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Abstracts

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ABS 1

ARE ANTIBIOTICS A RISK FACTOR FOR THE DEVELOPMENT OF NECROTIZING ENTEROCOLITIS?

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INTRODUCTION

Previous studies have identified many potential risk factors that are associated with necrotizing enterocolitis (NEC). Concerns have been raised about whether antibiotic therapy is a potential independent risk factor for NEC in premature infants. Therefore, this study was conducted to identify the association between antibiotic exposure and NEC in very low birth weight infants (VLBW).

METHODS

We performed a retrospective case-control analysis of VLBW infants born between 1/1/2012 and 31/12/2014 in Coombe Women and Infants University Hospital. Every case of NEC ≥ stage IIA according to the modified Bell's criteria matched to two controls for the gender, gestational age, birth weight, intrauterine growth restriction, mode of delivery and maternal chorioamnionitis. Demographic and clinical characteristics, as well as potential risk factors for NEC were compared between cases and controls.

RESULTS

Twenty-two cases of NEC were matched to 32 controls. A few notable differences were observed between case and control groups. Prolonged exposure to initial antibiotics for more than five days was associated with 3.6 times increase risk to have a baby with NEC (OR: 3.6; 95%CI: 1.129-11.478). The infants who developed NEC were exposed to more frequent number of antibiotic courses (1 [IQR 1-2] days vs. 1 [IQR 0.25-1] days, p = 0.03) and to more days on any antibiotic (5 [IQR 3-10] days vs. 3 [IQR 2-6] days, p = 0.02) compared to those who did not have NEC.

CONCLUSIONS

Prolonged exposure to antibiotics is associated with an increased probability of NEC in VLBW infants. Antibiotics should be used with caution to decrease subsequent serious outcomes. Antibiotic guidelines and stewardship is important to ensure antibiotic use is appropriate.

ABS 2

CLINICAL CHARACTERISTICS AND OUTCOME OF NEONATAL URINARY TRACT INFECTIONS

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INTRODUCTION

The symptoms of urinary tract infection (UTI) in neonate are non-specific and the sterile samples may be difficult to obtain.

AIMS

This study was performed to determine the clinical signs and outcome of UTI in neonates admitted to Pediatric Clinic University Medical Center Sarajevo from January 2015 to April 2016.

METHODS

A total of 35 neonates treated for UTI were enrolled into this study. UTI was confirmed with urine culture. As a screening for congenital urinary anomalies, in all newborns abdominal ultrasonography was done. In those with abnormal urinary ultrasonography results, further imaging studies were done.

RESULTS

The UTI was a little more common in male neonates (57.1%). The most common clinical manifestation was fever (74,3%), followed by gastrointestinal tract problems (43%). These manifestations were poor appetite, diarrhea, bloody stools, vomiting and abdominal distention. Four neonates (11.4%) had prolonged unconjugated hyperbilirubinemia. CRP was elevated in 29 (82.9%) neonates. Fifteen neonates (43%) had congenital urinary tract anomalies – unilateral hydronephrosis 7 (46.67%), bilateral hydronephrosis 4 (26.67%), unilateral ureterocele 1 (6.7%), unilateral double ureter 1 (6.7%), unilateral multiple cystic dysplastic kidneys 2 (13.3%). Hydronephrosis was caused by ureteropelvic junction in 8 (72.7%) and vesico-urinary

reflux in 3 (27.3%) neonates. Urinary tract anomaly was diagnosed prenatally in 46.7% of neonates.

CONCLUSIONS

Any neonate with a UTI, regardless of sex, should be presumed to have urinary obstruction or reflux and should have image studies to rule out these conditions.

ABS 3

FREQUENCY OF LATE-ONSET INFECTIONS DURING PRIMARY HOSPITALIZATION: DIFFERENCES BETWEEN SMALL-FOR-GESTATIONAL-AGE AND APPROPRIATE-FOR-GESTATIONAL-AGE PRETERM INFANTS

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INTRODUCTION

Several studies found positive relationship between small for gestational age status and late-onset infections.

METHODS

We retrospectively collected data from all single preterm infants ($24^{0/7}$-$36^{6/7}$ GA) born between Jan 2011 and Sep 2012 in a tertiary-care university clinic. The sample was divided into two groups: very low gestation age (VLGA) group with < 32 GA and low gestational age (LGA) group with ≥ 32 GA. Small-for-gestational-age (SGA) was defined as birth weight < 10^{th} percentile, appropriate-for-gestational-age (AGA) as 10^{th}-90^{th} percentile. We extracted data about late-onset infections – sepsis, meningitis, pneumonia, urinary tract infection (UTI) – during primary hospitalization.

RESULTS

The study sample consisted of 524 preterm infants – 108 VLGA and 416 LGA. In VLGA group there were 47 SGA and 61 AGA infants, with mean gestational age of 29.24 and 28.73 weeks, respectively. Sepsis (46.81%, 45.90%), meningitis (2.12%, 3.28%), pneumonia (8.51%, 6.55%), and UTI (6.38%, 4.92%) were of similar frequency in SGA and AGA VLGA infants. At least one late-onset infection was observed in 59.57% SGA and 52.46% AGA infants, which was not significantly different between the groups. In LGA group, there were 107 SGA and 309 AGA infants, with mean gestations of 34.96 and 35.23, respectively. Sepsis was significantly increased in SGA group (13.08%, 0.97%, $p < 0.0001$). Meningitis was diagnosed in one SGA infant. Frequency of pneumonia was similar in both groups (1.87%, 0.65%). UTI was more frequent in SGA infants (9.34%, 2.26%, p 0.001). At least one episode of any late-onset infection was found in 23.36% SGA and 2.59% AGA infants, with the significance at the level of $p < 0.0001$.

CONCLUSIONS

In our study sample, late-onset infections were of similar frequency in SGA and AGA VLGA infants. In contrast, in LGA group, sepsis, urinary tract infection, as well as at least one episode of any late-onset infection were significantly increased in SGA infants.

ABS 4

DIABETIC PREGNANCY ACTIVATES INNATE IMMUNE RESPONSE THROUGH TLR5 OR TLR1/2 ON CORD BLOOD-DERIVED MONOCYTES

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OBJECTIVE

Diabetes mellitus (DM) in pregnancy is known to cause congenital malformations, macrosomia, respiratory distress syndrome and so on in neonates, however it is unclear whether the maternal DM affects the neonatal innate immune system. This study aimed to study the influence of DM in pregnancy on the toll-like receptor (TLR)-mediated innate immune response in neonates.

METHODS

Cord blood was collected after full-term vaginal or cesarean delivery and classified into DM group (n = 8) and control group without DM (n = 7). After the separation of mononuclear cells from cord blood by density gradient centrifugation, monocytes were isolated from mononuclear cells by using anti-CD14 magnetic beads. After 12 hours of monocyte cultures with LPS (TLR4 ligand), flagellin (TLR5 ligand), Pam3CSK4 (TLR1/TLR2 ligand), zymosan (TLR2/TLR6 ligand) or MALP (TLR2/TLR6 ligand), cytokines (IL-8, IL-6, IL-1β, IL-10, TNF-α and IL-12) in cell supernatants were measured.

