid from her hometown. Seven days before she started with high temperature, abdominal pain and asthenia, diagnosed with malaria infection, with a normal blood analysis, and treated with only two doses intramuscular arthemether. Two days before travelling to Madrid she got worse, associating jaundice, without fever remission. On arrival in Madrid she presented jaundice, tenderness in the right and left hypochondrium and hepatomegaly 2cm. Laboratory examinations: white-blood-cell count 14.300/mm³ (neutrophils 72%), haemoglobin 11.9 g/L; thrombocytopenia (27000/mm³), C-reactive protein 128 mg/L, total bilirubin 22.9 mg/dL (direct 18.3 mg/dL), AST 201 IU/L, ALT 187 IU/L, and kidney failure (creatinine 2.19 mg/dL), with normal coagulation. Abdominal ultrasound was consistent with AAC (thickened gallbladder of 4.5mm with sludge inside). Peripheral smear showed *P. falciparum* (2% parasitemia); administering intravenous quinine and clindamycin, plus cefotaxime, metronidazol and intravenous fluids, with full recover. Other results: EBV-IgM/IgG-Ab positive (PCR<3,5 E3 copy/ml), and negative blood culture.



Learning Points/Discussion

To our knowledge, only 5 paediatric cases-AAC related to malaria have been published, which data we have reviewed. Also, we have found published articles that associate AAC with EBV infection. In our case, the full recovery after malaria treatment, and EBV markers let us think that the malaria infection has been the cause of AAC.

04C. EDUCATION: BRONCHIOLITIS

ESP17-0605

CLINICAL IMPACT OF RESPIRATORY VIRUSES ON THE BRONCHIOLITIS SEVERITY IN HOSPITALIZED INFANTS AND PRESCHOOL CHILDREN

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Background

Acute respiratory infections (ARI) are associated with wheezing illnesses at all ages and may impact the development and severity of asthma. They are associated up to 95% with respiratory viral infections. The objectives of the presented study is to investigate the relationship between various respiratory pathogen and severity of bronchial obstruction in hospitalized infants and preschool children with bronchiolitis.

Methods

During the 2015/16 winter season, nasopharyngeal specimens of 105 hospitalized children aged < 5 years with ARI were tested using RT-PCR for influenza viruses (IV), RSV (A/B), human metapneumovirus (hMPV), parainfluenza viruses (PIV 1/2/3), rhinoviruses (RV) and adenoviruses (AdV). Clinical characteristics of RSV-only infections were compared with other viral infections.

Results

Viral pathogen was confirmed in 89 children (84,8%). 25,7% of the children had URTI (rhinitis, laryngitis) and 78 (74,3%) had bronchiolitis. A single virus was detected in 80 cases, 9 were with multiple viral infections. The predominant pathogen is RSV (52%), followed by IV (25%), hMPV (12.5%), RV (4%), PIV (4%) and AdV (2.5%). The RSV type A prevail in infants and type B in preschool age children. In children with life-threatening bronchial obstruction with prolonged oxygen therapy, RSV is the most commonly detected pathogen (42%), followed by IV A. The presence of viral infection did not correlate with the duration of the systemic corticosteroid treatment. The median duration of reported lung sounds was longer in the patients with detected virus infection, most commonly RSV.

Conclusions

Respiratory viruses play a key role in the wheezing illnesses in young children, predominantly infants. Our results confirmed that the RSV (type B) is an important pathogen in severe wheezing episodes in preschool age, not only in the infancy.

18C. EDUCATION: CASES IN TROPICAL INFECTIONS

ESP17-0639

CLINICAL OVERLAP BETWEEN PAEDIATRIC VISCERAL LEISHMANIASIS (VL) AND HAEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS (HLH): IMPLICATIONS FOR DIAGNOSIS AND MANAGEMENT IN A NON-ENDEMIC SETTING

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Title of Case(s)

CLINICAL OVERLAP BETWEEN PAEDIATRIC VISCERAL LEISHMANIASIS (VL) AND HAEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS (HLH): IMPLICATIONS FOR DIAGNOSIS AND MANAGEMENT IN A NON-ENDEMIC SETTING.

Background

The clinical syndrome of familial HLH greatly overlaps with that of VL, while VL can be a precipitating cause for acquired HLH. Consequently, VL may be missed and left untreated, resulting in negative outcomes following intense immunosuppression for HLH. We report a case of VL with features of HLH successfully treated in a non-endemic setting, highlighting the importance of detailed travel history and high index of suspicion.

Case Presentation Summary

A 4-month old boy presented with a 5-day history of fever. Assessment revealed hepatosplenomegaly and cytopenias. He failed to improve with intravenous ceftriaxone. Further tests revealed hypertriglyceridaemia, hypofibrinogenemia and markedly raised ferritin (12000mcg/L).

Evaluation for HLH revealed, negative bone marrow aspirate (BMA) for haemophagocytes, malignant disease and leishmania microscopy. Functional testing for primary causes of HLH (SAP, XIAP, perforin and GRA) were negative. An exhaustive infectious screen including TB and HIV was also negative.

Partial HLH treatment (based on fulfilment of 5 diagnostic criteria) was started (dexamethasone 10mg/m²/d). Due to extensive antenatal maternal travel and postnatal travel to Madrid, empirical treatment for possible VL was commenced (liposomal amphotericin 3mg/kg/d). Etoposide was omitted from HLH-protocol whilst awaiting results of Leishmania PCR and serology.

Following clinical improvement, pre-treatment BMA Leishmania PCR and Leishmania serology were confirmed positive. Steroids were weaned. A treatment-course of amphotericin was completed and 4 months later he has fully recovered.

Learning Points/Discussion

Careful travel history and high index of suspicion, consideration of modification to standard HLH protocols and empiric VL treatment, plus access to rapid expert diagnostics, are essential in making an accurate diagnosis of VL/HLH and providing, safe, effective management.

19B. EDUCATION: TREATMENT OF DRUG RESISTANT TB (MONORESISTANT, MDR, XDR)

ESP17-0652

MULTIDRUG RESISTANT TUBERCULOSIS IN EUROPE, ARE WE READY?

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Title of Case(s)

MULTIDRUG RESISTANT TUBERCULOSIS IN EUROPE, ARE WE READY?

Background

MDR and XDR-TB require longer and more complex treatments using a greater variety of drugs that are associated with important side effects and lower success rates.

In 2015 there were 580,000 new cases of MDR-TB and RR-TB. India, China and the Russian Federation accounted for 45% of these cases. In the Russian Federation levels of MDR-TB are around 22% of all new cases of TB, while in most western European countries these levels are <3%.

In Spain, with TB incidence rate of 8/100,000 habitants and 6% children under 15 years, in 2014 only 35 MDR strains were detected. It can be estimated that only 2 cases of children with MDR-TB were taken care of in Spain in this year.

Case Presentation Summary

An asymptomatic 3-year-old girl, coming from Romania, with a pulmonary pre-XDR-TB, identified along the contact investigation following her mother's diagnosis. *M. tuberculosis* was not isolated in gastric aspirate of the child.

The mother's index strain is resistant to all first-line drugs and injectable drugs. In August 2016 she was treated using levofloxacin, linezolid, cycloserine, PAS and ethionamide.

Despite her young age, the girl was compliant with all the medications, without major problems of gastrointestinal intolerance. Nevertheless, during these months of treatment other side effects like neutropenia, subclinical hypothyroidism, dyskinesias and peripheral neuropathy occurred, which forced changes in the initial treatment plan.

Learning Points/Discussion

In Spain, as in most EU/EEA countries, cases of MDR-TB and XDR-TB are very rare, thus it is difficult for pediatricians to acquire sufficient experience for suitable treatment. An adequate training and a close collaboration with specialists of countries with high incidence is essential, as they have the necessary experience to face this complex disease.

04C. EDUCATION: BRONCHIOLITIS

ESP17-0660

PAEDIATRIC PATIENTS HOSPITALIZATION BY BRONCHIOLITIS: PARENTS EXPERIENCE, A QUALITATIVE STUDY

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Background

Bronchiolitis -and Respiratory Syncytial Virus (RSV) seasonality- is a major cause of hospitalization, and medical consultation in infants. RSV bronchiolitis hospitalizations in Spain is increasing. Hospitalization has emotional consequences for parents and additional feeling of vulnerability. There are several quantitative studies in this regard, but no qualitatives. Qualitatives are process-oriented, exploratory and inductive.

Objective: to describe the experience of parents/mothers of children hospitalized for bronchiolitis, and identify areas for improvement in our professional practices.

Methods

A phenomenological qualitative study by focus groups was made.

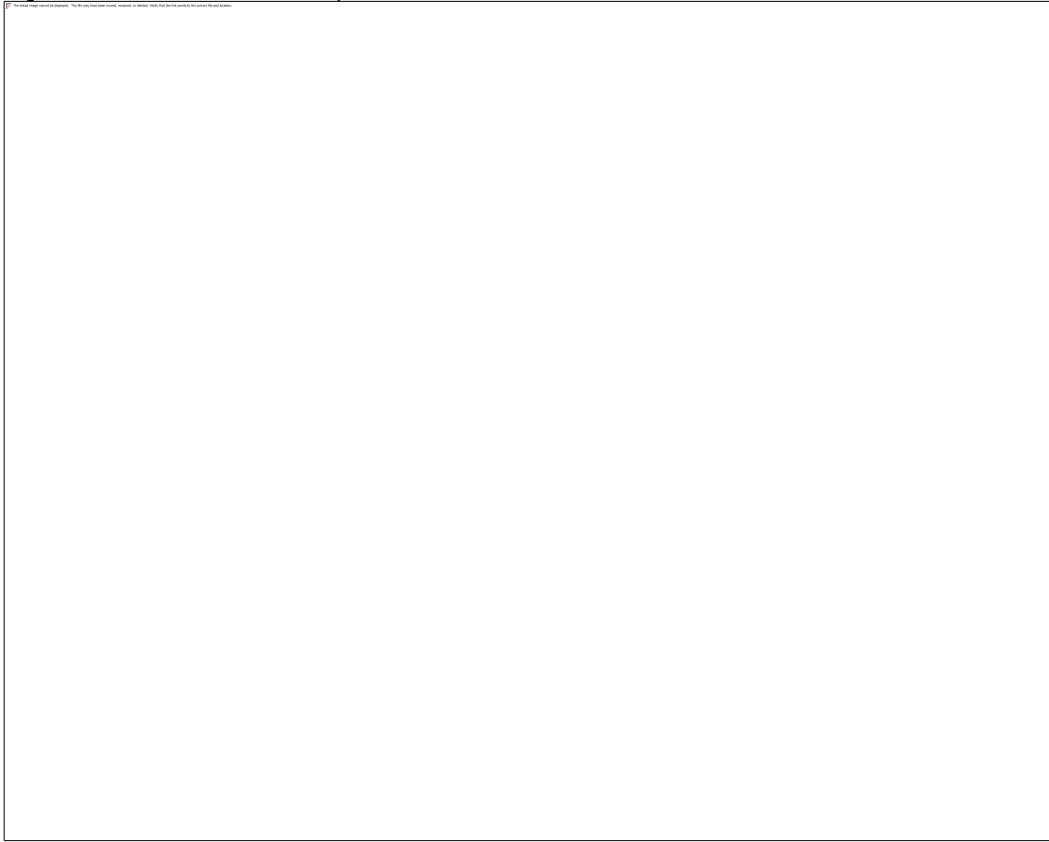
Poputation: Parents or tutors of children admitted for bronchiolitis (Dec, 1st 2015-Jan, 31st 2016) in a spanish public second level hospital's Pediatric Unit. Data collection by script theme from three groups, ten participants. Recording audio, and transcription. Thematic analyses was made according to identification of meaning units, grouping the repeating ideas into themes.

