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Selected Abstracts of the 4th International Congress of UENPS

ATHENS (GREECE) · DECEMBER 11TH-14TH 2014

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Guest Editor: Giuseppe Buonocore

Dear Colleagues,

It is a great honor and pleasure for me to invite you all to the 4th International Congress of European Neonatal and Perinatal Societies (UENPS), Athens, Greece, December 11th-14th, 2014.

The combined efforts and talents of the best and brightest minds in neonatology, pediatrics, obstetrics and perinatology, have turned this biannual event into a highly specialized meeting that promises a stimulating, multi-disciplinary program aimed at providing the latest ideas and information on management of health of critically ill fetus and newborn. The scientific program of the UENPS 2014 will be a stimulating combination of cutting edge scientific knowledge and practical advice and guidance on state of the art techniques. Our intention at the UENPS 2014 is to create an interactive meeting that will provide a forum for the exchange of ideas and experiences through a rigorous study, to spread and help the delegates to learn innovative care models, update methodologies and to assess the resulting outcomes from around the world. It will also create an opportunity to examine how fruitful collaborations can be struck between partners at local, national and international levels and to build systems that seamlessly provide care for the whole community, including people with complex care needs. There will pre-congress courses, plenary and parallel sessions led by Renowned Faculty chosen for their expertise as well as their keen presentation and teaching skills.

Since Greece is the birthplace of Olympic Games we have organized the "Academic Olympics" as a special session which is entirely devoted to young investigators and researchers. The presentations selected by an International Jury will be finally awarded with gold, silver, and bronze medals, a memorable gift for life!

Being set in Athens the UENPS 2014 we promise you a warm and friendly atmosphere from the old past to an exciting future!

I hope you will enjoy the scientific program as well as the beauties of Athens.

Giuseppe Buonocore
President of the UENPS
President of the Scientific Committee

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ABS 1

COMPARISON OF PRENATAL CARE AND PREGNANCY RELATED MATERNAL RISK FACTORS BETWEEN WOMEN WHOSE BABIES ARE ADMITTED OR NOT ADMITTED TO NEONATAL INTENSIVE CARE UNIT

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BACKGROUND AND AIMS

To determine the risk factors of neonatal intensive care unit (NICU) admission is very important for effective interventions. The aim of this study is to assess the risk of NICU admission related to socioeconomic characteristics, received prenatal care, maternal and fetal risk factors.

METHODS

This case-control study was conducted in a University Hospital. 200 women were chosen in both groups whose babies were admitted to neonatal intensive care unit or not. So, the study was conducted on 400 women and their 446 newborn babies. Data sources were hospital records and patient's questionnaire prospectively. The Adequacy of Prenatal Care Utilization (APNCU) index was used for assessing prenatal care status. Chi square test, Fisher's exact test, student-t test, Mann Whitney U test, and multiple logistic regression analysis were used for statistical evaluation.

RESULTS

Significant relationship was found between numbers of prenatal care visit and NICU admission. While "Inadequate" and "Adequate Plus" monitoring is higher in case group, "Intermediate" or "Adequate" monitoring is higher in control group (χ^2 = 17,629, p = 0.001). The location of residence (OR = 2.72), husband education (OR = 1.97), history of second trimester spontaneous abortion or preterm delivery (OR = 4.27), multiple pregnancy (OR = 5.25), early uterine contractions (OR = 2.21), and problems during delivery (OR = 2.53) were found related to the admission to the NICU.

CONCLUSIONS

Many risk factors were detected with regards to NICU admission. Effective interventions for these risk factors should be considered and implemented into the national health services to protect mothers and newborns from poor outcomes.

ABS 2

APPEARANCE AND DISTRIBUTION OF GENES AND GENE PROTEINS IN CLEFT AFFECTED TISSUE

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BACKGROUND AND AIM

Multifactorial morphopathogenesis of facial clefts detects the research on genes and gene proteins in affected tissue. Thus, the aim of our work was detection of genes in bi- and unilateral cleft lip palate (UCLP and BCLP).

METHODS

Tissues were obtained from 4 children with UCLP and 4 children with BCLP during plastical surgery. Sections were stained routinely and by immunohistochemistry for *RYK*, *Msx1*, *HoxB3* and *PAX9*. Results were evaluated semiquantitatively and by comparison between the cleft type and dentition aspect.

RESULTS

Numerous *Msx1*-containing epitheliocytes were seen in younger children tissue with slight decrease in aging. Moderate to numerous epithelial cells were *RYK* and *PAX9* positive, but only few connective tissue cells contained these genes. Blood vessels showed different number of both genes positive cells. The number of *RYK*, *PAX9* and *Msx1* cells were not influenced by the dentition age.

HoxB3 demonstrated the richest expression in the cleft affected epithelium, mainly in basal cells and connective tissue, and endotheliocytes. Both dentition age patient showed 2 appearance patterns of gene-containing structures. So, the

first one possessed moderate to abundant number of structures in epithelium, connective tissue and endothelium, while the second one showed patchy moderate number of gene positive epitheliocytes.

CONCLUSIONS

From genes in cleft affected tissue, *Msx1* appears only into the oral epithelium; *RYK* and *PAX9* are seen mainly in epithelium followed by connective tissue and endothelium, but *HoxB3* demonstrates distribution patterns. Appearance of genes does not depend on the dentition age and/or cleft type.

ABS 3

MANAGEMENT OF PARENTAL STRESS IN A NEONATAL INTENSIVE CARE UNIT. A RANDOMIZED CONTROL TRIAL

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AIM

To evaluate the effect of stress management programs in a group of parents of premature infants in NICU, three months after babies' discharge from the hospital.

STUDY DESIGN

The intervention group followed a program with relaxation techniques and structured courses about premature infants rearing, while control group followed only usual information program on parenting.

RESULTS

The relaxation techniques program was more successful in relieving parents with higher levels of stress and significantly those with Trait Anxiety. Particularly subjected were found to be the highly educated parents and those having a low income.

CONCLUSION

Our data, although not clear enough, indicate that parents, at least in the socioeconomic environment of the NICU studied, are not ready in the same way to receive a stress management intervention. Further studies are needed in different socioeconomic environments to evaluate if our findings are more widely applicable.

ABS 4

A CASE OF LARYNGEAL ATRESIA ACCOMPANIED BY PERSISTENT PHARYNGOTRACHEAL DUCTUS IN NEWBORN

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BACKGROUND

Laryngeal atresia (LA) is a generally fatal congenital anomaly with an incidence of 1:50,000 per birth. This congenital anomaly is a nearly fatal condition of multifactorial inheritance, in which the fetus has a dilated trachea, enlarged echogenic lungs, an inverted or flattened diaphragma, fetal hydrops and ascites.

CASE REPORT

Due to unpreventable preterm contractions a thirty-year old woman gave birth to a 1,220-gram baby girl at 32^{+5} weeks of her pregnancy via caesarian section as a first live baby. Ultrasonographic examination before caesarian section revealed polyhydramnios findings but without CHAOS findings. Just after birth, in the operating room, an emergent consultation was provided by Department of Otolaryngology and laryngoscopic examination was carried out. Thick fibrotic layer which blocked the vocal cords and very small opening (that is PTD) at posterior commissure level were observed (**Fig. 1**). Partial ventilation via PTD possibly enabled the newborn to hold onto life. Then emergent tracheostomy was carried out. Partial ventilation (small amount of ventilation) through TEF was also unsuccessful because of the proximal EA and distal TEF. Repair of EA with TEF was performed on the 2nd day of

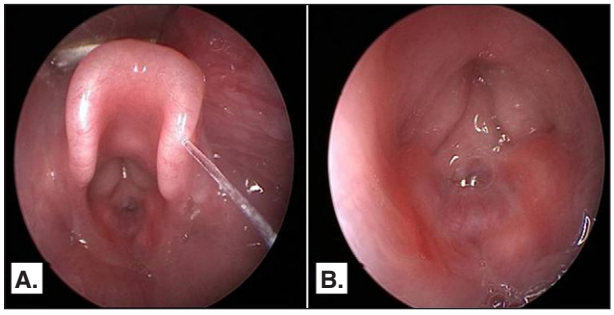

Figure 1. Laryngoscopic examination.

life. The postoperative course was uneventful, and the baby weaned from ventilation on the 7th day of life. After tracheostomy and stabilizing the general status of the patient, magnetic resonance imaging was done and size of laryngeal atresia was found to be 0.7 cm (**Fig. 2**). At present, the patient is 7 month old without neurological problem and she is in the list for permanent tracheostomy.

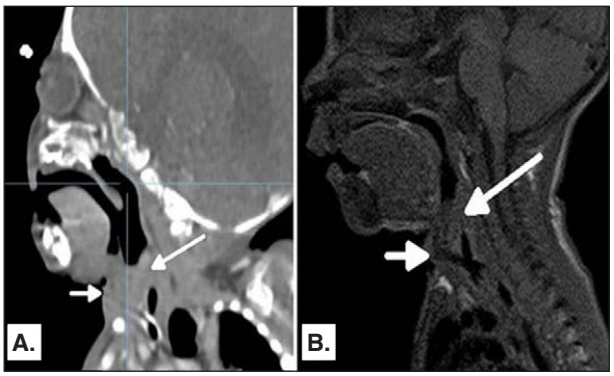

Figure 2. Magnetic resonance imaging after tracheostomy.

CONCLUSION

Here, we present a very rare case of a newborn with laryngeal atresia having respiratory distress who was sustained to life by partial ventilation via persistent pharyngotracheal duct. The newborn is under observation with no neurological sequel. Thus, we would like to focus on and draw attention to this rarely seen congenital anomaly.

ABS 5

DIFFERENTIAL REGULATION OF IRISIN AT THE EXTREMES OF FETAL GROWTH

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BACKGROUND AND AIMS

Irisin, a novel myokine with antiobesity properties, drives brown-fat-like conversion of white adipose tissue, increasing energy expenditure and improving glucose tolerance. We aimed to investigate circulating irisin concentrations in large for gestational age (LGA) and intrauterine growth restricted (IUGR) fetuses, both associated with metabolic dysregulation and long-term susceptibility to obesity and metabolic syndrome development.

METHODS

Plasma irisin and insulin concentrations were determined by ELISA in 80 mixed arteriovenous cord blood samples from LGA (n = 30), IUGR (n = 30) and appropriate for gestational age (AGA) (n = 20) singleton full-term pregnancies.

RESULTS

Fetal irisin concentrations were lower in IUGR cases than AGA controls (p = 0.031). Cord blood irisin concentrations were similar in LGA and AGA groups and positively correlated with birth weight, as well as customized centiles (r = 0.457, p = 0.043 and r = 0.458, p = 0.042, respectively). Fetal insulin concentrations were higher in LGA cases, compared to AGA controls. In the LGA group, fetal irisin concentrations positively correlated with fetal insulin ones (r = 0.374, p = 0.042).

CONCLUSIONS

Impaired skeletal muscle metabolism in IUGR fetuses probably accounts for their irisin deficiency, which may be part of the fetal programming process, leading to increased susceptibility to later development of obesity. Furthermore, irisin down-regulation may predispose IUGR infants to hypothermia at birth, by inducing less "browning" of their adipose tissue and consequently less non-shivering thermogenesis. Irisin upregulation with increasing birth weight may contribute to a slower fat gain during early infancy ("catch-down"), by promoting higher total energy expenditure. The positive correlation between irisin and insulin in the LGA group may counterbalance the documented hyperinsulinemia, which is partly responsible for the excessive fat deposition in the LGA fetus.