RESULTS
Compared to the control group, DM group had significantly higher concentrations of IL-8 ($p = 0.01$) and TNF-α ($p = 0.02$) when stimulated by Pam3CSK4 and had significantly higher concentrations of IL-8 ($p = 0.01$) when stimulated by flagellin, whereas there was no significant difference in cytokine profiles between DM and control group when stimulated by LPS, zymosan and MALP.
CONCLUSIONS
Our results indicate that maternal DM induces excessive IL-8 and/or TNF-α release in neonates via TLR5 or TLR1/2-mediated innate immune response, which may be relevant to the systemic inflammation by early-onset neonatal infection.

ABS 5

CONGENITAL CYTOMEGALOVIRUS INFECTION: A CLINICAL STUDY

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INTRODUCTION
Timing for diagnosis is one of the most important factors in order to start treatment and to prevent health problems, especially altered psychomotor development. Congenital CMV can be detected at birth or during the first 2 weeks of age by direct isolation of the virus in urine or saliva using electron microscopy: this is the quickest and most reliable method for early verification of this infection. Positive CMV in urine in third week of age or later detects acquired CMV infection. Serological diagnosis is confirmed by IgM antibodies in fetal or neonatal blood; diagnosis can be confirmed by PCR method. Congenital CMV diagnosis without previous information about mother's infection is very difficult but yet possible for experienced clinical neonatologist. Clinical signs are the following: pale or jaundiced skin color, skin rash, reduced fat tissue, reduced birth weight and length, microcephaly, hepatomegaly, poor feeding, hypotonia, lack of spontaneous motility, lethargic behavior.
METHODS
Aim of the study was to find out the most frequent CMV clinical signs at first clinical assessment of newborns, during a 10-year period at our Neonatal Department specialized in ill term newborns; they come from home to our hospital from the territory of Autonomous Province of Vojvodina with 2 million people inhabitants.
RESULTS
There were 27 neonates with congenital CMV infection. The most characteristic signs were: Small for Gestational Age (SGA) 100%; neonatal jaundice 8.88%; hypotonia 85.18%. The leading clinical problems responsible for their hospitalization were poor feeding and poor weight gaining (74.07%).
CONCLUSIONS
It is of great importance to recognize discrete signs of illness as they can lead to proper differential diagnosis. If congenital CMV is diagnosed on time, modern therapeutic approach and follow up united with stimulative treatment can prevent serious neurological problems and altered psychomotor outcome.

ABS 6

DIAGNOSTIC BIOMARKERS IN EARLY NEONATAL SEPSIS: TLR-2 AND TLR-4 VERSUS CONVENTIONAL MARKERS

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INTRODUCTION
Despite advances in medicine there is no consensus for a diagnostic panel of sepsis markers.
The study wants to highlight the contribution of some markers and reveal the relevance of TLR-2 & TLR-4 versus IL-6 & CRP in the diagnosis of neonatal sepsis.
METHODS
The study was performed in Neonatology I Department, Emergency County Hospital Cluj, Romania. The study group included 35 newborns with symptomatology suggestive of sepsis, requiring evaluation and antibiotic treatment and a control group of randomized healthy newborns. Blood counts, hemoculture, C reactive protein (CRP), interleukin 6 (IL-6), procalcitonin, tumor necrosis factor (TNF-α) were determined in the first and third day of life and Toll like receptors TLR-2 & TLR-4 only in the first day. Informed consensus

was obtained. For statistical analysis Statistica VI was used.

RESULTS

The major risk factor was the premature rupture of the membranes (PROM), which was significantly different in the 2 groups: 79 h (95% CI: 30-129) in study group versus 5 h (95% CI: 0-12) in control group ($p = 0.00003$). In the first day of life hematological parameters are the same in both groups. TNF-α and IL-6 were insignificantly higher in study group versus control. 1st day determinations in sepsis group revealed: IL-6 correlated significantly and negatively with leucocytes; TNF-α correlated significantly and negatively with TLR-2 and TLR-2 correlated significantly and positively with TLR-4. In the 3rd day higher correlation is observed between IL-6 and leucocytes and a negative correlation between IL-6 and TNF-α. Procalcitonin presented the same values in the first day but higher values in the third day in the study group. In the first day of life TLR-2 (%) were 42.5 versus 5.69 ($p = 0.00683$) and TLR-4 (%): 2.20 versus 0.67 ($p = 0.0372$), significantly higher in sepsis group.

CONCLUSIONS

TLR-2, TLR-4 could be precocious markers of neonatal sepsis. IL-6 and TNF-α can be used like markers of early neonatal sepsis.

ABS 7

URINARY KIDNEY INJURY MARKERS IN NEONATES WITH URINARY TRACT INFECTION AND PNEUMONIA

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INTRODUCTION

Severe sepsis and asphyxia are the main causes of acute kidney injury (AKI) in newborns. The diagnosis of septic AKI remains difficult and is established with delay. There are new, so called structural markers, emerging as potentially useful early indicators preceding the increase in serum creatinine and cystatin C, however evidence is still missing. Therefore we analyzed total urinary NGAL (uNGAL), KIM-1 and IL18 in neonates with pneumonia or urinary tract infection (UTI).

METHODS

Urinary levels of uNGAL, KIM1 and IL18 were measured on the first day of observation for infection in 20 patients with urinary tract infection and 8 with pneumonia. 20 apparently healthy neonates served as a control. Serum creatinine was measured on the daily basis and urinary output was monitored. Acute kidney injury was diagnosed according to pRIFLE criteria.

RESULTS

None of analyzed patients developed AKI during hospitalization. On the 1st day there were significant differences in uNGAL only. The medium value in urinary tract infection patients was almost 9 times higher than in controls (167 [59-500] vs. 19 [10-37] ng/ml, $p < 0.001$). The uNGAL values in patients with pneumonia were 2 times increased (41 [17-181] ng/ml, $p = 0.3$), however the difference was not statistically significant due to the low number of cases. On the contrary, the values of IL18 were: (64 [35-106] vs. 69 [42-108] vs. 85 [47-98] pg/ml, respectively in UTI, pneumonia and controls) and KIM-1 urinary levels (0.80 [0.34-1.01] vs. 0.70 [0.69-1.02] vs. 0.65 [0.15-0.91] ng/ml) were similar in all study groups.

CONCLUSIONS

The usefulness of total uNGAL for the diagnosis of AKI is highly limited in septic patients especially in those with UTI. The bias related to infection for IL18 and KIM-1 is smaller and therefore they may better reflect kidney injury in septic neonates.

ABS 8

EARLY DETECTION OF NEONATAL INFECTION AT BIRTH IN PREMATURE INFANTS BY CLINICAL AND LABORATORY MARKERS

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INTRODUCTION

In a significant part (over 35%) of preterm births an intrauterine infection (IUI) becomes evident.

IUI can cause a preterm birth (PTB) and may often affects the fetus and the newborn infant.

AIM

The aim of our study was to investigate the possibilities for early detection of neonatal infections at birth using a set of laboratory markers: number of leukocytes, the C- reactive protein at 24th hour after birth and IL-6 concentration in the umbilical cord.

METHODS

Ninety-three newborn infants delivered from 93 singleton pregnancies over 26 weeks of gestation were studied. The neonates were divided into two groups: the study group consisted of 60 prematurely born infants – 30 of them of mothers with intact membranes and 30 with preterm rupture of membranes (PROM), and the control group included 33 infants delivered at term by elective cesarean section. All infants were examined at birth and followed up by clinical and laboratory methods. The concentration of IL-6 in the umbilical cord, the count of white blood cells (WBC) on the first day of life and the concentration of C- reactive protein (CRP) at 24th hour after birth were studied. Bacterial examinations of a blood sample, gastric aspirate and a swamp from the external ear canal taken immediately after births from the infants were performed and the microbiologic results used for confirmation of a neonatal infection.