Approved by Hospital Ethics Committee.

Results

Themes identified (see Table 1): perception of the monitoring, need of knowing, perception of child's fragility, strategies of coping, reorganization of the family environment.

Limitations: results can't be directly extrapolated to other health care contexts. Strengths: This study can serve as a guide to establish areas of improvement.



Conclusions

Some areas of improvement in the medicine/nursing professional practice for organizing health education and care are discovered:

- The information transmitted, and how.
- Verbal and no verbal language must be evaluated, as well as the understanding, the times to give information.
- The emotional impact of the pulseoximetry monitoring.
- We must look for the parent empowerment enhancement.

14A. EDUCATION: COMMUNITY ACQUIRED DIARRHOEA IN INFANTS

ESP17-0673

CAMPYLOBACTER CONCISUS AND ACUTE GASTROENTERITIS IN CHILDREN: NOT THE END OF CONTROVERSY

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Background

According to ECDC, *Campylobacter* has been the most commonly reported gastrointestinal bacterial pathogen in humans in Europe since 2005. If the role of *Campylobacter jejuni-coli* is established as a cause of acute gastroenteritis (AGE), that of emergent campylobacters like *Campylobacter concisus* still remains to be demonstrated.

Methods

Patients presenting to the pediatric emergency room of two university hospitals in Brussels with AGE were recruited prospectively from May 2015 to October 2016. A similar population of controls, matched for age, was recruited prospectively from ambulatory general pediatric clinics in the same hospitals. Stool analysis was done for patients and controls for common bacteria, virus and parasites. We used a Butzler selective medium and filtration method to enhance the detection of *Campylobacter*. Demographic and clinical characteristics were analyzed in cases and controls using matched logistic regression.

Results

Overall, 185 cases and 179 controls were recruited. *C. jejuni* was statistically associated with the presence of AGE symptoms (OR=14.68; CI 3.93-95.87) and was the most frequent enteropathogen identified. There was no significant association between the presence of *C. concisus* and AGE symptoms (OR=0.89; CI 0.16-4.45), 6 in cases and 4 in controls. Given the prevalence of *C. concisus* in cases and controls in our study, a sample size of 7000 would have been necessary with 80% power, using culture methods.

Conclusions

Based on our *Campylobacter* culture protocol's results, there is no clear evidence that *C. concisus* plays a role in paediatric AGE. However, if there was an etiological link, the association would be moderate and hard to demonstrate. There is thus a need for the development of new molecular diagnostic methods allowing for an accurate identification of the different genomospecies of *C. concisus* isolates directly from stools.

04C. EDUCATION: BRONCHIOLITIS

ESP17-0677

RSV SEASONALITY, STABLISHING THE EPIDEMICS IN A 5-YEAR PERIOD

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Background

RSV infection normally spreads in an epidemic fashion, with similar yearly patterns of 5 months during Winter-Spring. We conducted an audit of the epidemiological features of the RSV infection in our area over a 5-year period.

Methods

Patients were identified via a database search of all children aged < 15 years admitted to a single tertiary referral centre with microbiological confirmation of RSV (PCR, IC, IF) in respiratory sample from January 2012 to December 2016.

Results

444 patients were identified, with a median age of 3 months (IQR 1-9). Clinically, 67.1% of the patients were stratified as moderate and 8.3% as severe infection, with a median hospital stay of 7 days (6-9). The main diagnostic method was IF (79.7%) and PCR was only conducted in a 10.4% of the patients. November and December concentrated most of the episodes, with a 60% of the total, being the latter the peak month for RSV (36.9%). Since 2012, there has been a decrease in the absolute number of cases (from 94 in 2012/2013 to 55 in 2015/2016). However, even though the 2016/2017 campaign is not finished, 120 cases have been identified. Virus circulation has been circulating from November to March in all RSV campaigns, but in 2016/2017, there was an early start of the epidemic in October. The epidemic with the most severe cases was 2015/2016, with 23.7% of the cases ending in PICU and 2.6% of the cases receiving invasive mechanical ventilation.

Conclusions

A November to March seasonality has been identified in our area, with minimal variations between epidemics. We deem important to analyse our own data to prepare contingency plans before the epidemics start and to help establish future vaccination programs.

12A. EDUCATION: INVASIVE FUNGAL INFECTION IN IMMUNOCOMPROMISED CHILDREN

ESP17-0680

DISSEMINATED FUSARIOSIS IN A PATIENT WITH RELAPSED ALL TREATED WITH COMBINED ANTIFUNGAL THERAPY AND GRANULOCYTE TRANSFUSION (GTS): CRITICAL ANALYSIS

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Title of Case(s)

DISSEMINATED FUSARIOSIS IN A PATIENT WITH RELAPSED ALL TREATED WITH COMBINED ANTIFUNGAL THERAPY AND GRANULOCYTE TRANSFUSION (GTs): CRITICAL ANALYSIS

Background

Fusarium has emerged as a serious human pathogen whose pathogenicity is linked to host immune factors. Mortality is high when neutropenia is severe and prolonged. GTs has been used as adjunctive treatment for invasive fungal disease (IFD) in patients with neutropenia, but the overall benefit of this approach is unknown. Our aim is to describe a case of a patient with fusariosis treated with combined antifungal therapy and GTs.

Case Presentation Summary

A 20 y-o male patient with relapsed ALL was hospitalized due to blackened lesions on the limbs, dorsum and scrotal sac. Biopsies were performed and antimicrobial therapy was started, with voriconazole and amphotericin b lipid complex. On the 3rd day, cultures of lesions were positive for *Fusarium spp* and, on day 4, peripheral blood and CVC cultures showed growth of mold. GTs was started on the 5th day. On the 9th day, he developed hypotension, bradycardia and bradypnea, worsening during granulocyte infusion. He received GTs for four times and granulocytes became above 1000 céls/mm³, with stabilization of infection at the mean time. However, because of adverse events, we stopped the GTs. Neutrophils became low again and there was a progression of the infection. On the 24th day, the patient evolved with hemodynamic instability and death.

Learning Points/Discussion

Fusariosis is a devastating disease where neutrophils play a key role. GTs is an adjunctive therapy which the major problems are adverse pulmonary reactions and unimpressive neutrophil increments. In our case, is difficult to establish the real impact of this approach. More studies are needed to provide a conclusion regarding the role of GTs in IFD.

04C. EDUCATION: BRONCHIOLITIS

ESP17-0688

RSV ASSOCIATED MORBIDITY IN A 5-YEAR PERIOD, WHAT CAN WE DO?

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Background

RSV infection causes mild respiratory infections in children but in some occasions, it can also lead to hospital admission and morbidity. We conducted an audit to describe the epidemiological and clinical of patients hospitalized for RSV infection.

Methods

Patients were identified via database search children aged < 15 years admitted to a single tertiary referral centre with microbiological confirmation of RSV (PCR, IC, IF) in respiratory sample from January 2012 to December 2016.

Results

We identified 444 cases of RSV infection, with a median age of 3 months (RIS 1-9). Clinically, 22.1% presented to emergency room with a mild infection, 67.1% with a moderate infection and 8.3% with a severe infection. Background showed 62.6% of fever upon admission. Antibiotics in the month prior to admission was present in 10% of the cases, bronchial hyperactivity in 8.1%, kindergarten in 13.1% and 26.5% was breastfed. Breastfed patients had a 0.7 reduction risk of acquiring superinfection (CI 95% 0,543-0,881) and children visiting kindergarten had a 1.5 increased risk of superinfection (CI 95% 1,179-1,879). Coinfection was observed in 5 cases, mostly by influenza virus. Thorax X-Ray was performed in 52.9% of the patients, showing consolidation in 18% and atelectasis in 3.8%. Nebulization with Hypertonic saline was used in 60,6% cases and adrenaline in 63.7%. Oxygen supplementation was needed in 60% of the cases and heliox in 19.1%. Admittance to PICU was 16.2%. A total of 2.2% cases received invasive mechanical ventilation. Median stay was 7 days (IQR 6-9), with no deaths.

Conclusions

simple measures as promoting breastfeeding and delaying the start kindergarten could help reducing RSV associated morbidity in our series. Nevertheless, RSV still causes a wide number of admittances and resource consumption.

04C. EDUCATION: BRONCHIOLITIS

ESP17-0723

TIPPING THE SCALE IN FAVOR OF HOSPITALIZATION IN RSV INFECTED CHILDREN. A RISK FACTOR ANALYSIS

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Background

RSV infection is a prevalent respiratory infection in paediatric age. Hospitalization, although not so frequent, can be severe. We conducted an audit to analyse possible risk factors associated to hospital admission secondary to RSV infection.

Methods

Patients were identified via database search of children aged < 15 years with microbiological confirmation of RSV (PCR, IC, IF) in respiratory sample done either in primary care or emergency room from January to December 2016.

Results

We identified 337 cases of RSV infection, from which 144 (42.7%) were admitted to hospital. Median age was inferior in hospitalized (3 months, IQR 1-9) than in outpatients (5 months, 3-11), with no statistically significant difference. Most of them had brothers or visited kindergarten (65-68% respectively). Breastfeeding was present in 52.9% of the outpatients but it was not associated with protection against admission. Thorax X-Ray was performed in 51.4% of the hospitalized patients and 22.3% of the outpatients ($p < 0.05$) and presence of consolidation was a risk factor into deciding admission (CI 95%, 1.35-7.8). Patients that were clinically evaluated into a mild category were more prone to an ambulatory follow-up (CI 95% 0.194-0.356) but patients that fell into the moderate category were at more risk of being admitted (CI 95% 3.941-8.925). Young age was a determinant factor in favour of hospitalization in moderate infections (Mean age 6.8 Vs 12.86, $p < 0.01$). One of every 3 patients that were admitted to hospital did not visit primary care prior to arriving to emergency room.

Conclusions

No epidemiological risk factors for hospital admission were found in our series. Hospitalization was mostly decided based in clinical evaluation and radiology. When individualising between moderate infections, age played a main role in deciding follow-up.