ABS 6

COPEPTIN UPREGULATION IN EARLY HUMAN MILK: POSSIBLE ROLE IN POSTNATAL ADAPTATION

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BACKGROUND AND AIMS
Breast milk contains a variety of biologically active nutrients of immediate benefit to the newborn infant, which transiently regulate the activity of various tissues. Arginine vasopressin (AVP), one of the most important physiological stress hormones, has recently been involved in postnatal adaptation, by ensuring water retention and inducing surfactant secretion by type II pneumocytes. We aimed to investigate breast milk and maternal concentrations of copeptin, a surrogate biomarker of AVP secretion.
METHODS
Eighty-one parturients were included in the study. Breast milk and maternal blood samples were obtained on day 3-4 postpartum. Breast milk (colostrum) and maternal serum copeptin concentrations were determined by ELISA and correlated with several perinatal characteristics.
RESULTS
Copeptin was detectable in breast milk at considerably higher concentrations than in maternal serum ($p < 0.001$). Furthermore, a positive correlation was recorded between maternal serum and breast milk copeptin concentrations ($r = 0.304$, $p = 0.006$). No association was observed between maternal serum or breast milk copeptin concentrations and maternal age, maternal BMI, parity, gestational age or fetal gender.
CONCLUSIONS
The presence of substantial amounts of copeptin in human milk (colostrum) may point to a crucial role of this peptide in postnatal adaptation with respect to lung function and water retention. Thus, early breastfeeding, especially in infants born by cesarean section, which are prone to breathing disorders and dehydration, is highly recommended. Furthermore, breast milk copeptin concentrations are higher than, and positively correlated with, corresponding maternal serum ones, probably indicating that both breast tissue and maternal circulation contribute to breast milk copeptin concentrations.

ABS 7

ADROPIN ABUNDANCE IN BREAST MILK: RELATION TO MATERNAL SERUM CONCENTRATIONS AND PERINATAL FACTORS

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BACKGROUND AND AIMS
Breast milk has a well-established protective role against obesity-related metabolic diseases, which is attributed not only to its nutritional composition, but also to the presence of bioactive substances. Adropin is a recently identified protein required for metabolic homeostasis and it is critically involved in the prevention of obesity-associated insulin resistance and endothelial dysfunction. We investigated breast milk and maternal serum concentrations of adropin.
METHODS
Eighty one parturients were enrolled in the study. Breast milk and serum concentrations of adropin were determined on day 3-4 postpartum. Above concentrations were associated with a variety of maternal, perinatal and neonatal characteristics.
RESULTS
Breast milk adropin concentrations were markedly higher ($p < 0.001$) and positively correlated with maternal serum ones ($r = 0.421$, $p < 0.001$). Breast milk adropin concentrations were lower in cases of maternal diabetes ($b = -0.166$, 95% CI = -0.251-[-0.080], $p < 0.001$). Similarly, maternal serum and breast milk adropin concentrations were lower in cases of maternal smoking ($b = -0.285$, 95% CI = -0.459-[-0.111], $p = 0.002$) and ($b = -0.040$, 95% CI = -0.075-[-0.006], $p = 0.022$), respectively.
CONCLUSIONS
Adropin abundance in human milk may point to a crucial role of this peptide in the regulation of infantile growth and metabolic development, probably contributing to the anti-obesity properties of human milk. Breast milk adropin concentrations are higher than, and positively correlated with, corresponding maternal serum ones, possibly indicating that adropin is secreted in breast milk by both breast tissue and maternal circulation. Adropin downregulation in cases of maternal smoking and diabetes may be attributed to endothelial dysfunction and insulin resistance development, respectively.

ABS 8

INFECTIVE ENDOCARDITIS IN NON-CATHETERISED PRETERM NEWBORN

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BACKGROUND AND AIM
Despite the progress of antimicrobial and surgical treatment, infective endocarditis remains one of the most serious and lethal complications in preterm newborns.
CASE REPORT
We report an infant born at 28 weeks of GA by cesarean section due to maternal bleeding. Birth weight 1,100 g, Apgar score 8/8. ANS prophylaxis was not done, without PPROM. On day of life 7, sepsis was developed. Empiric antibiotic treatment (ABT) was started (vancomycin, gentamicin). CONS was repeatedly isolated from blood culture despite appropriate ABT. Central line was not present. The CSF was negative; the child was without focal infections. Chest radiograph and cranial ultrasound were normal. Echocardiography examination in structurally normal heart demonstrated tricuspid valve endocarditis with right ventricular partial inflow obstruction, vegetation on the tricuspid valve and moderate tricuspid valve regurgitation. Cardiac murmur was present. We changed the empiric therapy to targeted (teicoplanin, gentamicin). Hospitalization was complicated by an episode of pulmonary embolism with signs of respiratory failure that required mechanical ventilation. We treated the baby with antibiotics for 6 weeks. At 3 months of age the echocardiography was without any signs of vegetation.
CONCLUSION
Well-timed and technically correctly executed blood cultures together with high-quality echocardiography are essential in the management of suspected infective endocarditis despite the absence of CVC or CHD.

ABS 9

INCIDENCE AND RISK FACTORS FOR RETINOPATHY OF PREMATURITY

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BACKGROUND AND AIMS
Retinopathy of prematurity (ROP) is a vasoproliferative disease of the retina of premature infants. It is the most common disease of prematurity and the most common cause of blindness in children in the world. The incidence of ROP in the region is 7- 37%. Our aim was to determine the incidence of ROP and risk factors for the development of ROP in "endangered" premature newborns in Montenegro.
METHODS
This study included all premature infants with ROP in Montenegro from January 2005 to December 2008.
RESULTS
The incidence of premature births in Montenegro ranges from 4.5% to 6%. The incidence of ROP in Montenegro was: in 2005, 3.9%; in 2006, 7.9%; in 2007, 9.2%; in 2008, 12.1%. The most important risk factors for the development of ROP were: short gestation, low birth weight, anemia and transfusion therapy. Factors that had no effect on the incidence of ROP were: sex, multiple pregnancy, mode of delivery, assessment of viability at birth and the use of mechanical ventilation.
CONCLUSIONS
The incidence of ROP in Montenegro had a trend of increase in the period from 2005 to 2008. We believe that the increase in the incidence of the proliferative ROP occurred due to higher survival of "endangered" premature newborns, but also due to changes in the criteria for the application of laser therapy.

ABS 10

CASE REPORT OF NEWBORN WITH CUTIS MARMORATA TELANGIECTASICA CONGENITA

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BACKGROUND
Cutis Marmorata Telangiectasica Congenita (CMTC) is a very rare anomaly of the cutaneous vessels. Since 1922, 300 cases have been reported worldwide. CMTC appears mainly at birth with female prevalence.
CASE REPORT
We report the case of a full-term female newborn with birth weight 3,390 g, born by C/S to a gravida 2 mother with negative family history and uncomplicated pregnancy.
RESULTS
Cutaneous lesions had patchy distribution and were pinkish blue with phlebectasia of superficial veins and ulcerations in few areas. The lesions were located mainly on right lower extremity, left scapula, left arm, left side of trunk, back, lower abdomen and left temporal area. They deteriorated with exposure to cold and while crying and didn't

disappear with rewarming. Neurological evaluation was normal. There were no macrocephaly, limb asymmetry or skeletal anomalies. The baby had mild respiratory distress due to transient neonatal tachypnea. Laboratory work up (CBC, electrolytes, coagulation profile, CRP, thyroid function tests) was normal. ANA, anti La-B and anti Ro-A were negative. Ultrasound of heart, brain, abdomen, stomach, spinal cord, right lower extremity and urogenital tract were normal. Fundoscopy was normal.

MANAGEMENT

Respiratory distress was treated with oxygen and antibiotics. Cutaneous lesions were treated with local antibiotic and skin repair ointments. The baby was discharged home in good condition.

CONCLUSION

The case of this newborn with CMTC with only symptom of cutaneous lesions is described due to its rare occurrence.

ABS 11

THIRTY-FIVE YEARS OF EXPERIENCE IN A PRIVATE NICU IN GREECE

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BACKGROUND

The "MITERA" NICU began its operation in April 1979, as part of the newly founded "MITERA" Maternity Hospital.

AIM

To evaluate perinatal mortality, neonatal mortality, survival rate, and disease incidence of babies born in "MITERA" and admitted to the NICU, from January 1980 up to December 2013.

METHODS

Our data were retrospectively collected and analyzed from clinical archives and annual reports by the "MITERA" NICU. We report summary statistics of total births, NICU admissions, prematurity rate, perinatal/neonatal mortality, and disease specific and overall survival.

RESULTS

During the period from January 1980 to December 2013, a total of 436,099 births took place in "MITERA" and 76,600 NICU admissions. The overall survival rate of babies born in "MITERA" was 99.58% and of those admitted to the NICU 97.63%. Prematurity rate increased from 6.0% in 1980 to 13.7% in 2013.

The perinatal mortality rate at "MITERA" decreased from 13.3‰ in 1980 to 5.17‰ in 2013. The neonatal mortality rate also decreased from 8.1‰ in 1980 to 0.86‰ in 2013. The survival rate according to gestational age increased for all age groups, reaching 99.6% for babies over 30 weeks of gestation. The incidence of bronchopulmonary dysplasia (BPD) was 4.01% in 2012 and 5.12% in 2013. Furthermore, during the years 2011 to 2013 none of the babies admitted to the NICU died of any kind of infections.

CONCLUSIONS

Our results indicate a substantial overall decrease of perinatal and neonatal mortality, improvement of survival rate and low incidence of BPD for babies born in "MITERA" and admitted to the "MITERA" NICU during the years 1980-2013.

ABS 12

DYNAMICS OF DEVELOPMENTAL OUTCOMES IN VERY LOW BIRTH WEIGHT PREMATURE INFANTS IN RUSSIAN FEDERATION FROM 2003 TO 2013

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BACKGROUND

The number of premature babies in population is 6% on average, and the number of very low birth weight (VLBW) infants among them is about 12%. The mortality rate in VLBW is three times as much as other premature babies, but now it tends to decrease because of changes in perinatal care organization (application of steroids and surfactant, respiratory supporting with nCPAP, hypoglycemia prophylaxis, adequate nutrition, etc.). In spite of this, VLBW infants are at high risk of neurologic impairments, developmental delay, chronic lung diseases, visual and auditory disturbances.

AIM

To estimate the developmental outcomes at 3 years in infants born VLBW during latest 10 years.

METHODS

VLBW infants (gestational age less than 32 weeks) were divided: group I – 1,000 babies who were 3 years old in 2003; group II – 1,000 babies who were 3 years old in 2013. The growth was estimated

with IHDP and WHO growth curves. Psychomotor development was estimated with CAT/CLAMS. Supplementary examination (eye-ground revision, audiometry, pneumonography) was done.

RESULTS

In group I, movement and cognitive disorders were present in 30% of infants, blindness – in 25%, deafness – in 10%, chronic lung diseases – in 15%; 45% of infants had combined diseases. In group II, 75% infants had normal indexes of growth and psychomotor development; movement and cognitive disorders were present in 15%, blindness and chronic lung disease – in 5% of cases.

CONCLUSIONS

The development of perinatal care led to decreasing mortality and morbidity and improvement of quality of life in VLBW infants.