RESULTS

We found increased number of WBC over the normal range in 28.3% of the preterm and in 6.1% of the term infants with early-onset infection, elevated concentration of CRP (> 5 mg%) in 61.7% of premature infants and no evidence of infection in the term born newborns. Elevated levels of IL-6 (> 30 pg/ml) were found in 81.7% of the study group and in 10% of the control group. According to the combined clinical and expanded laboratory evaluation, we diagnosed 83.4% of the premature infants and 3.3% among the term newborn infants with early-onset infection.

CONCLUSIONS

The obtained results show that two of the laboratory markers, i.e. CRP and IL-6, have good diagnostic abilities separately, but weaker than in a combined assessment. The better diagnostic characteristics of IL-6 can be used in difficult clinical cases.

ABS 9

PERSISTENT METABOLIC ACIDOSIS AND METHEMOGLOBINEMIA IN COW'S MILK PROTEIN-INDUCED ENTEROCOLITIS

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INTRODUCTION

Although cow's milk protein (CMP) allergy is the most common food allergy in newborns and infants, the differential diagnosis of food-protein-induced enterocolitis syndrome (FPIES) and other metabolic or infectious diseases can sometimes be difficult.

CASE REPORT

Female infant of 33 days of age, referred from another Hospital because of persistent metabolic acidosis, dehydration and diarrhea. She was admitted at the age of 24 days with fever, diarrhea and failure to thrive, and treated with intravenous ampicillin and gentamicin. Vaginal delivery was induced at 37 gestational weeks for intrauterine growth restriction. She had two previous admissions (due to small for gestational age and jaundice). Mixed feeding since delivery. No toxic intake or medication is reported. Hypoalbuminemia, metabolic acidosis and methemoglobinemia (12.5% maximum) were documented associated with enteral feeding. No hypoglycemia, hyperammonemia or significant elevations of lactic acid were detected. Metabolic and immunological tests were normal. Routine evaluation for acute infection was negative, despite positive *C. difficile* antigen in stools. Parenteral nutrition was established, with decreasing of diarrhea, and gasometry and methemoglobin values progressively returned to normal. Continuous enteral feeding with elemental formula was provided, achieving parenteral nutrition weaning after 24 days. Serum CMP, α-lactalbumin, β-lactoglobulin and casein specific IgE were positive. Intestinal failure-associated liver disease documented during admission, gradually improved and disappeared after discharge. At 12 months of follow up, complementary food has been introduced with no adverse effects, maintaining extensively hydrolyzed formula. At the moment she has normal development with adequate weight gain and growth.

CONCLUSIONS

In our patient the presence of methemoglobinemia and metabolic acidosis led us to the diagnosis of cow's milk protein induced enterocolitis (once ruled out the causes of secondary methemoglobinemia and congenital etiology). Although unusual, the

association of diarrhea, metabolic acidosis and transient methemoglobinemia has been described in the literature after exposure to CMP.

ABS 10

INTERLEUKIN 17A IN BRONCHOALVEOLAR LAVAGE FLUID: AN EARLY MARKER OF VENTILATOR-ASSOCIATED PNEUMONIA (VAP) IN PRETERM INFANTS

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INTRODUCTION

Ventilator-Associated Pneumonia (VAP) is a lung infection in patients on mechanical ventilation (MV) for ≥ 48 h. It is the second most frequent nosocomial infection [1]. The availability of rapid and reliable biomarkers would be desirable, since microbiological results are not confirmed before 48 h. Our aim was to assess a significant predictive capacity for diagnosing VAP among an ample array of cytokines in bronchoalveolar lavage fluid (BALF), and if there was correlation between levels in BALF and in tracheal aspirates (TA).

METHODS

This was a prospective observational cohort study approved by the Ethic Committee. Eligible patients were preterm newborns on MV for more than 48 h and suspicious of VAP. Exclusion criteria were: lack of consent, clinical instability to obtain samples or airway malformations. Diagnostic criteria for VAP were based on CDC guidelines [2]. Patients with clinical and radiological criteria underwent BAL before antibiotics. 1 mL of BALF was extracted with a blind protected catheter as shown in a previous study [3]. BALF quantitative culture was considered positive when > 1,000 CFU/mL were isolated. A TA sample was obtained by suctioning through endotracheal tube after BAL. Concentrations of 20 human cytokines (pg/mL) were measured by flow cytometry: E-Selectin, G-CSF, ICAM-1, LAP, IFN-α, IFN-γ, IP-10, MCP-1, MIP-α, MIP-β, TNF-α, IL-1α, IL-1β, IL-4, IL-6, IL-8, IL-10, IL-12p70, IL-13 and IL-17A. Data analysis was performed using SPSS® 17.0. Fisher exact and T-Student tests were applied to compare groups and to identify potential biomarkers. The area under the curve (AUC) of the receiver operator characteristic (ROC), sensitivity (ST), specificity (SP), predictive values (PPV, PNV), likelihood ratios (LR+, LR-) and Youden's Index were calculated. Pearson's test was performed to find out the correlation between BALF and TA. A p-value ≤ 0.05 was considered significant.

RESULTS

13 preterm infants were enrolled: 5 were diagnosed with VAP and 8 were not. No significant differences were observed. Cytokines were determined in BALF and TA. Only IL- 17A in BALF showed statistically significant higher values in the VAP group. ROC curve showed an AUC of 0.92. We established a cut-off of 0.27 μg/mL (ST 100%, SP 83%, PPV 80%, PNV 100%, LR+ 5.9, LR- 0, Youden's Index 0.83). Only ICAM-1, IL-6 and IP-10 showed a positive significant correlation between BALF and TA.

CONCLUSIONS

IL-17A in BALF has shown to discriminate between preterm newborns with pulmonary disease who develop VAP and those who did not, and could be used as an early marker of VAP. Our data did not support the use of cytokines in TA instead of BALF to diagnose VAP.

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ABS 11

VERY LOW WEIGHT PRETERM TWINS DIAGNOSED WITH LATE-ONSET SEPSIS SHOW CHANGES IN GUT MICROBIOTA PROFILES AND MUCOSAL CELLS GENE EXPRESSION

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INTRODUCTION
Neonatal sepsis is a serious condition associated with high mortality and morbidity in preterm infants. However, microbiologic diagnosis remains a challenge. In a non-invasive approach, we studied changes in the gut microbiota and gene expression of intestinal epithelial cells during sepsis in very low birth-weight infant twins.
METHODS
This is a prospective observational case-control study conducted in very low birth-weight preterm dizygotic twins with clinical signs of sepsis and their non-septic twin controls. Non-invasive samples (feces) were used for both microbiota analyses by qPCR and 16S rRNA sequencing and for genome-wide gene expression analysis of exfoliated epithelial cells.
RESULTS
The sepsis group showed reduced diversity in gut microbiota, dysbiosis, lower levels of *Bifidobacterium spp*. and higher levels of Enterobacteriaceae than their controls twins. Also transcriptomic differences in epithelial cells of septic samples versus healthy controls were evidenced as 343 up regulated and 167 down regulated genes. Functional analysis indicated the up regulation of inflammatory and oxidative stress pathways. Furthermore, there was a significant inverse correlation between the expression of oxidative stress genes and the presence of *Bacteroides spp*. and *Bifidobacterium spp*.
CONCLUSIONS
In non-invasive fecal samples of septic neonates we found differential expression of some genes related to oxidative stress that could be exploited for early diagnostic for this devastating disease in preterm neonates. Our results expand previous data showing the relevance of oxidative stress in sepsis, particularly in the gut lumen, which possibly determine the selection of gut microbiota.