14A. SCIENCE: COMMUNITY ACQUIRED DIARRHOEA IN INFANTS

ESP17-0739

INTERVENTIONS FOR THE POST-ACUTE CONSEQUENCES OF DIARRHEAL DISEASE IN CHILDREN: A SYSTEMATIC REVIEW

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Background

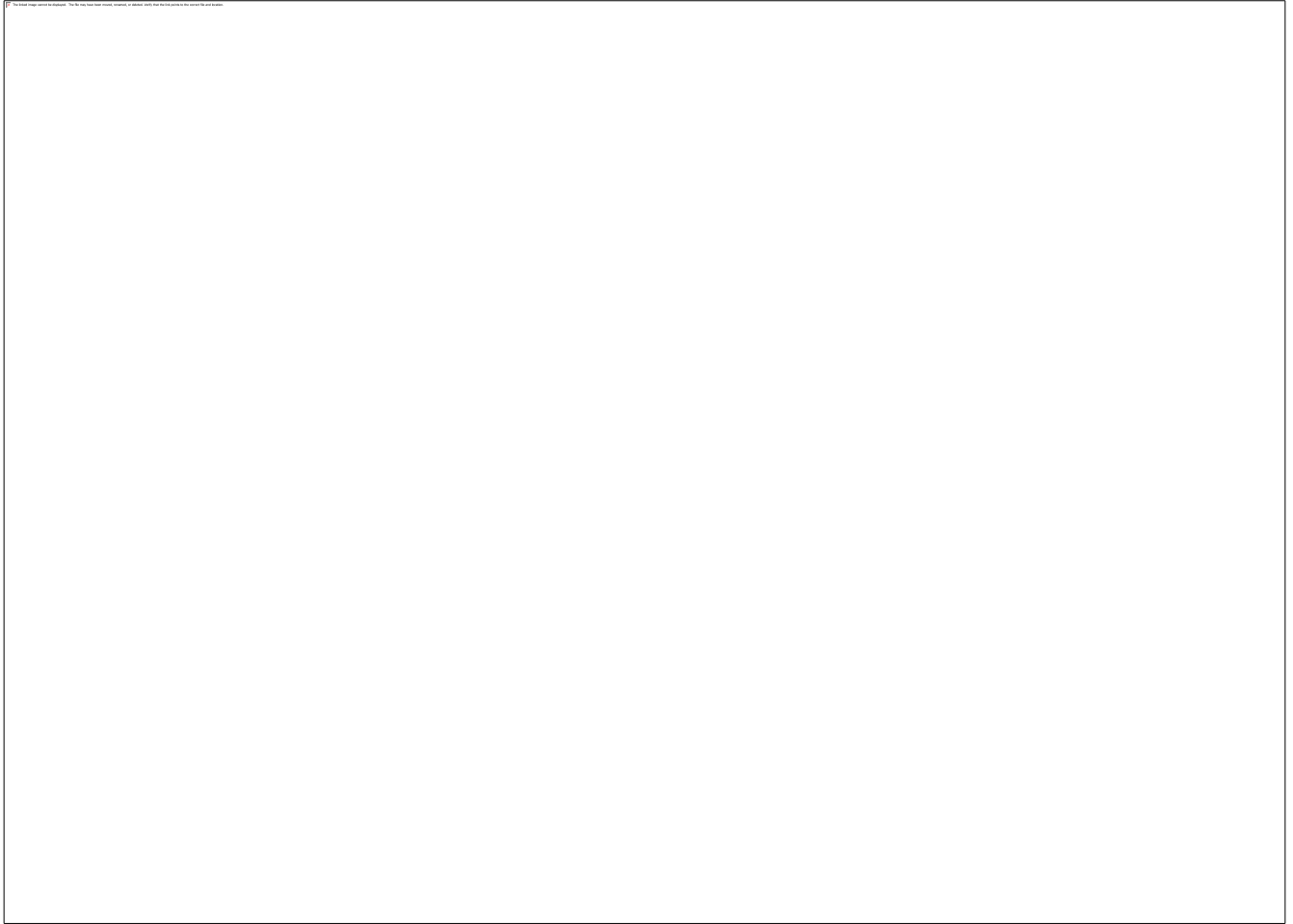
Children with diarrheal illness can suffer long term morbidity beyond acute dehydration and electrolyte imbalance. These long term consequences include recurrent or persistent diarrhea, linear growth faltering, and elevated risk of post-acute mortality. Current diarrhea case management strategies may not address long-term sequelae.

Methods

We searched Medline for randomized controlled trials (RCTs) of interventions published between 1980 and 2016 that were conducted in LMICs among children under 15 years of age with diarrhea and follow-up of at least 7 days. Effect measures were summarized by intervention and PRISMA guidelines followed.

Results

Among 301 otherwise eligible clinical trial full text, 68% were excluded because children were followed for less than 7 days. Forty-six trials were included, the majority of which (65%) were conducted in Southeast Asia (40% in Bangladesh alone). Over three quarters (78%) included less than 200 participants. Interventions included: therapeutic zinc (28%), diet formulations (28%), probiotics (13%), oral rehydration solution (ORS) (9%), lactose replacements (9%), vitamin A/zinc (4%), antimicrobials (4%), glutamate (2%), and guar gum (2%). Diarrhea morbidity was the most commonly reported outcome, and was assessed in ORS, probiotic, vitamin A, and zinc trials, however no consistent benefit was observed (Figure 1). Six trials evaluated mortality, with follow-up times ranging from 8 days to 2 years. Only a single trial found a mortality benefit (therapeutic zinc). One of four trials that assessed change in height/length for age z-score found a benefit, a small trial of a 21-day high protein compared to standard diet.



Conclusions

There is little evidence to suggest benefit of any specific intervention to decrease post-acute diarrhea sequelae. Adequately powered clinical trials with extended follow-up periods are needed to identify effective management interventions to prevent post-acute diarrhea outcomes.

Systematic Review Registration (Please input N/A if not registered)

N/A

04C. EDUCATION: BRONCHIOLITIS

ESP17-0751

PICTURING SEVERITY IN RSV INFECTION, AN ANALYSIS OF INTENSIVE CARE ADMITTED CHILDREN

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Background

Children with RSV infection usually develop mild to moderate affection. Although infrequent, the RSV spectrum includes severe infection leading to PICU admission. We describe the epidemiology and characteristics of paediatric patients admitted to PICU after an RSV infection.

Methods

Patients were identified via database search of children aged < 15 years admitted to a single tertiary referral centre PICU with microbiological confirmation of RSV (PCR, IC, IF) in respiratory sample from January 2012 to December 2016.

Results

We identified 72 cases of a total of 444 patients admitted to the hospital for RSV infection. Median age was 2 months (IQR 1-5,75). After dividing the hospitalized patients in clinical categories, 91.9% of the severe patients were sent to PICU, followed by 10% of the moderate patients and 1.9% of the mild ones. Background showed that 29.2% of the cases used inhaled salbutamol prior to admission, 11.1% antibiotics in the previous month and 59.7% presented with fever. A 61.1% of the cases was not breastfed. Clinically, superinfection suspicion was raised in 61.1% of the cases, with an increase in risk of PICU admission of 1.49 times (CI 95%, 1.19-1.85). Radiologically, we observed a 37.5% of consolidations and a 13.9% of atelectasis. Systemic antibiotics were administered in 63.9% of the cases. Adrenaline was the most used nebulization (77.8%). Although 94.4% of the patients needed oxygen supplementation, only 54.2% received heliox. Invasive mechanical ventilation was applied in 6.9% of the cases and no deaths were registered.

Conclusions

Superinfection was the main reason for admission to PICU in our series. There is a good correlation between clinical evaluation and severity. Invasive mechanical ventilation was not widely used, implying optimizing respiratory care could help avoid the increase in morbidity.

08B. EDUCATION: HIV IN ADOLESCENTS

ESP17-0755

HIV/TB CO-INFECTION TREATMENT AFTER ANTIRETROVIRAL THERAPY FAILURE IN ADOLESCENT

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Title of Case(s)

HIV/TB CO-INFECTION TREATMENT AFTER ANTIRETROVIRAL THERAPY FAILURE IN ADOLESCENT

Background

The HIV/TB co-infection treatment is always a challenge and the antiretroviral therapy (ART) failure much complicated this problem because of the drugs interaction, the sides effects and the lack of medicines in the resources limited settings.

Case Presentation Summary

A 13-years old female was hospitalized with complain on the cough, pain in the neck, growth retardation.

She had TB contact with mother, who died during TB treatment.

Girl started ART (ZDV+3TC+EFV) at 9 years old, but few months later it was interrupted. After mother's death the same regimen was renewed.

On presentation, she had the one-sized painful cervical swelling. The CD4 cells and viral load were 9,3%- 99 cells /ml and 7,083 RNA copies/ml, respectively.

A CT, abdominal and lymph nodes ultrasound examinations, lymph nodes biopsy and the bronchoscopy were performed. The disseminated TB was diagnosed. TB treatment were prescribed: ethambutol(EMB), rifampicin (RIF), pyrazinamide (PZA) , isoniazid (INH), streptomycin (S). At the same time resistance test to ART were performed, mutation to the almost all nucleoside reverse transcriptase inhibitors (NRTIs) (including mutation M184, K108) and to all non-nucleoside reverse transcriptase inhibitors (NNRTIs) were found. HIV-status were completely disclosure to the patient.

The TB treatment was optimized to INH+EMB+PZA+S+moxifloxacin(MFX). The new antiretroviral regimen was considered: ABC+3TC+ZDV+LPV/r.

Learning Points/Discussion

HIV disclosure should be done for every child in appropriate age and time, as it helps for the adherence formation, although, adolescence is a late period for HIV- status disclosure.

NNRTI have a low resistance barrier, and the new ART regimen should not include this class, especially when resistance test is not available.

NRTI class has a "beneficial" mutation which should be taken into account, when the new regimen is prescribed.

04C. EDUCATION: BRONCHIOLITIS

ESP17-0767

MANAGEMENT OF OBSTRUCTIONS OF UPPER AND LOWER RESPIRATORY TRACT IN PRIMARY CARE SETTINGS

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Background

Aim of our study was assessment of management of croup syndrome and bronchiolitis in primary health care settings and evaluation it's correspondence to best practice and WHO recommendations.

Methods

Retrospective analyses of medical records was conducted in 10 outpatient clinics (6 regional). At all 320 medical records of children under 3 years with diagnosis Laryngotracheitis (croup syndrome) and bronchiolitis were revised.