ABS 13

POSTDISCHARGE FORMULA FEEDING AND DEVELOPMENTAL OUTCOMES AT 12 MONTHS OF LIFE IN VERY LOW BIRTH WEIGHT PREMATURE INFANTS

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BACKGROUND

Feeding in the first year of life has an influence on their growth and development. The majority of very low birth weight (VLBW) infants in Russia have a growth failure at 12 months of life. Postdischarge formula feeding now is put on the standard of care of premature infants to prevent growth deficit through the first year of life.

AIM

To estimate the efficiency of postdischarge formula feeding on growth and developmental outcomes in VLBW at 12 months.

METHODS

VLBW infants (n = 120, gestational age 28.1 ± 1.9 weeks, birth weight 1,079.8 ± 227.4 g) were divided, depending on feeding type: I – fortified breast milk to 6 months, then native breast milk/standard formula; II – breast milk + standard formula through the 12 months; III – formula for premature babies from birth to 4 months, then standard formula; IV – postdischarge formula up to 12 months. The growth was estimated with IHDP growth curves. Psychomotor development was estimated with CAT/CLAMS.

RESULTS

At 40 weeks of life there was growth failure: I – 11 (37%), II – 22 (73%), III – 13 (43%), IV – 10 (33%) ($p < 0.05$ between II and I, III, IV groups). At 12 months, the weight was less than 10-centile: I – 3 (10%), II – 17 (57%), III – 16 (53%), and IV – 5 (17%) ($p < 0.05$ between groups IV and II, IV and III). The normal indexes of psychomotor development at 12 months were: I – 20 (67%), II – 19 (63%), III – 17 (57%), and IV – 23 (77%) ($p < 0.05$ between groups III and IV).

CONCLUSIONS

Postdischarge formula feeding (vs standard formula) promotes stable weight increase and psychomotor development during the first year of life.

ABS 14

HYPOXIC-ISCHEMIC ENTEROCOLITIS (HIEnt): A PROPOSAL FOR THE DEFINITION OF EARLY NEC AND ITS SEROLOGICAL EVIDENCE

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BACKGROUND AND AIMS

The pathophysiology and the time of onset of necrotizing enterocolitis (NEC) are closely related and differ significantly. Perinatal hypoxic-ischemic events are suspected to be the major factors leading to early NEC in the first week of life while intestinal dismicrobiotic processes cause classical NEC after the first week of life.

METHODS

Preterm infants who were admitted to the NICU after delivery and developed NEC during the hospital stay were divided into 2 groups according to the time of onset of the clinical picture as early (≤ 7 days) or late (classical, > 7 days) NEC groups. Beside demographic and clinical variables, serum L-lactate, endothelin-1 (ET-1), platelet activating factor (PAF) and intestinal fatty acid binding protein (I-FABP) levels were measured from the cord blood samples (basal levels) and during the time of clinical presentation (second samples) in all groups.

RESULTS

The incidences of fetal Doppler velocimetry disturbances and intrauterine growth restriction were significantly higher in the early NEC group. Cord blood levels of L-lactate, ET-1, PAF, and

I-FABP levels were significantly higher in the early NEC group. However, during the symptomatic period, serum L-lactate level was higher in the early NEC group while PAF and I-FABP levels were higher in the classical NEC group.

CONCLUSIONS

The major pathophysiological mechanism leading to early NEC seems to be a perinatal hypoxic-ischemic process rather than a dismicrobiotic process leading to classical NEC. Therefore we propose a new term, "hypoxic-ischemic enterocolitis" (HIEnt), to describe this unique clinical picture. We think that this new sight can lead to new therapeutic approaches for NEC.

ABS 15

CHANGES IN THE PREVALENCE OF CONGENITAL DEVELOPMENTAL ABNORMALITIES IN LITHUANIA BETWEEN 2002 AND 2011

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AIM

The aim of the study was to analyze changes in the prevalence of congenital developmental abnormalities (CDA) in Lithuania during 2002-2011.

METHODS

This was a survey that included data from the Lithuanian Neonatal Registry for the period of 2002-2011. The results were calculated by applying the ANOVA test, Bonferroni's criterion, and the Z test. The results were considered to be statistically significant when $p < 0.05$.

RESULTS

The prevalence of CDA among liveborn neonates born during the period 2002-2011 ranged from 3.5% to 4.9% ($p = 0.09$).

Of neonates born during the 22nd-27th weeks of gestation, 14.6% had CDA, of those born during the 28th-31st weeks of gestation – 13.8%, of those born during weeks 32-36 – 7.9%, and among those born ≥ 37th week of gestation – 3.8%. The diagnosis of CDA was significantly more frequent among neonates born during the 22nd-31st weeks of gestation than among those born during weeks 32-36 ($p < 0.05$).

During the period 2002-2011, the predominant CDA were those of the musculoskeletal and the cardiovascular systems. In 2002, CDA of the musculoskeletal system comprised 40.9%, and those of the cardiovascular system – 21.6% of all CDA. In 2002, a statistically significant higher number of neonates were born with CDA of the musculoskeletal system than those with CDA of the cardiovascular system. In 2011, the prevalence of CDA of these two types was not statistically significantly different: CDA of the musculoskeletal system comprised 25%, and CDA of the cardiovascular system – 29.7% of all congenital anomalies.

In 2002, the highest number of neonatal deaths was caused by CDA of the cardiovascular system (39%), other CDA and syndromes (25.4%), and CDA of the musculoskeletal system (13.6%). In 2011, the structure of mortality from CDA was not statistically significantly different: other CDA and syndromes as causes of death were diagnosed in 46.2% cases of all congenital anomalies, CDA of the musculoskeletal system – in 19.2% of cases, and CDA of the cardiovascular system – in 15.4% of cases.

CONCLUSIONS

There was no statistically significant change in the prevalence of CDA between 2002 and 2011.

CDA were significantly more frequent in neonates born during the 22nd-31st weeks of gestation.

ABS 16

MATERNAL FAT MASS, ANTENATAL STEROIDS AND RESPIRATORY DISTRESS SYNDROME: COMPLEX RELATIONS

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BACKGROUND AND AIMS

Antenatal steroid therapy is an evidence-based approach to reduce the risk of neonatal respiratory distress syndrome (RDS) in pregnancies complicated by preterm labour. Although steroids are known to have affinity to fat tissue, the relations between maternal fat mass, the efficacy of intramuscular injection of antenatal steroids and the incidence of RDS have not been investigated before.

METHODS

Pregnant women between 24 and 34 weeks of gestation, who received a single course of antenatal steroids (2 x 12 mg betamethasone, 24 hours

apart, IM) at least 48 hours before delivery, and their preterm infants were included in the study. Pregnant women with multiple gestation, diabetes, preeclampsia and chorioamnionitis were excluded. After delivery, weight, height, body mass index, body fat mass (kg), truncal fat mass (kg), body and truncal fat ratios (%) were measured by bioelectric impedance technique in all mothers. Clinical characteristics of the preterm infants were noted.

RESULTS

Forty-two mothers and preterm infants were included in the study; 19 (45.2%) infants developed RDS, while 23 (54.8%) infants did not. Although the mean gestational ages and birth weights of the two groups were similar, in infants with RDS maternal mean body fat mass, truncal fat mass, body and truncal fat ratios were statistically higher than non-RDS group.

CONCLUSIONS

This is the first study in the literature which investigated the relations between maternal body fat mass, antenatal steroids and RDS. In pregnant women who receive antenatal steroid therapy, higher body fat mass seems to be a risk factor for neonatal RDS. This important finding may lead to an individualization of the dose of antenatal steroid therapy for optimal efficacy.

ABS 17

INCIDENCE OF RETINOPATHY OF PREMATURITY IN PREMATURE WITH VERY LOW WEIGHT IN A GENERAL HOSPITAL IN SÃO JOSÉ DOS CAMPOS, BETWEEN 2010 AND 2013

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BACKGROUND

Retinopathy of prematurity is a vasoproliferative disease secondary to inadequate vascularization of the immature retina of premature. Brazil's incidence level is 20% to 62.4%. Its importance lies on the fact that it is a major cause of preventable blindness in children.

AIM

To evaluate the frequency of retinopathy of prematurity.

METHODS

Descriptive observational study of hospital incidence: data from medical records of premature with less than 32 weeks and/or weighing less than 1,500 grams admitted to the neonatal intensive and semi-intensive care unit, between March 1, 2010 and March 1, 2013 were analyzed.

RESULTS

During the study period, 241 children with less than 32 weeks premature and/or under 1,500 grams were admitted, of which 73 died. For 7 newborns the records were not available. Of the remaining 161, 41 did not undergo testing. Of the 120 studied, 36 (30%) had normal examination and 84 (70%) developed some stage of retinopathy of prematurity.

CONCLUSION

The study demonstrated a 70% frequency of retinopathy of prematurity on the service. This result is considered high when compared to national studies.

ABS 18

DETERMINANTS OF LOW WEIGHT (< 3‰) IN PREMATURE INFANTS (< 32 WEEKS OF GESTATION)

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BACKGROUND

Premature infants – especially those born after short gestation – often have a complicated beginning of life due to a variety of health problems that impair such children's further development.

AIMS

To evaluate the determinants of low weight up to one year of adjusted age in premature infants born before 32 weeks of gestation, and to compare neonates born at 22-26 with those born at 27-31 weeks of gestation.

METHODS

A follow-up study of 755 neonates who were born in 2003-2012 during the 22^{nd}-31^{st} weeks of gestation. We evaluated anthropometric data (weight) during 3 visits (at approximately 1, 6 and 12 months of adjusted age).

RESULTS

In our investigated group, the number of neonates born during the 27^{th}-31^{st} weeks of gestation was by four times higher than the number of those born during the 22^{nd}-26^{th} weeks of gestation. Premature infants born at 22-26 weeks of gestation were

hypotrophic (< 3‰) more frequently than those born at 27-31 weeks of gestation ($p < 0.05$). The risk of being underweight (< 3‰) for their age was higher in newborns with congenital heart defect, acquired infection, retinopathy of prematurity, rickets, severe perinatal hypoxia, or pulmonary atelectasis ($p < 0.05$), and in newborns with sonographically diagnosed internal hydrocephalus, intraventricular hemorrhage (III), or periventricular leukomalacia (II) ($p < 0.05$). Male sex and developmental disorders were predisposing factors for low weight ($p < 0.05$).

CONCLUSIONS

Further physical development of premature infants is greatly influenced by gestational age and a history of neonatal diseases.

ABS 19

QUANTIFIED OXYGENATION IMPAIRMENT ACCORDING TO CATEGORIES OF SEVERITY IN BRONCHOPULMONARY DYSPLASIA

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BACKGROUND AND AIMS

Bronchopulmonary dysplasia (BPD) is classified to mild, moderate and severe according to level of ventilatory support at 36 weeks corrected postmenstrual age (PMA) [1]. Oxygenation impairment can be quantified by measuring right to left shunt, right shift of the oxyhemoglobin dissociation curve and ventilation/perfusion ratio (V_A/Q). We aimed to report shunt, shift and V_A/Q in BPD according to categories of severity.

METHODS

Infants born < 32 weeks PMA with BPD (oxygen requirement at 28 days) were studied in a tertiary Neonatal Unit. Fraction of inspired oxygen (FiO_2) was altered to vary transcutaneous oxygen saturation (SpO_2) between 88% and 96%. Shunt, shift and V_A/Q were derived using a computer algorithm by analysing at least three pairs of FiO_2 and SpO_2 for each infant.