ABS 12

CONGENITAL CYTOMEGALOVIRUS INFECTION IN A SPANISH TERTIARY HOSPITAL (2009-2015)

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INTRODUCTION
Congenital cytomegalovirus (C-CMV) infection is common worldwide. It is the leading cause of non-hereditary sensorineural hearing loss (SNHL) and can cause other long-term neurodevelopmental disabilities (cerebral palsy, intellectual disability, vision impairment, seizures, etc.).
METHODS
We examined a population-based retrospective cohort of C-CMV infection cases diagnosed in our Neonatal Unit at the Navarre Hospital Complex (Spain) from 2009-2015. SPSS® has been used for the statistical analysis.
RESULTS
17 newborn babies (47% males, 53% females) have been diagnosed with C-CMV infection in our Unit during this 6-year period. The rate of C-CMV infection is 0.05% of live births per year in our community while C-CMV infection has a prevalence of 0.6% in developed countries. Three of them, were diagnosed after the neonatal period (> 30 days of life) as result of not passing the hearing screening tests. Maternal primary infections during pregnancy have not been detected in any of the cases included. The median age of the mothers was 34 years. 53% of them had previous pregnancies and 29% had history of al least one abortion. 47% of the detected patients had brothers and sisters less than 3 year old age. The majority (71%) of the pregnancies were asymptomatic regarding CMV infection (no fetal signs), 18% were symptomatic and there is no recorded data about the rest 11%. The most frequent sign was fetal growth retardation. Abnormal fetal cerebral ultrasonography was detected in 23% of the cases prenatally. 29% were twin pregnancies (no fetal twin lost was described). One fetal MRI was carried out with normal result. No amniocentesis or cordocentesis were performed and no treatment was administered to the mothers. 53% were eutocic deliveries. The average GA was 36 weeks with a prevalence of premature babies of 62.5%. The mean weight observed at birth was 2,320 g and nearly 59% of the babies were less than 2,500 g. Satisfactorily, only less than 19% had Z score less than 2 SD for weight, height or head circumference at birth. The first screening detection test carried out in our Unit is the CMV PCR in urine. We routinely test all premature babies less than 35 weeks GA as well as all suspected patients. 82% were diagnosed within the first three weeks of life (79% of them in the first week), and only 18% after the 7 days. Lumbar puncture was performed in 35% of the cases (although it is more common

in the patients diagnosed in the last years of the period studied). CMV PCR in urine was positive in 94.1% of the patients, in blood sample in 70.6% of the cases and dried blood spot PCR test was only done in 11.8% of the cases with positive result. The LCR PCR test was positive only in one case, but it was only performed in 35% of the cases. According to the scientific evidence, at birth most infants with congenital CMV are asymptomatic, but approximately 10% have symptoms. In our series of patients, only 53% were completely asymptomatic. Among the clinical signs observed we found thrombocytopenia (29%), hypertransaminasemia (ALT + AST) (23%), anemia (23%), elevated bilirubin levels (11.8%), absence of leukopenia (although 11.7% had neutropenia). First cerebral sonography was abnormal in 58.8% of the cases, 35.3% had a normal result and in one patient there was no data. The prevalence of chorioretinitis in the first ophthalmologic exam was 11.8% (2 cases). Otoacustic emissions were normal for both ears in 58.8% and abnormal bilaterally in 11.8%. Auditory evoked potentials were normal for both ears in the 64.7% of the cases, 17.6% had abnormal findings. The vast majority of newborns were treated with combined therapy with intravenous ganciclovir and oral valganciclovir. No life-threatening cases were recorded. In long-term follow-up (at the age of 12 months) (we could not evaluate 2 cases because they have not reached this age) only 14% presented Z score for weight less than 2 SD, 23% for height and microcephaly was detected in 35% of our patients. Hearing loss was detected in 47%. Motor impairment was observed in 23% of the cases and psychomotor in 5 patients. The majority (77%) were epilepsy free and only 2 cases had visual deficit.

CONCLUSIONS

As referred in other publications, SNHL is the most common sequel of congenital CMV (around 34% of the patients with symptomatic disease) and this hearing loss associated with symptomatic C-CMV is often progressive. The proportion of symptomatic patients (53%) and the number of preterm babies (62.5%) was higher in our series than in literature (15% and 35%, respectively). Approximately 8-10% of newborns with symptomatic C-CMV infection have severe, life-threatening disease (with a mortality of 30%), but non-fatal cases were registered in our series. Although in our small sample of patients there are more symptomatic babies, they have less severe affectation in blood tests and neuroimaging than those referred in other articles.

ABS 13

ADENOVIRUS PNEUMONIA IN A PRETERM NEWBORN

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INTRODUCTION

Infection in Neonatal Intensive Care Unit (NICU) is a significant problem particularly for Very Low Birth Weight (VLBW) preterm infants. Lack of reliable biomarkers for timely diagnosis of sepsis usually forces the clinician to start broad-spectrum antibiotics for subtle clinical and laboratory findings. However viral infections also occur in NICU causing clinical signs, which mimic sepsis or pneumonia.

CASE REPORT

A preterm infant was born at 31 weeks gestation due to preeclampsia and was admitted to NICU for prematurity and respiratory distress, which was managed by nasal noninvasive ventilation. Ampicillin and amikacin were started for possible early onset sepsis per protocol of the NICU. After the 3rd day of life infant's clinical condition worsened with increased respiratory distress requiring intubation, poor circulation and increased acute phase reactants resulting in change of antibiotic regimen to vancomycin and piperacillin + tazobactam. The patient was extubated on day 7 of life; antibiotics were discontinued after 10 days of treatment. Only 2 days later the patient developed respiratory distress with tachypnea, retractions and increased oxygen requirement. Chest X-ray showed hazy lung fields more prominent on right side. Sepsis work-up was done and again broad-spectrum antibiotics including antifungal were started despite negative CRP and pending cultures which were continued for 10 days. Patient's worsening respiratory status after treatment together with 24% eosinophilia in peripheral blood smear prompted work up for *Chlamydia spp.* pneumonia and azithromycin was started and discontinued at day 7 due to negative PCR result. Nasopharyngeal smear was sent for viral respiratory infections, which came back positive for adenovirus. The patient did not

have other findings of adenovirus infection in other systems. Contact isolation measures were applied and the respiratory findings resolved gradually.

DISCUSSION

This case represents an example of overtreatment of a preterm newborn with broad-spectrum antibiotics that had actually developed adenovirus pneumonia. Viral agents should also be considered in NICUs in newborns that don't seem to respond well to antibiotics.

RESULTS

Early diagnosis of viral infections can avoid unnecessary antibiotic treatment and may strengthen adherence to hand hygiene.