Results

In 65,1 % (n=202) of cases was diagnosed viral croup, in 34,9 % bronchiolitis (n=108). In 74.6% (n=239) of records children were checked for the presence of general danger signs (vomiting after each feeding, lethargy and convulsions) to detect cases with a very severe disease requiring urgent referral. But one of the danger signs as inability to drink was assessed less frequently (25, 3 % n= 81). Respiration rate were counted in 81,8 % (n=262) in 44,6 % (n=143) were mentioned presence or absence of retractions. 90.09 % (n=182) of patients with croup syndrome were managed according best practice recommendations , the diagnosis was based on clinical picture , First dose of corticosteroid was given in primary care. Stridor in rest was mentioned in 36,6 % (n=74) cases and from those first dose of nebulasied epinephrine was used in 28,3 % (n=28) cases, 71,7 % of patients were refer for hospitalization. In case of bronchiolitis majority of infants 61,6 % (n=63)patients were referred for hospitalization. Referral met the hospitalization criteria While one third of patients with bronchiolitis at home received antibiotics, frequently was used nebulasied corticosteroids and bronchodilator.

Conclusions

The results of the study emphasized that the basic principles of WHO and best practice recommendations in outpatient clinics are mainly followed.

11C. EDUCATION: INFECTIONS IN CHILDREN TREATED WITH CHRONIC IMMUNOSUPPRESSIVE THERAPY

ESP17-0792

HERPESVIRUS SEROLOGICAL STATUS IN PEDIATRIC PATIENTS WITH INFLAMMATORY BOWEL DISEASE

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Background

In the last decade, the treatment of pediatric inflammatory bowel disease (IBD) patients has been evolving, with an increasingly use of immunomodulators and anti-TNF therapies, arising specific concerns regarding opportunistic infections and/or reactivation of latent virus. However, at this age group, knowledge is yet scarce. Thus, we aim to evaluate the herpesvirus serological status of IBD patients and to identify potential associations with treatment.

Methods

Retrospective analysis of IBD patient's clinical charts with review of herpesvirus serological status (EBV; CMV; HSV-1; HSV-2; VZV); categorization into: asymptomatic screening vs suspicion of infection, before vs under treatment. Uni/bivariate analysis was performed (SPSS vv 22.0).

Results

62 IBD patients (69% male) were included with a median age of 12 years at the time of diagnosis. 80% had Crohn's disease, 17% ulcerative colitis and 3% non-classified colitis. Regarding VZV, 92% (12/13) were immune previously to treatment. 63% (17/27) showed evidence of exposure to EBV before treatment. Concerning CMV, 67% (34/51) of the patients were IgG positive and none presented positive viral load during anti-TNF therapy. 23/62 patients performed serologies for HSV-1/2, but only 4/15 (HSV-1) were IgG positive before treatment. Furthermore, 2 symptomatic patients, under azathioprine treatment, were EBV IgM positive, nonetheless only one had positive viral load. In 18/62 patients, serological status of EBV, CMV, HSV was reassessed after immunomodulator and/or biological treatment, but none had an immune status modification.

Conclusions

Our findings are consistent with recent literature data, revealing an elevated rate of previous exposure to VZV, EBV and CMV at the time of diagnosis. Although most patients didn't develop symptomatic disease or evidence of viral reactivation, namely under treatment, a longer follow-up period is warranted, concerning a more representative sample, considering the therapeutic implications.

04C. SCIENCE: BRONCHIOLITIS

ESP17-0795

NEBULIZED HYPERTONIC SALINE IN EMERGENCY DEPARTMENTS TO REDUCE HOSPITALIZATION RATE FOR ACUTE BRONCHIOLITIS: A RANDOMIZED DOUBLE BLIND CLINICAL TRIAL

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Background

Acute bronchiolitis is the leading cause of hospitalization in infants younger than one year of age. Previous studies, underpowered to examine hospital admission, have shown a limited benefit of nebulized hypertonic saline (HS) in the pediatric emergency department (ED) setting.

Objective

To determine whether HS nebulizations would decrease the hospital admission rate in infants with a first episode of acute bronchiolitis.

Methods

Design

GUERANDE was a multicenter, double-blind, randomized controlled clinical trial on two parallel groups conducted during two bronchiolitis seasons (October through March), between October 15, 2012 and April 15, 2014.

Settings

24 French pediatric EDs.

Participants

Among the 2,445 infants (six weeks to 12 months of age) assessed for inclusion, 777 were included with a first episode of acute bronchiolitis with respiratory distress

Intervention

Two 20 minutes nebulizations of 4mL 3% HS or 4mL 0.9% Normal Ssaline (NS) given 20 minutes apart.

Main Outcome

Hospital admission rate in the 24 hours following enrollment.

Results

The median age was three months (IQR 2-5 months). By 24 hours, 185 of 385 infants (48.1%) in the HS group were admitted, compared to 202 of 387 infants (52.2%) of the NS group (OR=0.85; 95%CI 0.64–1.12, P=0.25). The difference in hospitalization rates was not significant after controlling for baseline predictors such as age, viral status, center, oxygen saturation, and respiratory distress assessment instrument. Mild adverse events, such as worsening of cough, occurred more frequently among children of the HS group 35/392 (8.9%) than the NS group 15/384 (3.9%) (P<0.001), with no serious adverse events.

Conclusions

Nebulized HS did not significantly reduce hospital admissions of infants with a first episode of acute moderate/severe bronchiolitis admitted to the Pediatric ED relative to NS, but mild adverse events were more frequent in the HS group.

Clinical Trial Registration (Please input N/A if not registered)

clinicaltrials.gov: NCT01777347.

12A. EDUCATION: INVASIVE FUNGAL INFECTION IN IMMUNOCOMPROMISED CHILDREN

ESP17-0845

POPULATION PHARMACOKINETICS OF POSACONAZOLE IN CHILDREN AGED 12 AND UNDER

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Background

Invasive fungal infection is an important cause of morbidity and mortality in immunocompromised children. Posaconazole, a broad-spectrum triazole antifungal agent with activity against pathogenic yeasts and moulds, is only approved for use in patients aged 13 years and older. Limited pharmacokinetic data are available in younger patients although therapeutic drug monitoring (TDM) is routinely performed. This study aimed to develop a population pharmacokinetic model of posaconazole in paediatric patients for future use in dose optimisation and TDM.

Methods

This retrospective single-centre study analysed posaconazole serum concentrations in 26 paediatric patients including those younger than 13 years. For inpatients, dosing history was extracted from electronic prescribing records. For outpatients, dosing recorded on the TDM request was used and steady-state was assumed. Population pharmacokinetic modelling was undertaken using nonlinear mixed-effects modelling with NONMEM 7.3, using allometric weight scaling and fixing absorption parameters to those previously reported.

Results

A total of 56 serum samples were taken from 26 patients with a median age of 6 (0.5-16) years and weighing 18.2 (5.8-50) kg. A one-compartment pharmacokinetic model with inter-individual variability is best described posaconazole pharmacokinetics. Clearance scaled to a 70 kg individual was 43.47 L/h, which is similar to the reported adult value. However, volume of distribution standardised to 70 kg was 5472 L which is higher than those estimated from adults.

Conclusions

A preliminary analysis of posaconazole pharmacokinetics has been undertaken. Further work will entail augmenting the dataset with further patients, and analysing treatment and prophylaxis outcomes to derive a therapeutic index.

10A. EDUCATION: IMAGING IN CNS INFECTIOUS DISEASES

ESP17-0865

MASS EFFECT'S CEREBRAL EMPYEMA INDUCED BY PANSINUSITIS

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Title of Case(s)

Mass effect's cerebral empyema induced by pansinusitis

Background

A 10-years-old girl came to our department in order to investigate headaches associated with a sleepy behavior in a febrile context. After investigations it came that the observed sings were due to a subdural empyema generated by a pansinusitis. Such a cause and effect relationship is not so frequent which, in our opinion, in light of the possible potentially harmful complications implies that the case warrant to be reported.

Case Presentation Summary

A 10-years-old girl presented a misleading meningeal syndrome and feverish context for 2 weeks. CAT-scan showed a subdural effusion with a compressive mass effect and a left pansinusitis. A first surgical drainage was made and she has been plunged into an induced-coma for 2 days. *Streptococcus constellatus* has been revealed in blood cultures as well as in the abscess puncture. **In the following days, the patient's status did not improve** and many complications occurred : sepsis, right hemiplegia, new purulent collections with a persistent mass effect, cytotoxic parenchymal injury and sagittal sinus phlebitis. Nine days after the first intervention, a new surgical drainage was made. Right now, the patient still present a residual hemiplegia.

Learning Points/Discussion

In our case, the observation matches with theory as the reported case involves a child with pansinusitis but we were impressed with the seriousness of the mass effect compared **with** clinical signs. Subdural empyema is a complication which may endanger a patient's life. So, it is important to keep in mind the existence of such a cause and effect relationship, then it becomes possible manage the patient in the best conditions, namely : surgery, optimal antibiotherapy and last but not least a multidisciplinary approach.

03C. EDUCATION: SEVERE S. AUREUS INFECTIONS: IS IT A MATTER OF RESISTANCE OR TOXINS?

ESP17-0872

BONE AND JOINT INFECTIONS DUE TO STAPHYLOCOCCUS AUREUS STRAINS PRODUCING PANTON-VALENTINE LEUCOCIDINE IN FRENCH GUYANA

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Title of Case(s)

Bone and joint infections with staphylococcus aureus strains producing Panton-Valentine Leucocidine in French Guyana.

Background

- Never been described in French Guyana.
- Osteoarticular infections due to methicillin sensitive staphylococcus aureus are common.
- Clinical and biological tools are needed in order to direct an adequate and early treatment.

Case Presentation Summary

Introduction: Methicillin sensitive staphylococcus aureus (MSSA) is the first cause of osteoarticular infections in children in French Guyana. High morbidity and mortality is explained by extracellular virulence factors such as Panton-Valentine Leucocidine (PVL). This study describes the characteristics of bone and joint infections due to MSSA strains producing PVL.

Methods: A multicenter study which includes retrospective chart review of 6 children hospitalised with MSSA producing PVL bone and joint infection, between January 2010 and December 2015.

Results: 6 bone and joint infections due to MSSA producing PVL: 2 osteomyelitis, 1 septic arthritis and 3 disseminated osteoarticular infections. The mean age was 9,7 years old [4-14 years], and they were feverish for 3,2 days [2-5 days] before consulting. An open skin wound was incriminated in 5/6 patients. 1 patient presented, at admission, a septic thrombophlebitis of the femoral-popliteal vein. 3 patients had secondary visceral complications: 2 cases of necrotising pneumonia and 2 pericarditis. 1 died of tamponade.

Conclusion: MSSA producing PVL is responsible for severe bone and joint infections in children. Early diagnosis is needed in order to adapt treatment.

Learning Points/Discussion

On which clinical, biological and radiological features should we evoke PVL mediated infection?

Could we develop tools in French Guyana to detect PVL?

Do we have more severe cases of bones and joint infections due to MSSA producing PVL in French Guyana?

Should all patients with MSSA producing PVL osteoarticular infection have a cardiac ultrasound to rule out pericarditis?