RESULTS

Between October 2013 and May 2014, 21 infants were recruited. Median (IQR) birth gestation was 26 (24-27) weeks, birth weight 0.73 (0.64-0.915) kg. Shunt, shift and V_A/Q were measured at 43 (31-64) days. In severe disease (n = 16) shunt was 11% (8-17%), shift was 16.1 (10.8-19.4) kPa and V_A/Q was 0.39 (0.30-0.48). In moderate disease (n = 4) shunt was 0% (0-3%), shift was 10.2 (8.1-11.9) kPa and V_A/Q was 0.51 (0.42-0.63). In mild disease (n = 1) shunt was 1%, shift 12.5 kPa and V_A/Q 0.33. Shunt ($p = 0.019$) and shift ($p = 0.038$), but not V_A/Q were significantly higher in severe disease compared to moderate disease.

CONCLUSIONS

Categories of BPD severity at 36 weeks PMA correspond to distinctly different levels of early oxygenation impairment as quantified by measurements of shunt, shift and V_A/Q.

REFERENCE

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ABS 20

PLACENTAL INFARCTION IS ASSOCIATED WITH CEREBRAL PALSY: A PROSPECTIVE COHORT STUDY

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BACKGROUND

Although the survival rate of infants born extremely premature is increasing, neurological and developmental complications are still common. Few previous studies have attempted to study relationships between placental pathology and neurodevelopmental outcome in childhood, rather than outcome at a shorter term.

METHODS

A prospective cohort study from Stockholm, Sweden including 167 infants born < 27 gestational weeks during 2004-2007. Placental histopathology was assessed by a senior perinatal pathologist blinded to outcome data. Neuromotor and -sensory functions were evaluated. Bayley Scales of Infant and Toddler Development-III® (Bayley-III®) were used to assess development at corrected age 2.5 years. Main outcome measures were cerebral palsy (CP) and Bayley-III® composite cognitive, language and motor scores.

RESULTS
Two out of 7 children with placental infarction were diagnosed with CP compared with 1 child out of 51 without placental infarction (p = 0.036). All 15 children with accelerated villous maturation in the placenta had normal language development in comparison with 27 of the 34 children without accelerated villous maturation (p = 0.084). Presence of fetal thrombosis resulted in a lower Bayley-III® composite cognitive score (91.7; standard deviation [SD] 8.7) compared with participants without fetal thrombosis (97.0; SD 8.0). A low placental weight resulted in a lower mean Bayley® composite motor score (92.0; SD 15.1) compared to the children without a small placenta (103.4; SD 7.1).
CONCLUSION
Placental infarction is significantly associated with CP, and there are trends towards associations between placental histopathology and development at 2.5 years corrected age. These trends need to be evaluated in larger cohorts.

ABS 21

THE VARIABILITY IN CYSTATIN C REFERENCE VALUES IN NEONATES CAN PARTLY BE EXPLAINED BY THE USED ASSAY (TURBI- VS NEPHELOMETRY)

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BACKGROUND AND AIMS
Neonatologists commonly still use creatinine as a proxy for renal clearance, despite issues related to rapidly changing renal (patho)physiology and assay variability. Cystatin C (Cys C) has been suggested to be more reliable, but assay related differences have also been reported. We are unaware of any evaluation on the impact of the assay type on Cys C reference values in newborns.
METHODS
A structured literature search was performed on Cys C values in healthy (pre)term infants.
RESULTS
Data in 13 cohorts of healthy term (1,549 Cys C measurements, day 1-30) and 12 cohorts of healthy preterm (1,519 Cys measurements, day 1-30, gestational age 24-36 weeks) newborns were retrieved. Extensive variability (range 0.54-4.84 mg/L) in Cys C measurements was observed, in part explained by gestational and postnatal age. However, if we focused on healthy term cohorts in the first week of life, mean values for turbimetry (PETIA) were systematically higher compared to nephelometry (PENIA) (day 1 [2.23, 2.14, 2.11 vs 1.36, 1.84, 1.7, 1.21, 1.39], day 3 [1.82, 1.75 vs 1.35, 1.5, 1.58] and day 7 [1.63, 1.63 vs 1.54] mg/L).
CONCLUSIONS
Similar to creatinine, the wide Cys C range in neonates is only in part explained by neonatal physiology. A neonatal research agenda should focus on pooling of individual observations to develop assay (PENIA/PETIA) specific reference values. Such values should be compared to inulin clearance or other gold standard method to measure glomerular filtration rate in neonates.
ACKNOWLEDGEMENT
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ABS 22

RESPIRATORY DISORDERS AND CONSEQUENT MORBIDITY OF THE "LATE PRETERM" INFANTS (GESTATIONAL AGE: 34-36^{+6} WEEKS)

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BACKGROUND
Late preterm infants (LPIs) are defined as newborns with a gestational age (GA) of 34^{+0}-36^{+6} weeks. This neonatal population presents a delayed transition from intrauterine to extrauterine life and a functional immaturity of the lung structure, associated to high respiratory morbidity.

AIM
To determine the incidence of respiratory disorders of LPIs in a tertiary care perinatal center and their impact on LPI's morbidity.
PATIENTS AND METHODS
We performed a retrospective analysis of the LPIs delivered in our perinatal center and required admission to the NICU from April 2004 to December 2011. Infants with severe congenital anomalies were excluded. We recorded the incidence of respiratory complications and patients' evolution.
RESULTS
Out of 10,650 deliveries, 1,280 (12%) were LPIs; 239 of them were multiple (231 [18%] twins and 8 [0.6%] triplets) while 1,041 (81.4%) were singletons. A total of 1,527 infants were studied with 326 (21.3%) requiring direct admission to NICU while 17 deaths were recorded (12 stillbirths). Subjects were divided into three groups according to GA (1st: 34-34$^{6/7}$; 2nd: 35-35$^{6/7}$; 3rd: 36-36$^{6/7}$ weeks). The rate of RDS was markedly declined from 17% at the 1st group to 0.8% at the 3rd group. Infants of the 2nd group were more likely to develop transient tachypnea (10%) than those of the 1st group (4.7%). TPH was recorded in 3 of 340 neonates (0.9%) of the 1st group, 1 of 457 (0.2%) of the 2nd and 2 of 730 (0.3%) of the 3rd group.
CONCLUSIONS
LPIs who develop respiratory disorders are susceptible to respiratory failure and therefore they present higher neonatal morbidity and mortality.

ABS 23

ASYNCHRONOUS CHEST COMPRESSIONS VS SYNCHRONOUS IMPROVE 2-HOUR SURVIVAL IN AN EXPERIMENTAL NEONATAL PIGLET MODEL OF ASPHYXIAL CARDIAC ARREST

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BACKGROUND
The optimum mode of delivering chest compressions (CC) in neonatal resuscitation still remains unclear. ILCOR recommends 1 breath:3 CC; this is based on expert consensus and extrapolated data from pediatric and adult models.
AIM
The investigation of the impact of asynchronous CC vs the recommended 30 breaths:90 CC/min on survival, in a neonatal piglet model of asphyxial cardiac arrest.
METHOD
Asphyxia was induced by occluding the endotracheal tube in 20 male Landrace/Large White newborn piglets (age 1 ± 1 day old) until they develop either bradycardia (HR < 60 bpm) or hypotension (MAP < 15 mmHg); piglets were randomly allocated in 2 groups (10 animals/group): control group C resuscitated with 30 breaths:90 CC/min, and group CC which received asynchronous CC. All animals were resuscitated according to the 2010 ILCOR guidelines, intubated and ventilated using a NeoPuff.
RESULTS
There was a trend to quicker resuscitation of animals in group CC but this was not significant (50 ± 33 min vs 38 ± 13 min p = 0.542). Six animals out of 10 in group C and 9 out of 10 in group CC achieved ROSC (p = 0.152), and finally at 2 hours 2 and 7 animals from group C and CC (20% vs 70% p = 0.035) survived respectively.
CONCLUSIONS
In newborn piglets subjected to asphyxia, delivery of asynchronous CC improves survival at 2 hours when compared to 3:1 resuscitation.

ABS 24

HISTORY OF BREASTFEEDING

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Through the course of human history, the feeding of the newborn has puzzled man. A lot has been written about what is more beneficial for the growth and well-being of the children, mostly outlining breastfeeding's pivotal role. The first humanoids, the Neanderthals, raised their children like other higher primates did, i.e. breastfed them on demand for several years. From antiquity until today, the importance of breastfeeding has been well appreciated and depicted in mythology, philosophy and religion worldwide. Its vivifying power was

highlighted in ancient medical texts. In the case a problem with breastfeeding existed, wet nurses were the primary alternative in ancient and Byzantine times, with strict selection criteria. During the Middle Ages, objections against the use of wet nurses arose. Breast milk was believed to have magical properties, and it was thought that it could transmit the nurse's character and temperament. In Europe of the 16th-18th century, when high infant mortality rates were mentioned, wet nursing was the rule, mainly for wealthy families. At the end of 18th century in Europe the dilemma 'mother-*versus*-wet nurse' was by-passed by the new controversy that emerged, 'bottle-*versus*-breast'. During the Industrial Revolution artificial nutrition became the first choice and this lasted until the 20th century with the profuse commercialization of artificial milk. Fortunately, we have lately experienced resurgence of breastfeeding. All these will be presented in this review.

ABS 25

BREASTFEEDING IN PUBLIC

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Breastfeeding women all around the world often face the need of nursing in public and are concerned whether it is acceptable, tolerable or even offensive. Worldwide, attitudes towards breastfeeding in public diverge. Local socioeconomic and religious issues are the major contributors to forming either a favorable or discouraging climate for public breastfeeding. Some countries in North America and Europe have recently attempted to legally protect breastfeeding. This attempt was completed and definite only in the minority of these countries, while in most cases legislation was ambiguous. Scandinavian and North American societies seem to pioneer in this sensitive issue. Not only they protect breastfeeding in public and at workplace, but they also invest in advertising campaigns. On the other hand, few Asian and African countries have marginalized the topic of breastfeeding and discourage or even worse criminalize breastfeeding in public. If campaigns were to be successful and effective in attempting better rates of breastfeeding, the issue of allowing it in public should be more seriously handled. The current review aims at presenting in summary the current state of public breastfeeding all around the world.

ABS 26

SURVEILLANCE OF NEONATAL SEPSIS INCIDENCE IN A PRIVATE NICU IN ATHENS, GREECE

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BACKGROUND

Although advances in neonatal intensive care have led to improved survival of neonates, early- and late-onset sepsis continue to be an important cause of morbidity and mortality.

AIM

This study was undertaken to determine the incidence of early- and late-onset sepsis, distribution of infecting pathogens and outcome of neonates admitted to the NICU of "MITERA" Maternity Hospital, Athens.

METHODS

Our data were retrospectively collected and analyzed from the database of the Central Microbiology Laboratory, "MITERA-HYGEIA" hospitals. Blood samples were monitored on a 24hrs-basis (BacT/ALERT system®, bioMérieux).

RESULTS

During a 3-year period (January 2011-December 2013) 4,720 inborn neonates were admitted to our NICU, of which 2,415 weighted < 2,500 g and 280 < 1,500 g. Gestational age was 25-40 wks (average 30.8 wks). Thirty seven babies were born vaginally and 262 by cesarean section. We evaluated 4,045 neonates with blood cultures and in 299 the cultures were reported positive.

Early-onset sepsis (< 72 hrs) was diagnosed in 87 neonates (29%) and late-onset sepsis (> 72 hrs) in 212 (70.9%). The vast majority of infections (94.3%) were caused by Gram-positive organisms, with coagulase-negative *Staphylococci* accounting for 60.8%. Gram-negative organisms accounted for 3.8% and fungal infections for 1.9%.