ABS 14

ACCURACY OF NEONATAL GASTRIC FLUID EXAMINATION FOR DIAGNOSIS OF CHORIOAMNIONITIS

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INTRODUCTION

Chorioamnionitis is a major risk factor of neonatal sepsis. Examination of the infant's gastric fluid at birth may be useful for the diagnosis of chorioamnionitis.

OBJECTIVE

To evaluate the accuracy of neonatal gastric fluid examination in the diagnosis of chorioamnionitis, in comparison to the histologic examination of placenta.

METHODS

We retrospectively reviewed medical records of the neonates admitted to the NICU at King Chulalongkorn Memorial Hospital from January 1 to December 31, 2015, and were at risk of bacterial sepsis. The infants' gastric fluid microscopic examination and histologic examination of the placenta, which are parts of routine sepsis evaluation, were reviewed. Presence of neutrophils > 5-cells/high power field was considered positive for chorioamnionitis. The definite diagnosis of chorioamnionitis was documented by placental examination.

RESULTS

There were 254 infants at risk of bacterial sepsis (139 males and 115 females). Birth weight (mean /SD) was 1,934/836 grams and gestational age 32.9/3.8 weeks. 54 infants (21%) had positive gastric fluid examination. Histologic chorioamnionitis was documented in 64 placental specimens (25%). The diagnostic values of gastric fluid examination compared to histologic examination were: sensitivity 54.7% (95% CI: 41.8, 67.0), specificity 90.0% (95% CI: 84.7, 93.8), positive predictive value 64.8% (95% CI: 50.5, 77.0), negative predictive value 85.5% (95% CI: 79.7, 89.9), positive likelihood ratio 5.5 (95% CI: 3.4, 8.9) for the whole group and 10.6 (95% CI: 3.8, 29.7) among infants of less than 34 weeks gestation.

CONCLUSIONS

Neonatal gastric fluid examination had low sensitivity for the diagnosis of chorioamnionitis but had high specificity, negative predictive value and positive likelihood ratio. It can be potentially used as an additional tool to rule out or diagnose chorioamnionitis especially in preterm infants of less than 34 weeks gestation.

ABS 15

NON-TARGETED AND TARGETED URINE METABOLOMICS ANALYSIS IN NEONATES WITH LATE-ONSET SEPSIS

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INTRODUCTION

Late-onset sepsis (LOS) is a major cause of morbidity and mortality especially in preterm neonates. To date, most biomarkers evaluated in LOS lack high diagnostic accuracy. We aimed to evaluate the metabolic profile of neonates with LOS and determine the possible value of urine metabolomics as an early diagnostic tool.

METHODS

Prospective, case-control study in a NICU setting. Urine samples were serially collected at the initial diagnosis of LOS and on the 3rd and 10th day, thereafter, from 18 septic neonates (11 confirmed

and 7 possible LOS cases) as well as from 18 non-septic ones matched for gestational and postnatal age (controls) at respective time points. Urine metabolites were assessed using non-targeted (nuclear magnetic resonance spectroscopy: NMR) and targeted (liquid chromatography-tandem mass spectrometry: LC-MS/MS) analysis. Data were evaluated using the SIMCA 13.0 statistics software.

RESULTS

Principal Component Analysis (PCA) and Orthogonal Partial Least Square-Discriminant Analysis (OPLS-DA) models showed a clear separation between septic neonates and controls with both approaches. However, no differentiation could be made between neonates with confirmed and possible sepsis. Multivariate statistical analysis and ANOVA documented significant variability in several metabolites between septic neonates controls involving certain amino acids, carbohydrates, purine breakdown products and vitamins/coenzymes. Metabolic changes were restored after sepsis resolution.

CONCLUSIONS

Septic neonates have a different metabolic profile compared to those without sepsis allowing their discrimination with the use of LC-MS/MS and NMR-based urine analysis. These findings provide evidence for the underlying pathophysiology in LOS and the possible diagnostic/prognostic value of urine metabolomics in neonates with LOS.

ABS 16

PNEUMOCYSTIS JIROVECII COLONIZATION IN PRETERM INFANTS

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AIMS

To investigate the prevalence of *P. jirovecii* colonization in preterm infants; to evaluate its possible association with respiratory diseases.

METHODS

A prospective observational study of preterm infants (birth weight < 1,500 g and/or gestational age < 32 weeks) was carried out. Identification of *P. jirovecii* colonization was performed by mean of molecular techniques in nasal aspirated samples at birth.

RESULTS

A total of 128 preterm infants were included during the study period. *Pneumocystis* DNA was identified in 26% (n = 33) of newborn studied. No differences were found in clinical characteristics between the 2 groups. Preterm infants colonized by *P. jirovecii* showed a higher risk of respiratory distress syndrome (**Tab. 1**), even after adjusting for confounding factors (odds ratio 2.7 [95% confidence interval 1.0-7.5]; p = 0.04). There was an increase in

Table 1 (ABS 16). Outcome of colonized and non-colonized patients.

	P. jirovecii positive (n = 33)	*P. jirovecii* negative (n = 95)	p-value
Respiratory distress syndrome	24/33 (72.7)	50/95 (52.6)	0.044
Mechanical ventilation	24/33 (72.7)	55/95 (57.9)	0.131
High frequency ventilation	8/33 (24.2)	13/95 (13.7)	0.158
Interstitial emphysema	4/33 (12.1)	5/95 (5.3)	0.235
Supplemental oxygen at 28 days	8/30 (26.7)	20/86 (23.3)	0.707
Survival with brochopulmonary dysplasia [a]	6/30 (20)	7/85 (8.2)	0.080
Low blood pressure	7/33 (21.2)	20/95 (21.1)	0.985
Hyperglycemia	8/33 (24.2)	28/95 (29.5)	0.565
Retinopathy of prematurity (treatment administered)	8/30 (26.7)	10/85 (11.8)	0.053
Brain injury by cranial ultrasonography examination	6/33 (18.2)	11/95 (11.6)	0.336
Patent ductus arteriosus	7/31 (22.6)	14/92 (15.2)	0.346
Late-onset infection	11/30 (36.7)	31/92 (33.7)	0.766
Death	3/33 (9.1)	13/95 (13.7)	0.492
Days of mechanical ventilation [b]	24 (0-180)	12 (0-120)	0.156
Days of hospitalization [b]	40 (27-81.50)	37 (28-60)	0.593

[a] Bronchopulmonary dysplasia was assessed in 115 infants who were alive at a postmenstrual age of 36 weeks.
[b] Data are expressed as median (interquartile range). In all other cases, data are expressed as no./total no. (%).

retinopathy of prematurity and bronchopulmonary dysplasia at a postmenstrual age of 36 weeks in *P. jirovecii* colonized group but without statistical significance. No differences were observed in other medical conditions between the two groups.

CONCLUSIONS

Our data suggest that *P. jirovecii* colonization could be a risk factor to develop respiratory distress syndrome among preterm infants.

ABS 17

FACTORS THAT PREDICT DEATH IN VERY LOW BIRTH WEIGHT INFANTS WITH LATE-ONSET SEPSIS

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AIMS

To determine and evaluate factors that may predict death in very low birth weight infants with late-onset sepsis.