14A. SCIENCE: COMMUNITY ACQUIRED DIARRHOEA IN INFANTS

ESP17-0882

THE CHANGING EPIDEMIOLOGY OF ROTAVIRUS DIARRHEA: RESULTS FROM THE GLOBAL BURDEN OF DISEASE STUDY

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Background

The global burden of childhood diarrhea remains substantial despite tremendous decline over the last several decades. The Global Burden of Disease Study (GBD) is a systematic, scientific effort to measure the comparative magnitude of health loss.

Methods

GBD estimates the morbidity and mortality of diarrhea and its etiologies, including rotavirus. Diarrheal etiologies are estimated using a counter-factual approach based on molecular diagnostic methods.

Results

Rotavirus is the leading cause of diarrheal mortality among children under 5 years old, responsible for nearly 30% of diarrheal deaths in this age group (146,000 rotavirus deaths), and among all ages, responsible for 15.1% of all diarrheal deaths (199,000 rotavirus deaths). The introduction and scale-up of rotavirus vaccines is changing the global burden of rotavirus. Between 2005 and 2015, under-5 rotavirus mortality decreased by 43.6%, a rate faster than the decrease in all diarrhea mortality, and the fraction of under-5 diarrhea deaths attributable to rotavirus decreased nearly 5% during this time period.

Conclusions

Our results indicate that rotavirus will likely remain the leading cause of diarrheal mortality among children under-5 but rotavirus vaccine use may already be responsible for important declines in under-5 diarrhea mortality.

Systematic Review Registration (Please input N/A if not registered)

04C. EDUCATION: BRONCHIOLITIS

ESP17-0942

SEVERE RESPIRATORY SYNCYTIAL VIRUS INFECTION IN HOSPITALISED CHILDREN LESS THAN THREE YEARS OF AGE IN A TEMPERATE AND TROPICAL CLIMATE IN AUSTRALIA

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Background

Respiratory Syncytial Virus (RSV) infection is a frequent cause of hospitalisation in infants less than three years of age. We aimed to determine the factors associated with severe RSV disease including any impact of climate on disease severity.

Methods

Medical review of children up to three years of age admitted for laboratory proven RSV infection between January 1st 2013 and December 31st 2014 was conducted in a temperate (Women's and Children's Hospital, Adelaide, South Australia) and tropical (Paediatric Department, Cairns Hospital, Cairns, North Queensland) climate in Australia to assess any differences in severity of disease. Severity of infection was determined using the validated Brisbane RSV Infection Severity Score. Multiple regression analysis was performed to determine factors associated with severe RSV disease.

Results

496 children (383 at WCH and 113 at CH) were included in the study with 76, 323 and 97 patients identified as having mild, moderate or severe disease respectively. Decreasing age (OR = 0.95; 95%CI = 0.90 – 0.99, $p = 0.020$), and being Indigenous, increased (OR=2.6; 95%CI =1.4 – 4.9, $p = 0.002$) the risk of severe RSV infection in hospitalised children. Underlying respiratory ($p = 0.029$, OR=2.5; 95%CI = 1.1-5.8) or cardiac (OR=2.7; 95%CI = 1.1-6.4, $p = 0.024$) conditions, as well as the presence of tachypnoea on admission (OR=2.2; 95%CI = 1.2-4.1, $p = 0.009$), were also independent predictors of severe RSV infection. Seasonal variation in hospitalisation was observed between temperate and tropical climates, but was not associated with disease severity.

Conclusions

Young infants, Indigenous patients, and children with underlying respiratory and cardiac disease should be monitored closely for signs of deterioration. Infants with tachypnoea presentation, should be closely monitored during the admission.

12A. EDUCATION: INVASIVE FUNGAL INFECTION IN IMMUNOCOMPROMISED CHILDREN

ESP17-1001

INVASIVE FUNGAL DISEASE IN CHILDREN WITH HAEMATO-ONCOLOGICAL DIAGNOSIS AT TWO TERTIARY HOSPITALS IN THE UK

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Background

Invasive fungal disease (IFD) is a significant cause of morbidity and mortality for children. We undertook a retrospective audit of paediatric IFD in children with an underlying haematological diagnosis at two tertiary hospitals in London, St George's Hospital and the Royal Marsden Hospital. We aimed to describe the number of cases over time, demographics, risk factors and outcome.

Methods

Patients were identified using pharmacy records for children prescribed treatment dose antifungal agents from 2000-2010. Predetermined data were extracted from case records using a standard questionnaire and EORTC guidelines were used to classify episodes as definite, probable or possible IFD.

Results

In our preliminary study, 58 cases of IFD fulfilled criteria for analysis. The commonest underlying diagnoses were acute lymphoblastic leukaemia (ALL) 16(27%), relapsed ALL 18(31%) and acute myeloid leukaemia 11(19%). IFD was identified during the induction phase in two thirds of cases with ALL and AML. Cases of IFD were classified as proven, probable or possible in 19 (33%), 12 (21%) and 27 (47%), respectively. The incidence of IFD in patients receiving haematopoietic stem cell transplant (HSCT) was 6.5% and was greater in allogenic 16 out of 137 (11.7%) than in autologous 3 out of 156 (1.9%) transplants. Organisms isolated included *Candida* (16), *Aspergillus* (7), *Mucormycosis* (2), *Trichosporan* (1) and *Scedosporium* (1). Overall, complete response rate was 48% and mortality 33% at 3 months.

Conclusions

In our cohort, more than half the cases diagnosed with IFD were still in the induction phase of treatment. Mortality is still high with 33% of those diagnosed with IFD. This highlights the need for increased vigilance, early diagnosis and the need to discuss chemoprophylaxis at induction for all children at high risk of IFD.

14A. EDUCATION: COMMUNITY ACQUIRED DIARRHOEA IN INFANTS

ESP17-1004

FECAL MICROBIOTA ANALYSIS IN CHILDREN WITH ACUTE INFECTIOUS DIARRHEA DUE TO ROTAVIRUS

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Background

Rotavirus is the leading cause of gastroenteritis among children worldwide. According to the existing literature, there is limited data about the fecal microbiota composition in children with acute infectious diarrhea. The aim of this study was to evaluate fecal microbiota composition in children with acute infectious diarrhea due to rotavirus.

Methods

Ten children aged between 3-4 years with acute infectious diarrhea due to rotavirus and 6 healthy controls, enrolled during FACID study. Fecal samples have been obtained at the 24-48 hours after diarrhea episode and stored at -80 °C until analysis. . Microbiota compositions were characterized by 16S ribosomal RNA gene sequencing.

Results

Between rotavirus diarrhea group and healthy children, there is significant difference for LDA score. *Proteobacteria*, *Enterococcaceae*, *Enterococcus*, *Eubacterium*, *Escherischia*, *Parvimonas*, *Atopobium* and *Lactococcus* are abundant genera in children with rotavirus diarrhea. Shannon index and Chao1 index was significantly different between rotavirus diarrhea group and healthy children ($p < 0.05$ for both).

Conclusions

We found fecal microbiota composition of children with rotavirus diarrhea is significantly different compared to healthy children. Further studies need to be done for the evaluation of this changing microbiota composition related with rotavirus infection and disease clinical characteristics, severity and prognosis.

12A. EDUCATION: INVASIVE FUNGAL INFECTION IN IMMUNOCOMPROMISED CHILDREN

ESP17-1006

A CASE OF SEPTIC ARTHRITIS DUE TO CANDIDA SPECIES

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Title of Case(s)

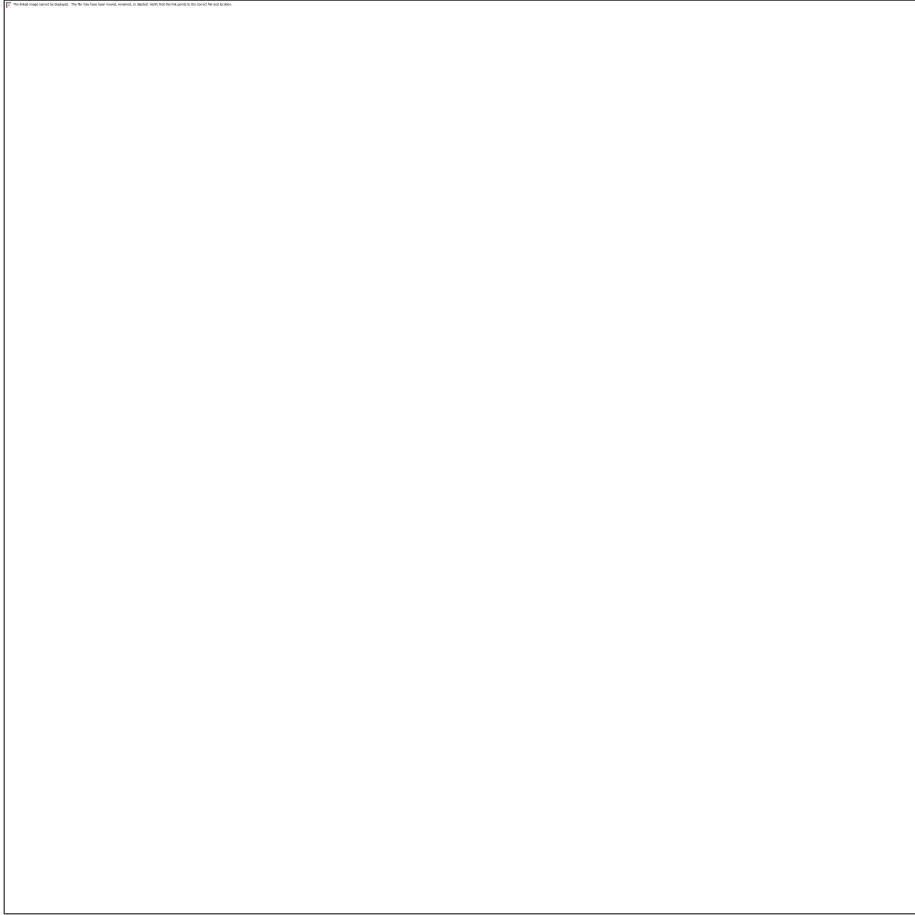
A case of septic arthritis due to Candida species

Background

Fungal septic arthritis is unusual in healthy children. These infectious tend to occur in immunosuppressive patients, who have indwelling central venous catheters, are injection drug users and have received broad-spectrum antibiotics. The most common pathogens are candida species

Case Presentation Summary

A 7-year-old boy with high-risk medulloblastoma was consulted for fever and left knee pain. His body temperature was 38.8°C. Left knee was painful with flexion. There was no swelling and erythema. Central venous catheter was present. White blood cell count (WBC) was 80/mm³, absolute neutrophil count (ANC) was 1/mm³, and C-reactive protein (CRP) was 93 mg/dl. Cefoperazone-sulbactam (80 mg/kg/d) was started. The next day fever resolved. On the 5th day the patient complained about swelling and pain in the left knee. There was septic arthritis findings in magnetic resonance imaging . (Figure 1-2). Articular puncture was done by orthopedic surgeons, and teicoplanin (10 mg/kg) was added. Candida species grew in joint fluid culture which was susceptible to fluconazole, amphotericin B and voriconazole. Intravenous (iv) caspofungin (50 mg/m²/dose) was added. Cefoperazone-sulbactam and teicoplanin were given for 14 days. On the 18th swelling and pain in the left knee regressed. After then, CRP was 1,1 mg/dl and sedimentation was 33/h. Caspofungin iv was given for 45 days, till the complaints and the diameter differences between knees regressed and CRP became negative. Patient was discharged with oral fluconazole treatment. Symptoms fully resolved and antifungal treatment continued for 8.5 weeks, until sedimentation became negative.