Sixty nine blood cultures were reported positive in < 24 hrs (23%). No multi-resistant organisms were isolated.

OUTCOME
All neonates with early- or late-onset sepsis survived in our NICU, during the 3-year study period (2011-2013).
CONCLUSIONS
The observed incidence of neonatal sepsis (6.33% of admitted neonates and 7.39% of total positive blood cultures) is considered, according to international reports, very low and the 100% survival rate is remarkable.

ABS 27

LEAD AND MERCURY LEVELS IN PRETERM INFANTS BEFORE AND AFTER BLOOD TRANSFUSIONS

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The frequency of anemia is very high in very low birth weight (VLBW) infants. In addition to several unfavorable effects of blood transfusions, heavy metal load via red blood cell (pRBC) transfusions is not a well known entity. The aim of this study is to determine pre-and post-transfusion red blood cell lead and mercury levels in infants and the relation to pRBC units' lead and mercury levels.
MATERIAL AND METHODS
VLBW infants (n = 80) who needed pRBC transfusion for the first time are included in the study. Two blood samples were obtained to determine red blood cell lead and mercury levels before and after the transfusion. Also pRBC units lead and mercury levels were determined. The quantity of transfused lead and mercury was calculated according to transfused volume and pRBC unit's lead and mercury levels. The results were compared with the daily exposure reference values.
RESULTS
The mean gestational age was 28.4 ± 2.3 weeks and birth weight was 1,083 ± 256 g. The average lead and mercury levels in a pRBC unit were 16.3 ± 10.8 µg/l and 3.75 ± 3.23 µg/l respectively. The rate of infants who receive lead above the daily reference dose was 69.7% and it was 27% for mercury. The average pre- and post-transfusion RBC lead levels were 10.6 ± 10.3 µg/l and 13 ± 8.5 µg/l respectively ($p < 0.05$), and the average pre-and post transfusion RBC mercury levels were 3.28 ± 3.08 µg/l and 3.5 ± 2.83 µg/l respectively ($p > 0.05$).
CONCLUSION
Even if lead and mercury concentration of the pRBC units are not too high, our results suggest that considerable number of infants are exposed to hazardous lead and mercury in their critical time of brain development.

ABS 28

THE OBSTETRICIAN AND PEDIATRICIAN BEFORE COURT: A CRITICAL CASE STUDY ON (SUB)STANDARD PERINATAL CARE

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BACKGROUND AND AIMS
Belgium, the Netherlands and France have enacted legislation to ensure high quality perinatal care. Together with the obstetrician and the midwife, the pediatrician has a very important responsibility. In case of birth injuries, such as brain damage or even death, parents are often incited to lodge a complaint, with civil, criminal, or disciplinary suits following. By assessing the risks involved in perinatal care, juridical recommendations for avoiding medical liability can be developed.
METHODS
More than 120 judicial proceedings of Belgium, France and the Netherlands, related to the delivery process, were analyzed in depth. Several national juridical databases were used and a minority of the cases were retrieved through contacts with insurance companies (Belgium only) and courts.
RESULTS
In many cases the judicial assessment of negligence was focused on recognizing and responding to a specific pathology such as foetal stress (indication to caesarean section or not), group B streptococcal sepsis, intrauterine growth restriction, perinatal inflammation and prematurity. Not addressing correctly a hypoglycemia also led to the liability of the pediatrician.
CONCLUSION
To reduce the liability rate several policy recommendations can be made. Most relevant in perinatal care is responding to the first symptoms of foetal stress or an early neonatal disorder. This involves evaluating the situation after disturbing messages of the midwife/nurse and briefing colleagues, to step in immediately if necessary.

A good internal organisation (on call service) is a must. If a diagnosis remains uncertain, order further examinations. Keep the patients' medical file up to date, to allow colleagues to make the appropriate choice of medical intervention or adjustment of medication.

ABS 29

THE EFFECT OF MELATONIN TREATMENT ON OXIDANT STATUS, ANTIOXIDANT CAPACITY, LIPID PEROXIDATION AND APOPTOSIS AFTER HYPOXIC ISCHEMIC BRAIN INJURY IN NEWBORN RATS

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BACKGROUND

The main reason of neuronal and oligodendroglial cells damage in hypoxic-ischemic (H-I) brain injury is free radicals. Melatonin is a strong free radical scravenger and has a strong antioxidant property. The aim of this study was to investigate the role of melatonin used shortly after H-I injury on brain tissue total oxidant status, total antioxidant capacity, oxidative stress index, lipid hydroperoxide (LOOH) and apoptosis in neonatal hypoxic-ischemic rat model.

MATERIALS AND METHODS

7 days old Wistar albino rats were randomly divided in 3 groups: sham (control), H-I and H-I melatonin groups (in each group, n = 16). In the H-I and H-I melatonin groups, left common carotid artery was ligated. Pups were allowed to recover for 2 hours and placed in a glass container perfused with a gas mixture (8% oxygen balanced with nitrogen) for 2 hours. 30 minutes later, pups in H-I melatonin group were treated with intraperitoneal 5 mg/kg dose of melatonin (1st dose); the 2nd and 3rd doses were administered at 8 pm on the 2nd and 3rd days. Control animals did not undergo ischemia or hypoxia, but had an incision under anesthesia and both control and H-I groups received only intraperitoneal saline treatment. Pups were sacrified on postnatal 10 day of life and total antioxidant capacity (TAC), total oxidant status (TOS), oxidative stress index (OSI), lipid hydroperoxide (LOOH) and apoptosis in left brain hemisphere by TUNEL method were evaluated.

RESULTS

Total antioxidant capacity was higher in H-I melatonin group compared to H-I ($p = 0.001$) and control groups ($p < 0.001$). Level of TOS was lower in melatonin treated H-I group than H-I group ($p = 0.002$) and OSI was significantly higher in H-I group compared to control ($p = 0.013$) and H-I melatonin ($p < 0.001$) groups. LOOH levels was also significantly lower in melatonin treated H-I group compared to H-I group. TUNEL staining showed markedly reduced numbers of TUNEL-positive cells in melatonin treated H-I group compared to H-I group ($p < 0.005$).

CONCLUSION

Melatonin significantly increased antioxidant capacity, reduced oxidant status, lipid peroxidation and apoptosis compared to placebo in hypoxic-ischemic brain injury in newborn rats, suggesting that melatonin may offer a benefit in hypoxic ischemic encephalopathy of newborn babies.

ABS 30

GROWTH OF PRETERM NEONATES WITH BRONCHOPULMONARY DYSPLASIA AND ITS LONG TERM IMPLICATIONS IN RESPIRATORY FUNCTION

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BACKGROUND

It is well established that bronchopulmonary dysplasia (BPD) produces long-term morbidity with the respiratory system as the main target. Prolonged administration of nasal CPAP in neonates with BPD (until 34 weeks GA) has been shown to be substantial.

AIMS

We investigated whether the specific policy of sustained administration of nasal CPAP in neonates with BPD – already known as facilitating their feeding – has durable impact in short-term growth and long-term prognosis of their respiratory function.

METHODS

We conducted a prospective observational study with controls in which we enrolled 42 preterm neonates who were hospitalized during 2007 and

2008. 21 of the neonates did not present BPD, had mean birth weight (BW) (SD) of 1,072 (121) g and gestational age (GA) of 30 (1.6) weeks (group A, controls); the above was compared to group B, that was also formed by 21 preterm neonates with BPD, BW of 1,037 (111) g and GA of 28 (1.2) weeks (BW p = 0.333, GA p = 0.002). Neonates of group B were all assigned in nasal CPAP from their 10th day of life and for 17 (1-34) days overall (median, range) and were hospitalized during the same period of time. The feeding policy was the same in all infants. We recorded: 1) the time frame needed till neonates received full enteral nutrition, the GA in which they reached 2 kg of body weight, the duration of their initial hospitalization; 2) all episodes of lower respiratory infections, all admissions in any clinic for the same reason, during the 1st and 2nd year and the growth in the 2nd year of life.

RESULTS

Neonates of group B, achieved full enteral nutrition on the 13th (10-28) day of life (median, range) and those of group A on the 12th (8-37) (p = 0.382), GA (mean, SD) in which they reached body weight of 2 kg was in 36.6 (1.4) weeks in group B and in 37 (1.6) weeks in group A (p = 0.450) and initial hospitalization duration in group B was 63 (49-84) days (median, range) while in group A it was 55 (38-78) days (p < 0.007).

Among the 34 (out of the initial 42) neonates that we managed to intensively follow-up during the first 2 years of their life (17 group A1, 17 group B1), we found no statistically significant between-group difference in the babies who presented lower respiratory infections (< 5/year) ([1st year: group B1, 3 babies: A1, 2 babies; p = 0.641], [2nd year: group B1, 1 baby; A1, 1 baby]), or hospitalization for lower respiratory infections ([1st year: no baby hospitalized in both groups], [2nd year: group B1, 0 babies; group A1, 1 baby; p = 0.325]). The growth of infants in the 2nd year of life as it concerns the percentiles (P) of Body Weight (BoW) and Head Circumference (HC), was also reported (mean, range) (BoW: group B1, P 43rd [5-95]; group A1, P 50th [5-75]; p = 0.426), (HC: group B1, P 55th [25-95]; group A1, P 60th [25-75]; p = 0.553).

CONCLUSIONS

Our results suggest that prolonged administration of nasal CPAP in preterm neonates with BPD and its gratifying and durable impact in their overall growth can favorably differentiate the natural course of BPD. Further multicenter cohort studies are necessary to support these promising messages.

ABS 31

THE SIGNIFICANCE OF UMBILICAL ARTERY BLOOD PH, BASE DEFICIT, BICARBONATE, AND LACTATE LEVELS FOR RESUSCITATION NEEDS IN FULL-TERM NEONATES, THEIR CEREBRAL BLOOD CIRCULATION CHANGES, AND HYPOXIC-ISCHEMIC ENCEPHALOPATHY

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BACKGROUND AND AIM

The umbilical artery blood pH, base deficit, bicarbonate, and lactate levels are the main indicators of fetal distress. The aim of the study was to evaluate the significance of these indicators for resuscitation needs in full-term infants, their cerebral blood circulation changes, and hypoxic-ischemic encephalopathy (HIE).

METHODS

The prospective cross-sectional study was performed at the Department of Neonatology, Lithuanian University of Health Sciences. The studied group consisted of 58 full-term neonates who experienced perinatal asphyxia or hypoxia. Immediately after birth, umbilical artery blood pH, base deficit, bicarbonate, and lactate levels were analysed. During the first 5 days of life, blood circulation in the anterior cerebral arteries was measured, and clinical signs of HIE were evaluated using the modified Sarnat and Sarnat scale.

The comparison between the resuscitations groups and HIE groups was performed by applying the parametric and nonparametric ANOVA analysis and the non-parametric Kruskal-Wallis (χ^2) criterion and Kendal (r) criterions. Correlation analysis was applied to determine the correlation of blood circulation parameters with pH, BE, bicarbonate and lactate levels.

RESULTS
Significantly lower pH values were detected in the umbilical artery blood of neonates with more severe stages of HIE ($r = 0.5$; $p < 0.001$). Decreasing pH and bicarbonate levels and increasing BE levels were associated with a lower maximal systolic velocity (Vs). Decreasing pH value was associated with a lower resistance index (RI).
CONCLUSIONS
Umbilical artery blood pH correlated with the stage of HIE. Bicarbonate, pH and BE levels in full-term infants influenced changes in cerebral blood circulation.