METHODS

We did a retrospective case-control study of very low birth weight infants with late-onset sepsis. Data were extracted from the Hospital of Lithuanian University of Health Sciences, Kaunas Clinics NICU 1998-2015 database. 88 cases were analyzed. 24 factors, such as demographics, pregnancy and birth complications, clinical and microbiological data, comorbidity, etc. were analyzed. The data were processed using SPSS® 20.0 software.

RESULTS

88 cases were analyzed, of which 44 newborns with late onset sepsis died (case group) and 44 survived (control group). Factors statistically significant ($p < 0.05$) to predict neonatal death were Necrotizing Enterocolitis (NEC) [20 (45.45%) in case group and 8 (18.18%) in control group], endotracheal intubation and mechanical ventilation (35 [79.54%] and 25 [56.81%] respectively), also the use of hydrocortisone to treat hypotension (5 [11.36%] and 0 [0%]).

CONCLUSIONS

NEC, endotracheal intubation and mechanical ventilation, lower gestational age, gram negative or fungal sepsis, urinary tract infection, the use of hydrocortisone may predict death in very low birth weight infants with late-onset sepsis.

ABS 18

FUNCTIONAL ANALYSIS OF BLOOD MONOCYTES IN NEONATES WITH BIRTH WEIGHT ≤ 1,500 G

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INTRODUCTION

There is very limited data available on the function of the monocytes' subsets in patients born with birth weight ≤ 1,500 g.

METHODS

A population of 55 enrolled patients with birth weight ≤ 1,500 g and absence of early onset sepsis was divided into 2 groups: A – without late-onset sepsis (LOS), B – with LOS during hospitalization. Peripheral blood mononuclear cells (PBMCs) were isolated from all infants on their 5th day of life (DOL) (A1 and B1). PBMCs were stimulated with bacterial endotoxin (LPS), and intracellular expression of interleukin (IL)-1β in the monocytes' subsets was assessed using flow cytometry. If a particular baby developed LOS, then a 2nd blood sample was obtained, and processed as described above (B2). Further analyses were performed in subsets of infants born either before 27th or after 28th gestational week.

Study supported by National Science Center, Poland (grant number: DEC-2012/07/B/NZ5/01221).

RESULTS

In the initial analysis on the 5th DOL, intracellular IL-1β expression was significantly higher in the non-classical monocytes from the babies, who did not develop LOS during hospitalization (A1 67% versus B1 32%; $p = 0.032$). In children born ≥ 28th gestational week, who developed LOS, intracellular IL-1β expression significantly increased; moreover it exceeded values observed in the A1 group (non-classical monocytes: B1 30% versus B2 86%; $p = 0.0066$, classical monocytes MFI: B1 430 versus B2 2,751; $p = 0.039$, intermediate monocytes MFI: B1 268 versus B2 1,149; $p = 0.049$). Such a rise in IL-1β expression was not present in less mature newborns.

CONCLUSIONS

A more robust production of IL-1β in the monocyte subsets on the 5th DOL might be associated with a better protection against sepsis *in vivo*. The group of

babies with birth weight ≤ 1,500 g, who developed LOS, demonstrated stronger functional response in monocytes with increased gestational age. In the group of children born before 27th gestational week, the monocytes taken during LOS presented with poor reaction to LPS.

ABS 19

VAGINAL *UREAPLASMA SPP.* COLONIZATION AND PREGNANCY OUTCOME: DATA OF A PROSPECTIVE MULTICENTER STUDY

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INTRODUCTION

Ureaplasma spp. (*U.*) infection of the upper genital tract during pregnancy is associated with adverse pregnancy outcome and neonatal morbidity. However, positive evidence of an association among vaginal colonization of *Ureaplasma spp.* and both preterm delivery and morbidity of the preterm infant is lacking. The aim of the present study was to screen women during early pregnancy for vaginal *Ureaplasma spp.* colonization and correlate biovar and serovar results with pregnancy outcomes in order to identify women at increased risk for preterm delivery.

METHODS

A total of 4,330 pregnant women between 12 and 14 weeks of gestation were assessed in this prospective observational multicenter study. In study patients, a vaginal swab was taken and tested for presence of *U. biovars* by PCR. In *U. parvum* positive samples a High Resolution Melt (HRM) serovar analysis was performed. Primary outcome variable was the rate of spontaneous late abortion or spontaneous preterm birth (SPB).

RESULTS

Of the study cohort, 37% of women were positive for *U. parvum*, 5.9% for *U. urealyticum*, and 3.1% for both. Vaginal colonization with *U. parvum* was significantly associated with an increased risk of SPB compared to negative screening results (OR 1.7, CI 1.3-2.2, $p < 0.001$), as opposed to colonization with *U. urealyticum*. Multiple logistic regression and interaction analyses indicated that vaginal colonization with *U. parvum* was a statistically significant risk factor for SPB independent of other risk factors such as bacterial vaginosis and history of SPB.

CONCLUSIONS

The results of our study showed a statistically significant and independent association between first trimester colonization with vaginal *U. parvum* and SPB. The clinical relevance of this finding, however, is limited since 89.6% of women with vaginal *U. parvum* colonization delivered at term. We hope that the serovar analysis will help us to get a better understanding why some infected women experience preterm deliveries whereas others remain symptomless.

ABS 20

MICRO-METHOD FOR DETERMINATION OF LINEZOLID IN THERAPEUTIC DRUG MONITORING IN NEONATES

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INTRODUCTION

Administration of linezolid is a chance when the infection is due to a vancomycin-resistant *Staphylococcus spp*. The age-related changes in linezolid pharmacokinetics (PK) have implications for the appropriate dosing of the drug. In pediatric patients only a small sample volume is available, and the possibility to easily assess linezolid plasma or cerebrospinal fluid (CSF) levels using a micromethod is important.

METHODS

We determined plasma and CSF linezolid concentrations in two infants with *Staphylococcus spp*. meningitis treated with linezolid (one-hour

Table 1 (ABS 20). Changes in plasma and cerebrospinal fluid (CSF) levels of linezolid (μg/ml) before infusion, after 1 h, and after 6 h (at the end of infusion).

	Plasma			CSF		
	Before infusion	1 h	6 h	Before infusion	1 h	6 h
Case 1	7.93	48.44	11.25	5.57	4.91	4.88
Case 2	1.05	10.4	2.41	1.68	1.39	1.38

infusion at dose of 10 mg/kg three times a day), using a validated High Performance Liquid Chromatographic (HPLC/UV) method. Blood samples were obtained by heel puncture, picked in a 0.2 ml capillary tube, transferred into micro-tubes (both containing sprayed EDTA). Plasma and CSF samples were collected before the infusion, after 1 h, and after 6 h (at the end of infusion). 100-μl samples added with p-toluic acid (internal standard), deproteinized, vortex-mixed and centrifuged. 20-μl supernatants were analyzed.

RESULTS

Tab. 1 shows the changes in the plasma and CSF levels of linezolid before infusion, after 1 h, and after 6 h (at the end of infusion). In our patients linezolid penetrated into the CSF, and plasma and CSF levels of linezolid were within the effective range in infants (respectively Cmax 6.8-36.7 μg/ml and 1.46-7.0 μg/ml). Only in the Case 1 there was a lengthening of QTc values (0.43 sec). After discontinuation of linezolid, ECG showed a normal QTc values (0.35-0.39 sec).