Learning Points/Discussion

Fungal pathogenes should be kept in mind in case of septic arthritis especially in immunosuppressive patients

14A. EDUCATION: COMMUNITY ACQUIRED DIARRHOEA IN INFANTS

ESP17-1033

VALIDATION OF A MODEL BASED ON EPIDEMIOLOGICAL AND CLINICAL FEATURES ONLY, FOR PREDICTING BACTERIAL AGENT OF COMMUNITY ACQUIRED ACUTE GASTROENTERITIS (GE) AMONG HOSPITALIZED CHILDREN

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Background

In a previous research in "Mair" hospital, Israel (2007-2009), The following models were found as predictors for bacterial agent (high sensitivity) and for predicting a Shigella infection (high specificity).

Aims: to validate these models on a large and diverse study cohort.

Model	(scoring) Criteria	Recommendation
Bacterial agent	Age>2 years, Fever > 38°C, Residence in rural area, Bloody stool.	One positive criteria or more Take stool culture
<i>Shigella sp.</i>	Age> 2 years (2), Fever > 38°C (1), Residence in rural area (1), Bloody stool (1), Jewish ethnicity (1), sickness period <1 day (1).	Scoring > 4 Give antibiotic treatment

Methods

A retrospective study of Records of 1000 children hospitalized with GE in two hospitals in a corresponding period of the previous research. Clinical parameters were collected based on the models. Sensitivity, specificity, PPV and NPV were calculated based on stool culture results.

Results

684 eligible children were included. A bacterial agent was identified in 94 cases (13.74%) : 7.4% ***Campylobacter Jejuni***, 3% ***Shigella sp.***, 3.2% ***Salmonella sp.***

The results of the validation of the first model (prediction of bacterial agent) and the second model (prediction of *shigella sp.*) were:

Sensitivity 91.49% and 90.48%; **specificity** 26.61% and 82.96%; **PPV**16.57% and 14.39%; **NPV** 95.15% and 99.6% respectively**Conclusions**

Utilization of stool culture based on simple clinical criteria may increase the yield of stool cultures. A simple module based on clinical scoring system may identify shigellosis with high specificity and sensitivity.

18C. EDUCATION: CASES IN TROPICAL INFECTIONS

ESP17-1046

UNUSUAL MANIFESTATIONS OF TYPHOID FEVER – CASE SERIES

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Title of Case(s)

UNUSUAL MANIFESTATIONS OF TYPHOID FEVER – CASE SERIES

Background

Typhoid fever is an important public health problem in developing countries. The classical presentation of typhoid has changed over the years. The atypical presentations are seen in the tropics possibly due to MDR typhoid with increased virulence, which may delay the clinical suspicion of the disease.

Case Presentation Summary

Case 1- A 13 year old sick looking boy presented to the emergency room with high grade fever of 5 days and features of decompensated shock with tender hepatomegaly. Circulatory parameters were stabilised and was initiated on piperacillin tazobactam. Investigations showed leucopenia and thrombocytopenia with raised CRP and liver enzymes. S. Ferritin and LDH were highly elevated suggestive of secondary HLH, confirmed by bone marrow examination. Serial ECHO's revealed poor ejection fraction of 39 % suggestive of myocarditis. Salmonella typhi was isolated from blood cultures at 48 hours, hence antibiotics were de-escalated to ceftriaxone and he recovered.

Case 2- A 14 year old boy presented with fever, constant back ache of 6 weeks with loss of weight and appetite. He had increased lumbar lordosis with positive SLR on both sides. MRI revealed fluid collection in intervertebral disc and paravertebral region with possibility of tuberculous/infective spondylodiscitis L3-4. Left paravertebral soft tissue biopsy showed chronic inflammation and tissue culture grew S. typhi. He was managed with IV ceftriaxone for 6 weeks and recovered uneventfully.

Learning Points/Discussion

Atypical presentations of common diseases are rarely seen in clinical practice. The aim of presenting this case report is to sensitise the clinicians about the fact that typhoid fever can rarely present with spondylodiscitis/abscess/pyomyositis or can be complicated with myocarditis or secondary HLH in the tropics. Hence a high index of suspicion is required for diagnosis of such conditions as early diagnosis and appropriate treatment results in complete recovery without any morbidity or mortality.

03C. EDUCATION: SEVERE S. AUREUS INFECTIONS: IS IT A MATTER OF RESISTANCE OR TOXINS?

ESP17-1068

DIFFERENTIATING BLISTERING SKIN CONDITIONS IN PREMATURE INFANTS

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Title of Case(s)

DIFFERENTIATING BLISTERING SKIN CONDITIONS IN PREMATURE INFANTS

Background

Staphylococcal scalded skin syndrome (SSSS) represents a spectrum of blistering skin conditions, following infection with epidermolytic toxin-producing *Staphylococcus aureus*. Exfoliative toxins (ETA and ETB) have been implicated in the pathogenesis. The condition is more common in children, especially premature infants lacking maternal transplacental antibodies and whose renal toxin clearance is impaired. We highlight diagnostic and management challenges in a premature neonate with major comorbidities.

Case Presentation Summary

A preterm (32 weeks gestation) with exomphalos major was on the general paediatric ward at four weeks of age, requiring oxygen therapy following staged surgical repair. He developed a blistering skin rash, with erythematous skin around the exomphalos, spreading over 4-5 hours to his arms, legs and back. Mucus membranes were spared. There were no purpuric macules. He was febrile (38°C) and tachycardic (180bpm), with visible discomfort on movement and Nikolsky sign, exfoliating >10% surface area. The differential diagnosis included; SSSS; streptococcal infections; toxic epidermal necrolysis (TEN); and Stevens-Johnson syndrome (SJS) as he had been on fluconazole prophylaxis from birth.

Immediate management involved intensive care transfer to a warm, humidified incubator with frequent monitoring given the risks of fluid loss and temperature instability, exacerbated by exomphalos major. He received fluid resuscitation and intravenous clindamycin (dose adjusted). Fluconazole was stopped due to its rare association with TEN/SJS. His blood culture was negative but he completed 10 days of clindamycin.

Learning Points/Discussion

Differentiating SSSS and TEN/SJS is very challenging in preterm infants with risk factors for both, evolving clinical signs and no rapid diagnostic tests. Intensive monitoring and multi-disciplinary review, including dermatology, are needed in view of the high mortality of both TEN/SJS and sepsis with SSSS in a preterm infant with comorbidities.

03B. EDUCATION: OPTIMAL APPROACH OF MENINGOCOCCAL DISEASE

ESP17-1099

MENINGOCOCCAL INFECTION

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Title of Case(s)

Meningococcal Infection In a Four-Month-Old Infant: A Case Report

Background

Pediatricists fear meningococcal disease because of the difficulties to diagnose in its early stages. Initial presentation of the meningococcal infections can be insidious and nonspecific, but typically consist of sudden onset of fever, malaise, decreased ability to concentrate and a rash that can be maculopapular, petechial or purpuric. In here, we describe a four-month-old boy with meningococ meningitis.

Case Presentation Summary

A four-month-old boy was admitted to the emergency room with the complaint of fever for two days. He looked discomfort with an axillary temperature of 38°C. On physical examination, his anterior fontanel was pulsatile and bulging. Laboratory tests showed a white blood cell 11520/mm³ and C-reactive protein of 70mg/L. Blood and urine cultures were obtained. Lumbar puncture was planned, because of fontanel bulging and fever without origin. The cerebrospinal fluid (CSF) contained abundant leukocyte. Antibiotic therapy with vancomycin and ceftriaxone were started. *Neisseria meningitidis* was isolated in both CSF and blood cultures for this reason vancomycin therapy was stopped. On the fifth day of therapy, the patient had seizure which lasted after 45 minutes. Magnetic resonance imaging examination was compatible with meningitis and no abscess was seen. On the 7th day of admission, fever was repeated, CSF, blood and urine cultures were obtained and antibiotic therapy was changed to combination of intravenous vancomycin and cefepime to cover healthcare associated infections. Control blood and CSF cultures remained sterile. The infant received systemic antibiotic therapy for two weeks and he was discharged with antiepileptic drug

Learning Points/Discussion

Invasive meningococcal infections have high mortality if it is not treated promptly, and long-term sequelae occur in 11% to 19% of survivors even in patients whom are treated successfully.

04C. SCIENCE: BRONCHIOLITIS

ESP17-1111

RESPIRATORY SYNCYTIAL VIRUS (RSV) INFECTION INDUCES A DYSREGULATED IMMUNE RESPONSE: T AND B CELL INTERACTIONS AND DISEASE SEVERITY