ABS 32

GROSS MOTOR PATHS IN GREEK "HEALTHY" PRETERM INFANTS ASSESSED BY THE ALBERTA INFANT MOTOR SCALE (AIMS): COMPARISON WITH FULL-TERM INFANTS AND INFLUENCE OF NEONATAL MORBIDITY FACTORS

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BACKGROUND AND AIMS
The Alberta Infant Motor Scale (AIMS), a reliable and easy to use clinical assessment tool, has been primarily employed to evaluate the motor development of full term infants. Preterm infants have been inadequately studied, whereas factors influencing their AIMS performance are not known. The aim of this study was to evaluate by AIMS the gross motor development of preterm infants and examine the possible influence of neonatal morbidity factors.
METHODS
Mean AIMS scores were compared, at monthly age level from 1 to 19 months of age, between 403 "healthy" preterm infants (mean ± SD gestational age 28.6 ± 2.3 weeks) at corrected for prematurity age and 1,038 full-term infants, as controls. In preterm infants, the association of AIMS scores with several morbidity factors was assessed by multivariate linear regression analysis.
RESULTS
Preterm infants had significantly lower gross motor developmental scores at each monthly level as compared with full-term infants ($p < 0.0001$). In multivariate linear regression analysis, mean AIMS scores of preterm infants were negatively associated with respiratory distress syndrome ($b = -1.71$; 95% CI = -2.50-[-0.91]), intraventricular hemorrhage ($b = -1.10$; 95% CI = -1.86-[-0.35]), retinopathy of prematurity ($b = -1.33$; 95% CI: -2.23-[-0.44]), and being born SGA ($b = -1.89$; 95% CI: -3.61-[-0.17]), but not with bronchopulmonary dysplasia or sepsis.
CONCLUSION
"Healthy" preterm infants exhibit inferior gross motor development, as assessed by AIMS at corrected for prematurity age, in comparison with their full-term peers. Neonatal morbidity factors related to prematurity, as well as being born SGA, have a negative impact on AIMS performance.

ABS 33

PERINATAL OUTCOME IN PREGNANT WOMEN WITH GESTATIONAL AND OVERT DIABETES AND ACCORDING TO WHO AND/OR IADPSG CRITERIA

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AIM
The aim of the research was to compare perinatal outcomes of pregnant women with gestational diabetes (GDM) according to the criteria established by WHO and IADPSG.
SUBJECTS AND METHODS
The study included pregnant women who made OGTT with 75 grams of glucose between 24 and 34 weeks in the period 2009-2011. GDM is diagnosed according to the WHO criteria and to the IADPSG criteria. Data on pregnancy and perinatal outcome were analyzed from the medical histories of women who conducted and completed their pregnancies in the Department of Obstetrics/Gynecology of Zagreb.
RESULTS
The first group (WHO/HAPO) was the group of pregnant women with GDM according to WHO and IADPSG criteria (n = 430; 16.1%). In the second group there were pregnant women who had

GDM according to WHO criteria (n = 126; 4.7%). A third group of pregnant women included those with GDM according to IADPSG criteria (n = 521; 19.5%). The fourth group of pregnant women had overt diabetes (OD) according to WHO and IADPSG criteria (n = 54; 2.0%). The fifth group of pregnant women included those with OD according to IADPSG criteria, but they had also GDM by WHO criteria (n = 119; 4.5%). The sixth group of pregnant women with OD according to IADPSG criteria who according to WHO criteria had normal OGTT (n = 51; 1.9%). The seventh group was the control group of healthy pregnant women (n = 1,368; 51.3%). The incidence of cesarean section was higher in pregnant patients with GDM according to WHO and IADPSG criteria compared to the control group (26.7%; 25.4%; 18.6%). The highest incidence of cesarean section was in the group with OD (29.6%; 27.7% and 35.3%), while the lowest was in the control group (14.4%) ($\chi^2 = 62.01$; $p < 0.001$). Incidence of hypertrophic children (> 90th percentile) was the largest in the group of pregnant women with GDM by IADPSG criteria (24.4%) and in the group with OD (38.9%, 29.4%, 29.4%) compared to the control (17.4%) and WHO group (16.7%) ($\chi^2 = 45.971$; $p < 0.001$). The highest incidence of preeclampsia and gestational hypertension was in the group of obese women (0.9%; 22.9%) and the lowest in the group with normal BMI (0.4%; 0.1%; 3.0%) ($\chi^2 = 184.819$; $p < 0.001$).

CONCLUSION

With IADPSG criteria for GDM, OD and GDM were diagnosed more often in comparison with WHO criteria.

The largest number of caesarean sections (35.3%), hypertension/preeclampsia and macrosomic newborns (> 4,500 g, 23.5%) were found among women with OD by IADPSG, which, according to WHO criteria, had no GDM.

ABS 34

SURVIVAL AND NEONATAL COMPLICATIONS IN EXTREMELY PREMATURE NEONATES 22^{+0}-27^{+0} WEEKS OF GESTATION. COMPARISON OF TWO TIME PERIODS

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BACKGROUND AND AIMS

Survival of extremely premature neonates improved during the last decade, but major neonatal complications and neurodevelopmental outcome at 18-30 months corrected age remained stable.

The aim of this study was to compare the survival and neonatal complication rates in neonates 22^{+0}-27^{+0} weeks during two time periods: 2001-2005 and 2008-2012.

MATERIAL AND METHODS

All neonates with gestational age 22^{+0}-27^{+0} weeks born at our hospital during the predefined time periods were included. Gestational age, clinical characteristics, neonatal complications, neurosensory outcome at 18 months corrected age and final outcome (survival or death) were recorded.

RESULTS

During the first and the second period, 121 and 101 neonates were born, respectively. Survival was stable (47.5% *versus* 45.5%, p = 0.722). Neonatal complications in survivors were similar: IVH (29.8% vs 35.5%, p = 0.586), PVL (23.1% vs 20.8%, p = 0.827), NEC (0% vs 4.3%, p = 0.139) and BPD (10.7% vs 4.8%, p = 0.287). However, during the second period, ventricular dilatation (43.6% vs 70%, p = 0.011) was higher, even after adjustment for gestational age and birth weight (p = 0.035). Retinopathy of prematurity also increased (49.1% vs 70.7%, p = 0.032) but laser photocoagulation treatment remained stable (19.3% vs 25.5%, p = 0.409). Major neurological disability, at 18 months corrected age, was significantly higher in the first period (22.2% vs 6.1%, p = 0.035) whereas auditory defects (3.1% vs 9.1%, p = 0.547) and blidness (1.8% vs 2.4%, p = 0.486) were stable.

CONCLUSION

Survival and complications of prematurity remained stable, with the exception of ventricular dilatation that increased and major neurological disability that decreased during the second observation period.

ABS 35

NEONATAL CREATINEMIA TRENDS IN RELATION TO BAYLEY SCALES OF INFANT DEVELOPMENT® IN FORMER EXTREMELY LOW BIRTH WEIGHT (ELBW) NEONATES

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BACKGROUND AND AIMS
Serum creatinine is traditionally used as a marker of renal clearance in neonates and relates to gestational age and disease severity in extremely low birth weight (ELBW) infants. On the other hand, ELBW infants have lower cognitive outcome in reference to the general population. We aimed to compare creatinine trends as a biomarker of cognitive outcome.
METHODS
A well-characterized cohort of ELBW infants (140 survivors, 73 boys – 67 girls) [1] was examined at the corrected age of 9 and 24 months by the Bayley Scales of Infant Development® (BSID-II-NL) to evaluate their cognitive development. Postnatal creatinemia trends were analyzed using optimal matching and hierarchical clustering and these trends were subsequently linked to BSID scores.
RESULTS
Different neonatal creatinemia trends after birth were identified (increased; normal; decreased; increased and normalizing afterwards) for which cognitive outcome differs significantly (p = 0.026). Both neonates with continuous decreased creatinine and with increased creatinine at birth normalizing afterwards have the best cognitive outcome, the latter even better than the group with continuous normal creatinemia trends. Neonates with increased creatinine had the worse cognitive outcome (difference with normalizing group 80 *versus* 102, p = 0.046).
CONCLUSIONS
Creatinemia trends after birth are not only useful to predict renal clearance, but might also be linked to cognitive development in former ELBW neonates. Neonates who have increased creatinemia trends after the first week of life have lower BSID scores. This might be a reflection of disease severity and compromised microcirculation.

ACKNOWLEDGEMENT
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ABS 36

IS A SMALL PLATELET MASS ASSOCIATED WITH INTRAVENTRICULAR HEMORRHAGE IN EXTREMELY LOW BIRTH WEIGHT INFANTS?

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BACKGROUND
Thrombocytopenia appears to be common in ELBW neonates (BW ≤ 1,000 g or GA < 28 weeks). Prematurity is relatively proportional to the severity of IVH. However, the efficacy of platelet administration as preventive strategy for IVH is not well established. The association between small mPLT, as a prognostic factor, and the incidence of IVH in ELBW infants is unknown.
METHODS
We performed a retrospective cohort analysis of 130 ELBW inborn infants admitted in our tertiary care perinatal center during the last four years. We evaluated mPLT at the 1st day of life and the incidence of IVH.
RESULTS
Among the sample population, 102 (78.4%) neonates with GA 26.8 ± 1.2 weeks and BW of 864 ± 180 g had a mPLT of 2,800 ± 824 fl/nl and did not present IVH during the 1st day of life. In contrast, IVH (≥ II degree) appeared during the 1st day of life in 28 (21.4%) neonates with GA 25.7 ± 1.4 weeks, BW 747 ± 238 g and platelet mass of 1,982 ± 673 fl/nl. The unpaired Students t-test showed a significance of p = 0.011. In order to reveal a possible influence of mPLT on the development of IVH, we used binary logistic regression which showed a statistically significant influence (p = 0.022, CI = 0.999-1.000). Consecutively, ROC curve was drawn in an attempt to estimate the most accurate predicting valuable; the AUC was 63.9% (p = 0.028) with a possible cut of value of < 1,600 fl/nl, with a sensitivity of 85.4% and 1-specificity of 70.4%.
CONCLUSIONS
The incidence of IVH in ELBW infants remains high. Among ELBW infants, the small mPLT can be used as an independent predictive factor for the appearance of IVH.

ABS 37

A CASE OF SEVERE HEMOLYTIC DISEASE OF NEWBORN CAUSED BY ALLOANTIBODIES AGAINST ANTIGENS D AND E TO THE SYSTEM RHESUS TREATED WITH INTRAUTERINE TRANSFUSIONS AND *EX-UTERO* EXCHANGE TRANSFUSIONS

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BACKGROUND

Hemolytic disease of newborn (HDFN) follows destruction of red blood cells of the fetus and/or newborn induced by maternal alloantibodies against red cell antigens. The most serious clinical cases are usually caused by alloantibodies Rhesus (anti-D, anti-c) system and Kell (anti-K) system.

AIM

We describe an interesting case with a severe HDFN due to anti-D and anti-E, which was successfully treated with intrauterine transfusions and *ex-utero* phototherapy, exchange transfusions (ET), transfusions of blood products and IVIG.