CONCLUSIONS

Micro-method for the measurement of levels of linezolid was effective, in fact with these dosages patients recovered from meningitis. PK index in linezolid administration for clinical efficacy is Area Under Curve/Minimal Inhibitory concentration (AUC/MIC) > 80. The possible occurrence of prolongation of the QT interval suggests performing serial ECG controls before, during and after linezolid administration.

ABS 21

ANTIBIOTIC USE IN THE FIRST WEEK OF LIFE

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INTRODUCTION

Suspected sepsis is a common diagnosis in neonatal care. The aim of this study was to evaluate local practice regarding antimicrobial therapy during the first week of life.

METHODS

Retrospective observational study during 2015 of all inborn newborns (NB) that underwent antibiotics (AB) during the first week of life. Demographic, risk factors, clinical and laboratory data (time, type, number of samples), duration of therapy and complications were analyzed.

RESULTS

Of 2,749 live NB, 158 (5.7%) underwent a course of antibiotics and 79% where admitted to the NICU. Median gestational age and birth weight was 36 w and 2,537 g. Risk factors were: prematurity = 1st risk factor. Most (58%) had laboratory assessment at birth. First evaluation included white blood cell count, C-reactive protein and blood culture in 69% of cases. Median number of blood samples was three/NB and only 5% of blood cultures where positive. Additional evaluation included: lumber puncture (11%), second blood culture (4%), urine culture (2%). Most (58%) initiated AB based on prematurity alone and 25% on laboratory criteria. Penicillin and gentamicin were used in 79% of cases; median time for starting AB was two hours of life with a median duration of 144 hours. Duration was shorter in premature NB ($p = 0.038$) and longer in NB with history of chorioamnionitis ($p = 0.001$). Most (57%) had a central venous catheter with catheter related infections, occurring in 7% of cases.

CONCLUSIONS

Diagnosis (time of assessment) and management (antimicrobial duration) of high-risk neonates were not according to actual established principles, although the shorter duration of AB in premature infants reflects the consciousness of the risks associated with both antibiotic and catheter use. We hope this assessment can contribute to better practices in antibiotic prescription.

ABS 22

STUDY OF BACTERIAL CONTAMINATION OF MOBILE PHONES AND STETHOSCOPES IN NEONATOLOGY

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INTRODUCTION

There are few studies on the bacterial contamination of mobile phones and stethoscopes in neonatology.

AIM

The aim of this study is to assess the microbial contamination of mobile phones and stethoscopes, used by medical and paramedical staff, in the Neonatal Unit (NICU) of Mohamed VI University Hospital, Marrakesh, Morocco.

METHODS

The study was conducted at the NICU in April 2016. The bacteriological study was made of 17 mobile phones and 13 stethoscopes. Samples were taken from all surfaces of mobile phones and stethoscopes, with a sterile swab.

DISCUSSION

Bacterial contamination rate of all mobile phones and stethoscopes was 100%. The cultures of bacteria isolated were polymorphic. Among the bacteria isolated, six multi-resistant bacterial strains were isolated at the mobile phones (35%), corresponding to 4 *K. pneumoniae* and 2 strains of *E. coli*. A strain of multidrug-resistant *K. pneumoniae* (7.7%) was found on a stethoscope.

CONCLUSIONS

This work shows that mobile phones and stethoscopes could be involved in the transmission of severe nosocomial infections, with multidrug-resistance. As part of the prevention of such risks, we must educate the medical staff, users of mobile phones on the importance of hand washing and the use of hydro-alcoholic solutions after each use of mobile phones and stethoscope.

ABS 23

SEVERE NEONATAL SEPSIS WITH HYPERGLYCEMIA

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INTRODUCTION

Sepsis is caused by an immune response triggered by an infection. In 2016 screening by SIRS was replaced with quick Sepsis-Related Organ Failure Assessment (qSOFA), which is two of the following three: increased breathing rate, change in level of consciousness, and low blood pressure. Severe sepsis is sepsis causing poor organ function or insufficient blood flow. Neonatal sepsis can either be early-onset sepsis (EOS) or late-onset sepsis (LOS: > 7 days of age, or > 72 hours, depending on the system used).

CASE REPORT

C.L.F, male newborn, 12 days aged was admitted in the Critical Care Department of First Pediatrics Clinic in the County Hospital of Craiova, on 30 march 2016, due to the following symptoms: breathing problems, reduced sucking, vomiting, diarrhea and lastly coma, in the context of dehydration signs. The patient had been fed with a formula since birth. Laboratory analysis revealed hyperglycemia – 600 mg/dl, therefore the newborn was suspected of neonatal diabetes.

RESULTS

The laboratory findings: WBC = 28,000/mm^3, anemia, fall of the blood platelets, hyperglycemia, metabolic acidosis, nitrate retention. But the blood sugar levels were elevated two days after admission only, requiring insulin; the third day, the blood sugar level decreased to a normal status and maintained without insulin. Due to the fluid rebalancing, as well as antibiotic and oxygen therapy, the evolution of the newborn was favorable. The patient became conscious and reactive to stimuli after two days. The lab test returned normal again in two weeks after admission.

CONCLUSIONS

This clinical case required differential diagnosis from an alleged neonatal diabetes. The real diagnosis turned out to be neonatal severe sepsis with hyperglycemia and MODS, triggered by gastroenteritis. The particularity of the case was the transient high blood sugar, even though, in medical practice, hypoglycemia is more frequently registered in neonatal infection. Fortunately, the newborn survived and fully recovered.

ABS 24

SPECTRUM OF CONGENITAL VIRAL INFECTIONS IN NEONATES

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INTRODUCTION

Congenital viral infections in early gestational trimesters result in significant CNS lesions in neonates, which have serious neurodevelopmental sequelae. Congenital Cytomegalovirus (CMV) is one of commonest congenital infection. Transmission occurs during primary or recurrent maternal infection. Congenital Herpes simplex virus (HSV) infections are rare and transmitted usually during delivery. Intrauterine transmission is rare.

METHODS

Retrospective analysis of neonatal database at tertiary neonatal unit over last 5 years. In our case series we present a case each of HSV infection and congenital CMV.

RESULTS

Case 1: 25 year-old multigravida diagnosed with primary HSV at 26 weeks gestation. Prophylactic oral acyclovir one week before delivery. No active maternal lesions noted at time of birth. Term delivery, commenced on prophylactic oral acyclovir. Presentation with seizures on day 3. Postnatal MRI: widespread meningoencephalitis with encephalomalacia. HSV negative on investigations. EEG: fulminant encephalitis. Treated with intravenous acyclovir for 2 weeks. Did not tolerate oral acyclovir planned for 6 months.

Case 2: 31 year-old multigravida tested positive for CMV reactivation on bloods at 12 weeks gestation. Ventriculomegaly was noted at 36 weeks gestation. Term delivery. Blood and urine were positive for CMV. Unilateral profound sensorineural hearing loss. No chorioretinitis. Postnatal MRI: Bilateral cystic changes in anterior temporal lobes with calcification. Commenced on treatment with valganciclovir at 3 months of age for a period of 6 months. On follow-up, the infant has infantile spasms and evolving cerebral palsy.

CONCLUSIONS

Cases above illustrate adverse neurodevelopmental sequelae associated with congenital infections. Current reported case series have shown early treatment improves neuro-linguistic and probable developmental outcome in cases of congenital CMV. Further studies are needed to assess efficacy of treatment in both cases.