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Background

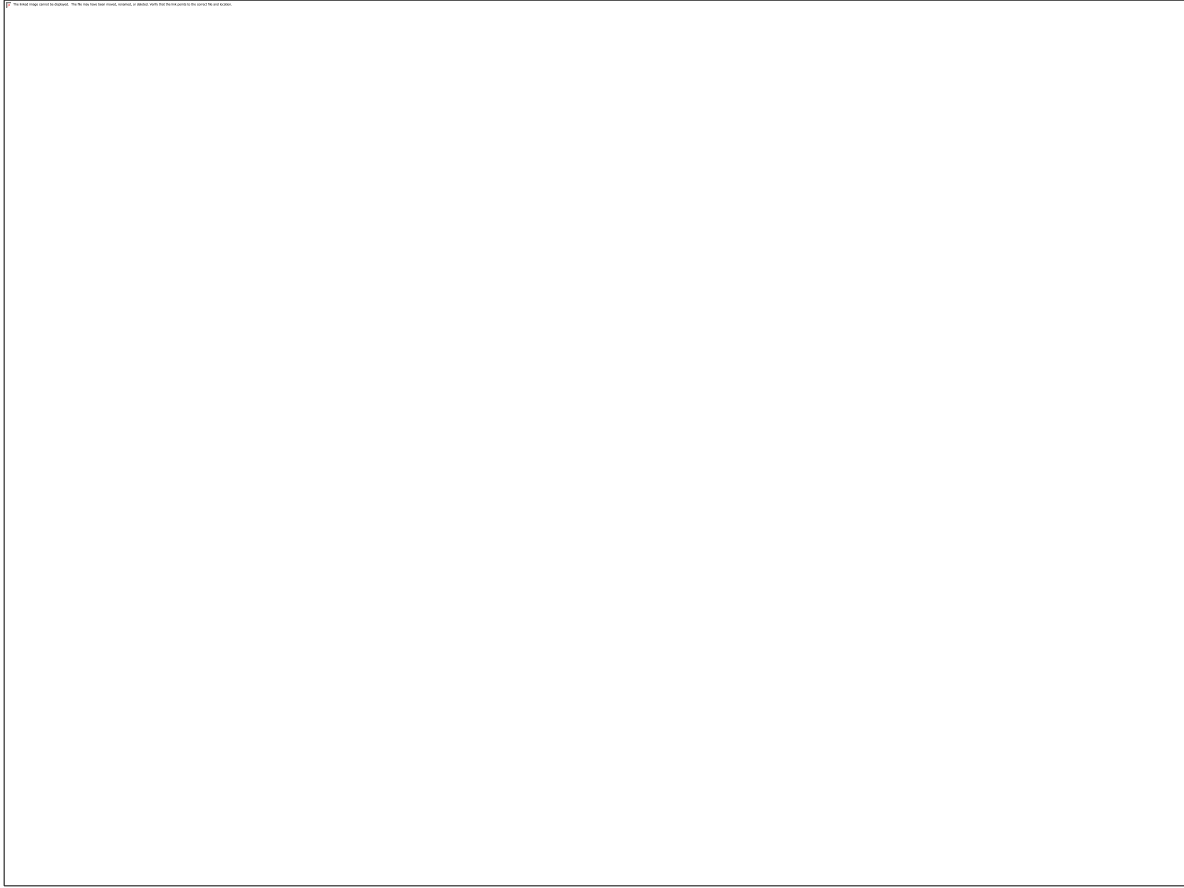
RSV infection is associated with a dysregulated immune response and lack of protective immunity. We aim to define the distribution of blood T-helper populations in infants hospitalized with RSV infection and their association with B-cell numbers, disease severity (ward vs. PICU) and viral loads (VL).

Methods

Infants with RSV infection and healthy controls (HC) were enrolled and nasopharyngeal samples obtained at enrollment and daily thereafter for RSV quantitation by rt-PCR. Blood samples were also obtained at enrollment and analyzed by flow cytometry for T-helper subsets including: Th1 (CD4⁺CXCR5⁻ CXCR3⁺CCR6⁻), Th2 (CD4⁺CXCR5⁻ CXCR3⁻CCR6⁻), Th17 (CD4⁺CXCR5⁻CCR6⁺CXCR3⁻), and follicular T-helper (Tfh) (CD4⁺CXCR5⁺CD45RA⁻) and subtypes. B-cell analyses included: plasmablasts (CD19⁺Cd20⁻CD27⁺CD38⁺), plasma-cells (CD19⁺CD20⁻CD27⁺CD38⁺CD138⁺) and memory B-cells (CD19⁺IgD⁻CD27⁺).

Results

From 2/2015-5/2016, 66 RSV+ patients; median age 2 [1-6] months (49 ward/17 PICU) and 34 age-matched HC were enrolled. Total white blood cell counts were comparable between groups (10.3-10.7 x10³/uL; p>0.05); however lymphocyte % was significantly lower in RSV patients vs. HC (p<0.001) with no differences according to the admission unit. CD4⁺ T-cells and all T-helper subsets were significantly reduced in PICU patients (Fig 1). Th1 (r=-0.40, p=0.001) Th2 (r=-0.27, p=0.03) and Th17 (r=-0.25, p=0.04) subsets, but not Tfh populations, inversely correlated with VL area under the curve. Last, Tfh cells and subtypes correlated with plasmablast (r=0.42, p=0.006), plasma cells (r=0.43, p=0.004) and memory B-cell (r=0.74, p<0.001) numbers, while only Th1 and Th17 correlated with memory B-cells (r=0.3, p<0.05).



Conclusions

CD4+ helper subsets were reduced in infants with severe RSV infection. While Th subsets modestly and inversely correlated with RSV loads, Tfh populations were positively associated with numbers of immunoglobulin-producing B-cells. Further studies are critical to understand T-B cell interactions, and their association with RSV disease severity and antibody production.

Clinical Trial Registration (Please input N/A if not registered)

03B. EDUCATION: OPTIMAL APPROACH OF MENINGOCOCCAL DISEASE

ESP17-1120

UNUSUAL PRESENTATION OF A PATIENT WITH MEN B MENINGITIS

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Title of Case(s)

Unusual presentation of meningitis B

Background

Despite decreasing overall rates Ireland has the highest incidence of Invasive Meningococcal Disease (IMD) in Europe. The highest prevalence is among the under one years, where clinical presentation often is without typical signs. We describe an unusual phenotype of a patient with meningococcal B meningitis, the progression of their disease and a literature review of the current epidemiology, presentations, complications and vaccination strategies in Ireland.

Case Presentation Summary

8 month old boy, born to non-consanguineous members of the Travelling community, presented to regional paediatric unit with poor feeding, stridor and irritability. He was diagnosed with croup, had one episode of diarrhoea, low serum potassium and high sodium, tested positive for rotavirus. Broad spectrum antibiotics were given because of irritability despite negative inflammatory markers. On day 3, Lumbar puncture results were consistent with partially treated meningitis. PCR assay for Men B was positive. On day 6 of admission, he developed right head tilt and spiked temperature for the first time. CT showed right sided subdural collection requiring burr-hole draining. Subsequent investigations didn't find any abnormality of his immune system. Metabolic and genetic work up were negative. He has bilateral hearing loss requiring cochlear implant and is enrolled into early intervention.

Learning Points/Discussion

This case underlines the importance of high clinical suspicion of invasive meningococcal disease in infants, the high variability of presenting complaints. While the overall decrease in the incidence of IMD is unarguably positive, current generation of young physician might not have been exposed to many cases of typical and atypical presentation of IMD, and their clinical suspicion might be decreased in that aspect. Regular literature review and focused training is necessary in order to maintain safe practice.

03B. EDUCATION: OPTIMAL APPROACH OF MENINGOCOCCAL DISEASE

ESP17-1170

GASTROINTESTINAL SYMPTOMS AND INVASIVE MENINGOCOCCAL DISEASE IN ENGLAND

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Background

A review of 15 invasive meningococcal disease (IMD) group W (MenW) cases in 15-19 year-olds identified seven teenagers who presented predominantly with an acute history of gastrointestinal symptoms in the 24 hours before attending hospital. This initial case review was extended to an analysis of MenW, MenY and MenB cases in 2014 across all age groups ≥ 5 years.

Methods

MenW, MenY and MenB cases confirmed by the Public Health England (PHE) Laboratory Meningococcal Reference Unit in individuals aged ≥ 5 years in 2014 were linked to case records on HPZone, a national web-based case management system used by local Health Protection Teams to record public health events and actions. Each case was also followed up by PHE with a clinical questionnaire. Records were reviewed to classify prodromal symptoms, presenting symptoms, diagnosis and outcome.

Results

There were 340 confirmed IMD cases; 179 MenB, 95 MenW and 66 MenY. Of these, 338 (99%) could be matched on HPZone and/or returned questionnaires. Gastrointestinal symptoms were present in 40 of 269 (15%) cases with these details available and associated with capsular group ($P < 0.001$). Seven of 140 (5%) MenB, 25 of 82 (30%, OR 6.9 (2.7-17.8)) MenW and 8 of 47 (17%, 3.5 (1.2-10.8)) MenY cases had these symptoms. A higher proportion of these cases died (18%, 7/40) than those without such symptoms (8%, 19/229) but was not significant.

Conclusions

IMD cases with gastrointestinal symptoms had high case fatality and were associated with capsular group being significantly more likely with Group W and Y IMD than Group B.

03C. EDUCATION: SEVERE S. AUREUS INFECTIONS: IS IT A MATTER OF RESISTANCE OR TOXINS?

ESP17-1211

TWO CASES OF STAPHYLOCOCCAL ENTEROCOLITIS: CHOLERA - LIKE DISEASE

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Title of Case(s)

Two cases of staphylococcal enterocolitis: cholera- like disease

Background

Staphylococcus aureus does not appear in the differential diagnoses of acute infectious diarrhea in books or established guidelines. Since antibiotic therapy is possible, this etiology should be recognized and looked for in cases of acute watery diarrhea in very young children and neonates.

Case Presentation Summary

A previously healthy 7-week old boy was admitted hours after he had an increased frequency of loose stools. He appeared pale and dehydrated, with a prolonged capillary refill time, elevated pulse and sunken anterior fontanelle. CRP was elevated (58mg/L), leukocyte count was normal ($17,5 \times 10^9$), with a predominance of bands (22%). During treatment he passed a significant amount of greenish watery stools up to twenty times/day, small amounts of blood and pseudomembranes were noted. Fluid losses of 700 – 1300 ml (150 – 280 ml/kg/day) were recorded. *Staphylococcus aureus* was prevalent in the stool (we obtained two samples with prevalent *S. aureus*, but molecular testing of colonies for staphylococcal enterotoxins (A – E and TSST-1) was negative. Culture of his stools was negative one month after discharge.

A second case was treated, with similar clinical and laboratory findings, but methicillin resistant *S. aureus* was found in stools at height of disease.

Both children were healthy on follow-up.

Learning Points/Discussion

Both children presented with severe fluid losses and life-threatening disease. Unnecessary laboratory investigations and invasive procedures could have been avoided. *Staphylococcus aureus* is surely not a common pathogen in enterocolitis, but it would be interesting to investigate the pathogenesis of staphylococci and their toxins in the gut, the gut colonization rate of *S. aureus* in healthy children and if this colonization is connected to nasal carriage in children and caregivers.

18C. EDUCATION: CASES IN TROPICAL INFECTIONS

ESP17-1253

MALARIA – A FAMILIAR CASE OF AN IMPORTED TROPICAL DISEASE...ON HOLIDAYS!

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Title of Case(s)

MALARIA – A FAMILIAR CASE OF AN IMPORTED TROPICAL DISEASE...ON HOLIDAYS!

Background

Malaria is an infectious disease nearly eradicated from industrialized nations, but almost half of the world's population lives in countries where the disease is endemic. Children are the most affected especially those aged 6 months to 5 years. Malaria may be responsible for 10% of all deaths of children in those countries. We report an imported case of familiar malaria.

Case Presentation Summary

A 3-year-old female, from Mozambique, on holidays in Portugal since previous week, admitted to our Pediatric ward with three days of fever, without other symptoms. Both parents had the same symptoms. Thinking about tropical diseases a research of seric *Plasmodium falciparum* was performed and became positive. The initial parasitemia was 14% without associated gravity factors. She started treatment with intravenous quinine 10 mg/Kg/dose plus clindamycin. Due to coagulation alterations, it was necessary the infusion of K vitamin. The ECG was normal. After two negative researches of *Plasmodium falciparum*, treatment was changed to oral quinine and clindamycin for plus seven days. She maintained an excellent clinical condition, without fever since day 4 of treatment and was discharged 7 days after admission. Parents also needed hospital admission with favorable evolution.