CASE REPORT

Newborn male, O Rh+, later-born mother, with GA 36 w because of known Rh sensitization. In early weeks of pregnancy the basic immunological and hematological control was not held. The level 2 ultrasound found heavy fetal anemia. The test showed the presence of maternal anti-D and anti-E antibodies. There were four intrauterine transfusions of packed red cells (PRC). After birth the infant showed signs of severe HDFN (Ht: 21.6%, bilirubin: 13.75 mg/dl, hepatosplenomegaly). The infant started mechanical ventilation, phototherapy, 8 ET (from the 1st to the 4th 24-hour life) and gamma-globulin. During the fifth ET, he manifested severe allergic reaction, hypotension, bradycardia, rash, altered ECG and electrolyte imbalance. He stopped ET and was treated conservatively. The infant was supported overall throughout hospitalization with 6 PRC, 12 PLT, 5 FFP. The neonate was discharged after 19 days of hospitalization and improved with recommended regular monitoring.

CONCLUSIONS

We report the importance of good monitoring of pregnant women with early detection of alloantibodies and signs of fetal anemia, and the possibility of a positive outcome in even severe forms of HDFN in specialized centers where Obstetricians and Hematology Neonatologists closely work together.

ABS 38

EVALUATION OF SERUM HEPCIDIN LEVELS AND HEMATOLOGICAL PARAMETERS IN PRETERM INFANTS BEFORE AND AFTER THE TRANSFUSION OF PACKED RED BLOOD CELLS

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BACKGROUND AND AIMS

Anemia and iron deficiency are very common in neonatal intensive care units. Compromised iron stores combined with rapid growth, accelerated erythropoiesis and frequent blood sampling render preterm neonates at high risk for iron deficiency and consequent anemia. Most premature infants require transfusions of packed red blood cells (PRBCs) during their neonatal course. Hepcidin is the key regulator of iron homeostasis.

The aim of the study was to evaluate serum hepcidin levels and established hematological parameters in preterm infants before and after the transfusion of PRBCs.

METHODS

We determined hepcidin levels in 19 preterm infants with gestational age less or equal to 32 weeks and chronological age more or equal to 4 weeks before and after the transfusion of PRBCs. Venous blood sample was collected from each of the participants before the transfusion and thereafter at one week and one month. Samples' evaluation was as follows: complete blood cell count, reticulocyte parameters, ferritin, transferrin, iron, total iron binding capacity, soluble transferrin receptor and hepcidin.

RESULTS
Hepcidin had a significant increase 5 days after the transfusion and a slightly decrease after one month reaching similar level with the baseline ones. Statistical analysis revealed significant differences in reticulocyte parameters, red blood cells parameters, ferritin, transferrin and iron before and five days after the transfusion. Changes in hematological indices during the follow up period were not significantly different between boys and girls.
CONCLUSIONS
Hepcidin tended to increase after the transfusion, indicating the existence of the same regulatory mechanisms in its production as in older children and adults.

ABS 39

PLATELET MASS IN PRETERM INFANTS OF PREECLAMPTIC MOTHERS AND ASSOCIATION WITH NEONATAL MORBIDITIES

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BACKGROUND
Preeclampsia is one of the common cause of maternal and neonatal morbidity and mortality occuring in up to 8% of all pregnancies. The aim of this study was to evaluate platelet mass in preterm babies with < 32 weeks' gestational age of preeclamptic and normal pregnant women and to determine the association between platelet mass and neonatal morbidities.
METHODS
This was a retrospective study of preterm infants < 32 weeks' gestation who were admitted to the NICU from September 2011 to April 2014. A total of 60 preterm infants were divided into two groups: 30 preterm infants of preeclamptic mothers and 30 preterm infants of normal pregnant women (control group). Platelet mass is calculated by multiplying the platelet count (platelets/µl) by the mean platelet volume (MPV) (fL). Two groups were compared according to their birth weight, gestational age, platelet count, MPV, platelet mass and morbidities.
RESULTS
Demographic and clinical characteristics of the patients were given in **Tab. 1**. Although platelet count and platelet mass were lower in infants of preeclamptic mothers, there was no statistically significant difference (p = 0.32; p = 0.24). There was a significant negative correlation between MPV and platelet count. There was no correlation between certain neonatal morbidities and platelet mass in total preterm infants (p > 0.05).

Table 1. Demographic and clinical characteristics of the patients.

	Preterm infants of preeclamptic mothers (n = 30)	Preterm infants of normal pregnant women (n = 30)	p
Gestational age (weeks)	30.7 ± 1.9	30.2 ± 1.5	0.34
Birth weight (g)	1,351 ± 303	1,461 ± 247	0.12
Apgar at 1st minute	6.1 ± 1.5	6.3 ± 1.6	0.68
Apgar at 5th minute	7.5 ± 1	7.4 ± 1	0.81
Platelet count (x 10^9/l)	179 ± 62	195 ± 59	0.32
MPV (fL)	7.6 ± 1.6	7.3 ± 1.1	0.44
Platelet mass	1,328 ± 407	1,461 ± 472	0.24

MPV: mean platelet volume.

CONCLUSION
Although lower platelet mass are thought to be associated with certain neonatal morbidities and preeclampsia, we found no association in this retrospective analysis; further studies with large sample size are needed to demonstrate this relationship.

ABS 40

ADVERSE EVENTS RECORDED DURING URGENT NEONATAL TRANSPORT IN GREECE OVER A PERIOD OF ONE YEAR

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BACKGROUND
Neonatal transport (NT) is a high risk service, especially for premature and severely ill neonates.
AIM
To record the main adverse events during urgent NTs as those reported on admission to Neonatal Intensive Care Units in tertiary hospitals of Athens.

METHODS
According to the Hellenic National Center of Emergency Care (HNCEC), 677 urgent NTs were performed in 2009. Scheduled transports for consultation or for any surgical condition were excluded. Analysis was performed using SPSS-18.
RESULTS
655 neonates (96.8%) were transported during the 1st week of life, while 514 (75.9%) on the 1st day of life. 132 neonates (19.5%) had BW ≤ 1,500 g and GA in 152 (22.5%) was ≤ 32 weeks. 353 neonates (52.1%) were transported by flying squad of the HNCEC, 11 (17.4%) by the air-transport unit and 206 (30.4%) were transported from regional hospitals without neonatal transport unit. Hypoglycemia (glucose ≤ 50 mg/dl) and hypothermia (temperature < 36°C) were most commonly observed (9.9% and 9.6% respectively) while hyperglycemia (glucose ≥ 150 mg/dl) occurred only in 4.6%. Hyperthermia (temperature > 37.2°C) occurred in 8.9%. 3.2% had $SatO_2$ < 90%, 4.3% acidosis (blood pH < 7.25) and all were alive on admission.
CONCLUSIONS
Hypoglycemia and hypothermia are the most commonly observed complications during NTs. Transport units should have specialized personnel to minimize these adverse events.

ABS 41

NEONATAL MORTALITY AND MORBIDITY AFTER URGENT NEONATAL TRANSPORT IN GREECE

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BACKGROUND
Outcome of infants transferred postpartum is reported to be worse than that of infants transferred in-utero.
AIM
To assess neonatal mortality and morbidity after urgent neonatal transport (NT) in Greece.
METHODS
According to the Hellenic National Center of Emergency Care (HNCEC), 677 urgent NTs were performed in 2009. Scheduled transports for consultation or for any surgical condition were excluded. Analysis was performed using SPSS-18.
RESULTS
353 neonates (5.1%) were transported by the flying squad of the HNCEC, 118 (17.4%) by the air-transport unit and 206 (30.4%) were transported from regional hospitals without neonatal transport unit. 89 neonates (13.1%) were intubated immediately after birth and 126 transported neonates (18.6%) were on IPPV. During their hospitalization in the NICU, 314 neonates (46.4%) needed oxygen supplementation, while 257 (38%) were on mechanical ventilation. 196 neonates (29%) had RDS, 40 (5.9%) IVH grade I-II while 19 (2.8%) grade III-IV. 24 neonates (3.5%) developed PVL, 55 (8.1%) ROP and 25 (3.7%) NEC while only 11 (1.6%) required surgery. 46 neonates (6.8%) developed BPD and 22 (3.2%) died, the majority of them (1.9%) due to cardiac arrest.
CONCLUSIONS
Perinatal care should be organized in such a way that transport of neonates and high risk pregnancies be in a safer framework.

ABS 42

CASES REVIEW OF CENTRAL HYPOVENTILATION SYNDROME IN A NICU: A 10 YEARS SURVEY

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AIM
To determine the genotype and phenotype of three different cases of Central Hypoventilation Syndrome (CHS) presented during the decade 2004-2014 in the NICU.
METHOD
Medical records were reviewed to record phenotypic presentation at baseline occurrence and genetic testing results in order to group the cases according to the genotype/phenotype. Different types of treatment were also stated. Additional information was requested using a parent's questionnaire.
RESULTS
One patient had the *PHOX2B* gene responsible for 91% of gene mutations, while the other two were not determined as any of the existing up to date gene mutations. Two of the three characterized as

CHS without Hirscshprung's disease. The diagnosis was made in two of the three cases with sleep study (plethysmography). Formal investigations included 24-hours video-recording EEG for two cases, two out of three cases underwent brain MRI and one had MRI spectroscopy and brain CT scan for calcifications while investigations for metabolic diseases were common in all cases. Another patient had LP electrophoresis and neuronal conduction studies. Treatment was tracheotomy in two out of three and respiratory support with positive pressure with the use of a special mask for one incident. The clinical manifestations ranged from 5% to 75% covering all the wide spectrum of the up to date known clinical manifestations of the disease.

CONCLUSION

Genotypic and phenotypic expression of Central Hypoventilation Syndrome vary greatly but conclusions may be drawn only on the basis of longitudinal follow-up of patients.

ABS 43

DURATION OF HOSPITALIZATION IN A TERTIARY LEVEL NICU: A COMPARATIVE STUDY BETWEEN TWO TIME PERIODS AS A RESULT OF CHANGING FEEDING PROTOCOL

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AIM

To compare the duration of inpatient stay after changing to exclusive vs some expressed breast milk and early vs late feeding.

METHODS

343 and 253 neonates were admitted in 2009 and 2013, respectively. Neonates were allocated according to the most outstanding clinical diagnosis to either healthy preterms (2% vs 4.7% [$p > 0.05$]); preterms with clinical condition other than prematurity (28.9% vs 26.9% [$p > 0.05$]); fullterms with some clinical condition (8.2% vs; 4.7% [$p > 0.05$]), and those who required full work up (9% vs 8.7% [$p > 0.05$]); surgical cases (35.9% vs 30.4% [$p > 0.05$]); and miscellaneous (11.1% vs 19.8% [$p = 0.003$]). Preterms were 30.6% vs 18.6% ($p = 0.876$). Number of neonates transferred to another NICU was 16.3% vs 6.3% ($p < 0.001$). Recorded deaths were 5.5% vs 4%.

RESULTS

The median duration of stay in NICU for healthy preterm was 26 days (IQR = 18-27) vs 14 days (IQR = 9-21.5) ($p = 0.036$), for combined (NICU + intermediate) care was 27 days (IQR = 25-68) vs 21 days (IQR = 9-4) ($p = 0.017$). The median duration of stay in NICU for preterms with some clinical condition tended to be lower in 2013 while in intermediate care and combined care decreased significantly ($p < 0.05$). Linear regression analysis after exclusion of ROP and congenital heart disease cases and adjusting for the transferred showed a significant decrease of NICU stay ($\beta = -0.504$, SE = 0.17, $p = 0.007$), the intermediate care stay ($\beta = -0.21$, SE = 0.10, $p = 0.030$) and the combined care stay ($\beta = -0.10$, SE = 0.05, $p = 0.027$).