ABS 25

DIFFERENT CLINICAL COURSES IN NEONATAL LISTERIOSIS

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INTRODUCTION

L. monocytogenes infection may present either early (within the first 5 days of birth) or late (after 5 days). Early listeriosis results from placental infection or by the acquisition of bacilli from the colonized birth canal of the mother. Typically early listeriosis causes septicemia or meningitis, whereas late listeriosis causes meningitis.

CASE REPORT

Case 1: a baby boy, born at 27 weeks of gestation with a birth weight of 750 grams was resuscitated in the delivery room, including surfactant treatment. He was treated with ampicillin + gentamycin and fluconazole prophylaxis. His leucocytes were 8,500/mm^3, platelets 172,000/mm^3 and CRP was 4.6 mg/dl. In the postnatal 20th hour, while he was receiving mechanical ventilation, he developed sudden cardiac arrest, pulmonary hemorrhage and hypotension and in spite of intensive efforts, he succumbed. His blood culture, revealed *L. monocytogenes*.

Case 2: a baby girl, born at 38th week of gestation with vaginal delivery and a birth weight of 3,800 grams, presented to an emergency department at 5 days of age with fever and poor suck. She was administered a single dose of ceftriaxone and upon the continuation of her fever, she was admitted to our unit the day after. Her temperature was 38.2°C, poor sucking, and anterior fontanel was 2 x 2 cm and non-pulsatile. CRP, blood culture, peripheral smear, urinary analysis and urinary culture were obtained. Her leukocytes were 36,900/mm^3, platelets: 312,000/mm^3, CRP: 1.2 mg/dl. A lumbar puncture yielded 540 polymorphonuclear cells/mm^3, proteins 184 mg/dl and glucose 24 mg/dl. Ampicillin and cefotaxime was started. In the third day of her admission, *L. monocytogenes* was recovered from the blood culture and cerebrospinal fluid. Repeat blood and CSF cultures were negative and the antibiotics were stopped at the 14th day. Brain magnetic imaging was found to be normal.

CONCLUSIONS

Listeria spp. is known to cause neonatal sepsis and meningitis but the presentation may be different in each newborn.

ABS 26

THE ROLE OF ULTRASOUNDS IN THE DIAGNOSIS OF NEONATAL OSTEOARTHRITIS

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INTRODUCTION

Acute osteoarthritis, although it is a rare complication in neonates, is a diagnostic and therapeutic challenge. The aim of the study is to determine the diagnostic value of ultrasound and its correlation with clinical and intraoperative findings in patients with osteoarthritis in neonatal period.

METHODS

During 5-year period 2009-2013, infections caused by Methicillin Resistant Staphylococcus Aureus (MRSA) occurred in previously healthy children. That was the reason for hospital admission of 145 neonates, and 19 of them had infection of bone and joint structures. Diagnosis was set on the basis of clinical appearance and ultrasounds of the affected joint, and was confirmed by intraoperative findings. We identified causative agent by intraoperative tissue sampling and from the blood culture.

RESULTS

Most of our patients (17/19) had septic arthritis, and in 2 cases there was isolated osteoarthritis. First clinical sings of illness appeared at average age of 12.7 days of life (range 4-24 days). Most common affected joints were hip and knee. In 11/19 children there were two or more joints affected. First clinical sings of infection were swelling and of reduction of spontaneous movements in affected joint. In all cases we had diagnosis within first 24 hours (mean time 18.7 hours, range 8-26.5), and arthrotomy performed within first three days of hospitalization (mean 40.5 hours, range 24.0-80.3). We didn't perform any X ray.

CONCLUSIONS

Early clinical recognition and prompt ultrasounds evaluation is sufficient for diagnosis of osteoarthritis in neonatal period.

ABS 27

NEWBORNS AT RISK OF CONGENITAL TOXOPLASMOSIS: 16 YEARS EXPERIENCE IN A SECOND-LEVEL HOSPITAL

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INTRODUCTION

Toxoplasmosis is a zoonotic infection caused by *T. gondii*. The primary infection in pregnancy might result in congenital toxoplasmosis (CT) from vertical transmission. The severity of the illness depends on the gestational age of transmission and the neurologic or ophthalmic disturbances are the most frequent sequels.

METHODS

We conducted a retrospective, descriptive and analytic review of newborns at risk of CT born between 2000-2015. Demographic characteristics, clinical history, diagnosis, treatment and follow-up were analyzed.

RESULTS

Incidence of newborns at risk of CT was 2.25/1,000 live births (89 cases and 88 pregnancies), 50% males. The majority of this occurred in term pregnancies (83%), 3% of which had no regular medical follow-up and one of the newborns had low birth weight. Serologic test in the first trimester was positive in 48%. Seroconversion occurred in 24% in the second trimester and 28% in the third trimester. The amniocentesis performed in 24 pregnancies for the detection of CT (PCR) was positive in 1 case. 35% of pregnancies were treated with spiramycin. 90% of newborns had positive IgG at birth and 6 had positive IgM. The maternal-fetal transmission rate was 22%. Treatment was applied in 74% of newborns at risk. 83% completed the full follow-up, with 7 positive serologic test obtained at 12 months of age. Abnormal results in cerebral ultrasound consistent with CT were found in 14 infants. There were 2 cases of chorioretinitis. 94% had regular psychomotor developmental evolution, and one case had motor delay. There were no deaths.

CONCLUSIONS

The CT is the most severe expression of infection from *T. gondii*. As in other studies we demonstrated that complications occur in a significant proportion of newborns with CT. To avoid this burden, it is important to provide screening tests in pre-natal care and appropriate therapy to achieve optimal maternal and newborn outcomes.

ABS 28

OUTCOMES OF CONGENITAL VERSUS ACQUIRED NEONATAL CMV INFECTION

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INTRODUCTION

In the neonatal period, CMV infection can be congenital or acquired. Congenital infection is the leading cause of nonhereditary neurosensorial hearing loss and can cause other long-term neurodevelopmental disabilities. The long-term sequelae of acquired CMV neonatal disease are less known. The main goal of this study was to compare the short and long-term outcomes in infants with congenital and acquired neonatal CMV infection.

METHODS

This was a retrospective case series study. All infants born in Hospital Prof. Doutor Fernando Fonseca, from 2011 to 2015, diagnosed with neonatal CMV infection (congenital or acquired) were enrolled.

RESULTS

Twenty-two patients were enrolled, with a median gestational age at birth of 35 weeks (range 26-40 weeks) and a median birth weight of 2,010 g (range 600-3,690 g). Comparison groups were defined as congenital or acquired CMV infection (13 and 9 cases, respectively). The median gestational age and birth weight were significantly lower in the acquired infection group (26 vs 38 weeks and 830 g vs 2,530 g, with a p-value of 0.003 and 0.013, respectively). All participants survived to the study period. The presence of clinical symptoms was higher in the acquired infection group, although not significant. Three patients of each group received antiviral treatment. The long-term outcomes were assessed from 12 to 24 months corrected for gestational age at birth. No cases of permanent sensorineural hearing loss were reported in either group.

CONCLUSIONS

This study showed no major differences regarding short and long-term outcomes in neonates with congenital or acquired CMV infection. Symptomatic patients at birth are known to be at higher risk of long-term sequelae, which may be more relevant than the type of infection. Likewise, we also acknowledge the effect of the small sample size and short follow-up period.