Learning Points/Discussion

We present this case to claim attention to the existence of tropical diseases in non endemic areas. We must be aware that this diagnosis should be considered in all patients with fever from these countries. It was important to make an early diagnosis in order to begin treatment in an initial stage and to prevent malaria complications that can lead to death eventually.

14A. SCIENCE: COMMUNITY ACQUIRED DIARRHOEA IN INFANTS

ESP17-1283

EFFECT OF SHORT-COURSE ZINC SUPPLEMENTATION FOR PREVENTION OF DIARRHEA AND IMPROVEMENT OF WEIGHT AND LENGTH

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Background

Zinc deficiency is common in developing and low income countries. This study assessed the effects of short course zinc supplementation in the prevention of diarrhea and also in improvement of weight and length.

Methods

In a double-blind, randomized, and controlled trial; 282 children aged 6 to 36 months from the sub-district of Khezr, in the district of Hamadan province in the west of Iran; were divided to 4 groups i.e. A, B, C, D, receiving zinc supplement (20mg /5ml elemental zinc as ZnSO₄), placebo, multivitamin and zinc sulfate plus multivitamin respectively. The supplement was administered once daily for 2 weeks.

The diarrhea was defined with three or more unformed stools in 24 hours and incidence of diarrhea was recorded during a 3 months follow up.

Serum zinc was measured at baseline and weight and length were measured at baseline and 15, 30, 60, and 90 days after intervention.

Results

The mean children's age was 18 months at baseline, with the averages of weight was 10.3 kg and length was 78.7 cm. The mean of serum zinc concentration was 9.66 mg/dl (53.6% of children had zinc deficiency), there were no significant differences in the age, gender, baseline-weight, baseline-length and baseline-zinc of serum among the intervention groups as compared to the placebo group.

During 3 months after intervention, incidence of diarrhea and also weight gaining and lengthening in groups A and D were not significantly different from those of groups B and C.

Conclusions

Our study findings showed that short course zinc supplement was not effective in prevention of diarrhea; and improvement of weight and length in healthy children.

Clinical Trial Registration (Please input N/A if not registered)

The study protocol was approved by the committee on Human Rights Research Involving Human Subjects, Hamadan University of Medical Sciences.

08B. EDUCATION: HIV IN ADOLESCENTS

ESP17-1294

PERCEPTION OF THE DISEASE AS A CRITICAL FACTOR OF THE THERAPEUTICS SUCCESS IN HIV INFECTIONS: COHORT STUDY OF ADOLESCENTS AND YOUNG PEOPLE

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Background

The recent therapeutic discoveries led to a longer life expectancy also for HIV infected children. Nevertheless, the scientific progress is not sufficient per se to decrease HIV morbidity and mortality rate. In order to achieve a similar life expectancy in comparison to a seronegative peer, a proper treatment adherence is crucial. This study describes the awareness and the perception level of the HIV infection and how this affects therapeutic success for a cohort of adolescents and young people.

Methods

An anonymous questionnaire was submitted in four different HIV Pediatric Italian centers: Rome, Milan, Padua, Naples. The patients received it through an online platform or delivered by their own doctors. The questions were not only related to the medicines assumption but also habits, mental and physical well-being, social relationships, knowledge of the disease and how this is associated to their fears, uncertainties and worries.

Results

All the interviewed patients responded enthusiastically, in particular via social network and email. The most relevant results in terms of treatment adherence occurs when the patients are supported by both the family and the healthcare facility, specifically when it is required overcoming the difficulties to share their health status. The study also reveals the transition to the adult care setting being easier for the guys more aware of their status.

Conclusions

The social discrimination related to the fear of infection perceived in the peers is the most concerning and impacting factor for the seropositive people. Increasing the amount of the information about the treatment and the results achieved through the therapy is fundamental to eradicate the discrimination which affects the HIV positive people. Family, educational structures, healthcare facilities and support groups play a central role in this game.

18A. EDUCATION: TROPICAL VIRUSES

ESP17-1311

SUBTLE FETAL SONOGRAPHIC FINDINGS IN A PREGNANT WOMAN WITH CONFIRMED ZIKA VIRUS INFECTION ACQUIRED IN THE DOMINICAN REPUBLIC

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Title of Case(s)

ZIKV tip of an iceberg?

Background

Zika virus (ZIKV) infection during pregnancy can cause neonatal microcephaly and other serious brain anomalies, though the complete clinical spectrum of congenital ZIKV syndrome is not yet known. We describe prenatal and postnatal follow-up in a pregnant woman with confirmed ZIKV infection during first trimester with subtle fetal brain abnormalities detected during neurosonography

Case Presentation Summary

Multigravida woman, living in Spain who travelled 21 days to the Dominican Republic. Several days after arrival, at 6.5 weeks of pregnancy, she presented maculopapular rash and arthralgia that lasted two days. Back at Spain, at 10.2 weeks (25 days after symptom onset), she was screened for arboviruses and ZIKV and tested positive for ZIKV by RT-PCR, IgM and IgG antibodies in serum samples. At 20.0 weeks an amniocentesis was performed with a negative ZIKV RT-PCR result. Serial targeted transvaginal brain ultrasound showed normal findings until 32 weeks when a subtle unilateral periventricular hyperechogenicity was observed at the level of the anterior horn. At 35 weeks the image evolved into a small periventricular cyst. Prenatal MRI could not be performed. A normal-weight girl was born at 40 weeks. All ZIKV testing was negative including placenta (RT-PCR), cord blood (RT-PCR and IgM), and neonatal (serum: RT-PCR and IgM; urine RT-PCR; cerebrospinal fluid RT-PCR and IgM). Clinical examination, hearing screening and ophthalmologic assessment were normal, and postnatal transfontanelar ultrasound showed only a small choroid plexus cyst. Although congenital ZIKV infection has been discarded the infant continues with targeted evaluation.

Learning Points/Discussion

Given that the clinical spectrum of ZIKV effects during pregnancy is not yet known and that the reliability of newborn diagnostic testing is not well-defined, a comprehensive prenatal and postnatal follow-up is recommended.

14A. EDUCATION: COMMUNITY ACQUIRED DIARRHOEA IN INFANTS

ESP17-1330

ACUTE RENAL FAILURE AS COMPLICATION OF GASTROENTERITIS, TWO CASES PRESENTATION.

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Title of Case(s)

ACUTE RENAL FAILURE AS COMPLICATION OF GASTROENTERITIS, TWO CASES PRESENTATION.

Background

Acute renal failure is characterized by the sudden inability of the kidney to retain water and electrolyte balance of the body. In pediatric practice causes of acute renal failure are hypovolemia, infectious agents and medicines. ARF is usually due to dehydration combined with electrolyte losses as the cases of gastroenteritis.

Case Presentation Summary

1st: A two-month-old infant was admitted in our department presenting fever, vomiting and diarrhea. On admission, the infant was hypotonic with anuria, in shock. The laboratory work up revealed metabolic acidosis and renal failure, urea and creatinine were increased, hypocalcemia, hyperphosphatemia, hyperuricemia and hypokalemia. The patient was supported by ICU and renal department. Acidosis, electrolytes disorder and hyperuricemia was treated. Body cultures collected and antibiotics were administered. Laboratory tests confirmed infection by rotavirus. The baby's clinical picture was improved, as hemodynamic and renal function were stabilized. He following 48 hours of hospitalization, he remained afebrile while stools contents were progressively improved. **2nd:** We report a 14-year-old girl who was admitted to our department with hyperpyrexia, vomiting and multiple diarrhea over 4 days. The teenager was already in medication with amoxicillin and cefuroxime axetil for 2 days, because of positive fecal culture salmonella spp. She admitted due to non-response in oral medication. She presented with dehydration with acute tubular disorder, urea and creatinine were increased with hypokalemia, hypocalcemia, hypoalbuminemia and proteinuria. She was treated by diuretics (furosemide) and IV given fluids. She remained hospitalized for 7 days with good response.

Learning Points/Discussion

We described two different age group patients with two different infectious factors that were responsible for equal severe renal failure events. If this situation is not treated properly the complications could lead to chronic renal problems. The appearance of renal dysfunction during gastroenteritis is frequent and requires from the clinicians a very concerned aspect.

03C. EDUCATION: SEVERE S. AUREUS INFECTIONS: IS IT A MATTER OF RESISTANCE OR TOXINS?

ESP17-1387

EPIDEMIOLOGY, MICROBIOLOGY AND CLINICAL CHARACTERISTICS OF COMMUNITY-ACQUIRED STAPHYLOCOCCUS AUREUS ACUTE OSTEOMYELITIS(AO) AND SEPTIC ARTHRITIS(SA) IN COSTA RICAN INFANTS

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Background

Although *S.aureus* is the leading cause of pediatric AO and SA, few reports have been published in infants <3 months. We describe the epidemiology, microbiology, and clinical aspects of *S.aureus* AO and SA in this age group at the only national tertiary referral hospital of Costa Rica.

Methods

Retrospective and prospective descriptive study of infants <3 months with a hospital discharge diagnosis of *S.aureus* AO and/or SA, from Oct-1-2013 to Sep-30-2016.

Results

Among 57 patients with discharge diagnosis of *S.aureus* AO and/or SA, 7 (12.3%) pts were <3 months. Age distribution was: <1 month, 5(71.4%) pts and 1-3 months, 2(28.6%). 6(85.7%) pts were girls. 2(28.6%) pts had SA, 2(28.6%) AO, and 3(42.8%) both AS and AO. Mean length of hospitalization was 51.5(25-83) days. None had preceding trauma or ARTI, 2 pts had recent GI infections (diarrhea and NEC). Mean length of symptoms was 4.2(1-10) days. Irritability and edema were present in 87.5% pts; fever and pain in 71.4% pts. Affected bones/joints included femur 5(71.4%), hip 2(28.5%), knee 1(14.3%), ankle 1(14.3%), and wrist 1(14.3%), respectively. *S.aureus* was isolated from blood in all pts, joint/bone 28.5% pts, CSF 28.5%, pleural fluid 14.2%, and soft tissues 14.2%. Resistance to methicillin (MRSA), clindamycin, and erythromycin was 14.3% each; 0% to TMP-SMX and vancomycin. 2 isolates were STSS(+) and 1 PVL(+). Arthrocentesis was performed in 71.4% pts; osteotomy and arthrotomy in 57.1%, each. Most common complications included pneumonia (43%), endocarditis (43%), meningitis (29%), and septic shock (29%). ICU management was required in 4(57.1%) pts.

Conclusions

Of interest, in this particular age group the rates of CA-MRSA SA/AO is lower than older children. This is the first report of its kind in Central American and Caribbean infants.