CONCLUSION

Expressed breast milk and early feeding resulted in a significant decrease in the inpatient stay for the preterm population.

ABS 44

GROUP B STREPTOCOCCUS PORE-FORMING TOXIN INDUCES INTRA-AMNIOTIC INFLAMMATION AND NEUTROPHIL RECRUITMENT IN A MURINE MODEL OF CHORIOAMNIONITIS

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BACKGROUND

Group B Streptococcus (GBS) is a leading cause of perinatal infection, including chorioamnionitis and early onset sepsis. We recently demonstrated a crucial role for the GBS pore-forming toxin β-hemolysin/cytolysin (βH/C) in the disruption of maternal-fetal barriers and vertical transmission of GBS to the fetus using a novel murine model of ascending GBS infection following vaginal colonization. Direct, toxin-induced tissue damage is one potential mechanistic explanation. We hypothesize that βH/C-mediated local inflammation and neutrophil recruitment also contribute to observed adverse pregnancy outcomes.

METHODS

We vaginally colonized C57Bl/6J mice on pregnancy day 13 (E13) with wild type (βH/C-expressing) GBS, an isogenic knockout (βH/C-deficient) GBS or sham infection. Dams were sacrificed at two

distinct time points (E15 and E17) and fetoplacental units were harvested for histologic examination, culture, and ELISA analysis of amniotic fluid for determination of local cytokine production.

RESULTS

We demonstrated that fetoplacental units exposed to wild-type GBS produced higher concentrations of IL-1β, IL-6, and KC (CXCL1) in amniotic fluid than those exposed to either isogenic knockout GBS or sham infection. These differences were directly correlated with the degree of placental neutrophil infiltrate and with the composite outcome of preterm birth and intrauterine fetal demise.

CONCLUSION

βH/C induces intra-amniotic, pro-inflammatory cytokine expression and placental neutrophil recruitment. Identification of specific toxin-signaling pathways enhances our understanding of the pathogenesis of GBS chorioamnionitis and neonatal sequelae, and may yield novel strategies for intervention.

ABS 45

DESCRIPTION OF NEURODEVELOPMENTAL DELAYS AT TWO YEARS CORRECTED AGE IN A COHORT OF HIGH RISK PREMATURE NEONATES

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AIMS

The description of neurodevelopmental delays of high risk premature neonates at two years corrected age.

METHODS

This was a prospective study including an unselected cohort of premature neonates admitted to a level III referral Neonatal Intensive Care Unit, from July 2007 to January 2010. Inclusion criteria were being premature babies born at 30 weeks of gestation or less, or a birth weight less than 1,250 g, At two years corrected age, 55 infants underwent a complete neurodevelopmental follow-up assessment with use of the Griffiths Mental Development Scales-Extended Revised, 2006.

RESULTS

The infants were assessed at a mean corrected age of 24.5 ± 0.6 months (range 24-26). The mean overall corrected quotient was 70.4 ± 19.2 (range 14.8-95.7). Normal quotients (T scores 84-116: ± 1 SD) were found in 10 infants (18.2%), mildly abnormal (T scores 68-83: 1-2 SD) in 27 (49.1%), moderately abnormal (T scores 52-67: 2-3 SD) in 8 (14.5%) and severely abnormal (T scores < 52: < 3 SD) in 10 (18.2%). The mean subquotients were as follows: Locomotor (A) 68.7 ± 20.3 (range 10-97.1); Personal-Social (B) 78.9 ± 26.5 (range 16.6-132.8); Hearing and Language (C) 73.3 ± 20.6 (range 21.2-103.2); Eye-Hand Coordination (D) 67.5 ± 20.3 (range 9.2-115.2); Performance (E) 63.1 ± 17.2 (range 13.8-95.1).

CONCLUSIONS

Very low birth weight premature neonates present in a substantial rate neurodevelopmental delays of different severity mainly in the areas of Eye-Hand Coordination and Performance. Early identification of delays is crucial, because it results in early intervention and possible improvement of the outcome.

ABS 46

THE IMPACT OF HUMAN BREAST MILK ON VERY LOW BIRTH WEIGHT INFANTS' OUTCOMES

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BACKGROUND AND AIMS

Preterm human milk is the ideal nutritional support for preterms. Nevertheless, there is no clear scientific data referring to the most appropriate post-conceptional age (PCA) for the initiation of breastfeeding. Some advocate that it is preferably started after 32 weeks (w) of PCA while for others it is efficacious after the 28th w. The aim of the study was to investigate the benefits of feeding preterm infants ≤ 32 w with raw human milk and early initiation of breastfeeding (cases) in comparison to feeding with pasteurized donor milk plus a preterm formula (controls).

METHODS

240 infants initially fed with their mother's milk were matched to 240 ones treated with banked donor milk and afterwards with a preterm formula.

RESULTS

Raw milk fed infants were more likely to survive, regained their birth weight earlier and suffered less episodes of feeding intolerance (p = 0.026;

p = 0.005; p = 0.000). Treating with raw preterm human milk from the 1st day of life was associated with lower rates of ROP and IVH (p = 0.025; p = 0.005). Infants fed raw human milk were able to initiate breastfeeding earlier compared to the controls who achieved later to initiate bottle-feeding (29.7 ± 1.3 w PCA vs 33.1 ± 2.1 w PCA) (p = 0.000). At hospital discharge, infants fed raw human milk presented a higher body length and head circumference (p = 0.001; p = 0.002). Although not statistically significantly, breastfeeding was associated with lower incidence of hospital infections and necrotizing enterocolitis (p = 0.243; p = 0.286).

CONCLUSION

It is safe to recommend initiation of breastfeeding for VLBW infants even after the 28th w of PCA if tolerated. Raw human milk not only reduces feeding intolerance but ameliorates mortality and serious morbidities such as ROP and IVH.

ABS 47

RAW HUMAN MILK AND EXCLUSIVE BREAST-FEEDING IMPACT ON HEALTH CARE SYSTEM COSTS

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BACKGROUND AND AIMS

Preterm human milk is a valuable natural resource, promotes health, prevents infant and childhood disease, and saves health care costs. The purpose of the study was to investigate the effect of initially treating preterm infants with raw human milk and afterwards breastfeeding on health care system costs.

METHODS

This is a prospective observational matching study. 480 infants born before the 32nd week of gestational age and admitted to the Neonatal Intensive Care Unit from the 1st of November 2011 to the 1st of September 2013 were enrolled. 240 neonates initially fed with their mother's milk and afterwards breastfed (cases) were matched to 240 infants initially treated with banked donor milk and afterwards with a preterm formula (controls).

RESULTS

Survival rates were statistically higher when infants were raw-human milk fed and afterwards breastfed (p = 0.026). Cost of length of stay in NICU as well as cost of enteric and parenteral feeding were higher when infants were not treated with breast milk from their own mothers, although differences concerning parenteral feeding were not statistically significant (p = 0.007; p = 0.007; p = 0.094, respectively).

Total cost spent for antibiotic/antifungal drugs administration in NICU for controls was four times higher than that spent for raw-human milk fed ones (€ 1,261.022 vs € 323.606). Total defined daily dose (DDDs) of antibiotic/antifungal drugs per 1,000 days of hospitalization (DOH) were higher in controls compared to cases (35.33/1,000 vs 30.16/1,000 DDDs per 1,000 DOH). After hospital discharge, at the age of 8 months, infants who were fed with formula were 1.6 times more likely to have been visited for a viral infection in a hospital or by a pediatrician (p = 0.017).

CONCLUSION

Treating infants with raw human milk and promoting breastfeeding has been found to diminish in a statistically significant way health care system costs.

ABS 48

PRENATAL ULTRASOUND EXAMINATION OF NEONATAL CRANIOSPINAL AND CRANIOFACIAL MALFORMATIONS

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BACKGROUND AND AIM

The craniospinal and craniofacial malformations discovered in newborns are relatively common malformations, occurring with a prevalence rate of 0.5%, approximately. The aim of our analysis is to examine the effectiveness of the prenatal ultrasound diagnosis.

METHODS

During the study the clinical data of 7 years (2006-2012) of the 1st Department of Obstetrics and Gynecology was processed, i.e. data of 197 newborns with craniospinal and craniofacial malformations, and the prenatal ultrasound and postnatal clinical data of their 291 different malformations. The patients were divided into three groups. The first group (I) contained patients whose prenatal ultrasound and postnatal test results showed complete agreement.

The patients in the second group (II) were those for whom the postnatally found malformation was only partially recognized prenatally. In case of the patients of the third group (III), prenatal sonography failed to detect the craniospinal and craniofacial malformations discovered in postnatal examinations. We examined separately the chromosome-associated malformations, disorders occurring as part of a multiplex malformation.

RESULTS

In cases of newborns born with craniospinal and craniofacial malformations, the prenatal ultrasound diagnosis in 77/197 patients (39.1%) fully agreed with the postnatal test results, in 29/197 cases the malformations were partially diagnosed (14.7%), and in 91/197 cases the craniospinal or craniofacial abnormalities were not detected at all (46.2%). The craniospinal and craniofacial malformations were not associated with abnormalities of other organs in 127 cases; among them, the results of prenatal ultrasound of 57 newborns (45%) fully agreed with the postnatal test results, in 20 newborns (16%) the malformations were partially diagnosed prenatally, and in 50 cases (39%) the abnormalities were diagnosed prenatally. The craniospinal and craniofacial malformations occurred in 59 cases as part of multiplex malformations (32%), in 19 cases the prenatal diagnosis fully agreed, in 9 newborns (15%) the malformations were partially recognized, and in 31 newborns (53%) the abnormalities were not diagnosed prenatally. In 11 newborns the craniospinal and craniofacial malformations occurred in association with chromosomal disorders, in 4 cases 18-trisomy, in 2 cases 21-trisomy, and in 5 cases other chromosomal disorders occurred.

CONCLUSIONS

Our results demonstrate that prenatal ultrasound examination plays an important role in the diagnosis of the craniospinal and craniofacial malformations. In almost 40% of the cases the postnatally diagnosed craniospinal and craniofacial malformations agreed with the prenatal diagnosis of fetal malformations.

ABS 49

NASAL CONTINUOUS POSITIVE AIRWAY PRESSURE (nCPAP) OR O_2 THERAPY TO TREAT TRANSIENT TACHYPNEA OF THE NEWBORN (TTN)? A COMPARATIVE RETROSPECTIVE NON-RANDOMIZED STUDY

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BACKGROUND

TTN is a common reason for NICU admission among term and late preterm infants. Conventional treatment involves supplemental O_2, withholding enteral feeding and i.v. fluids. To date, nCPAP is not a standardized therapy for TTN.

AIM

To evaluate if nCPAP for TTN reduces length of NICU stay vs O_2 administration.

METHODS

Clinical records of 37-41 GA infants consecutively admitted at "A. Beclere" and "San Giovanni Calibita – Fatebenefratelli" Hospital NICUs were analyzed. Infants with clinical and radiological signs of TTN, negative CRP in the first 2 blood tests, negative admission blood culture and no history of chorioamnionitis were included. NCPAP or O_2 therapy was at neonatologist's discretion. In all infants, FiO_2 was adjusted to keep SpO_2 values 90-95%. Data were analyzed according to univariate analysis, while results were adjusted for BW and GA according to multivariate analysis.

RESULTS

82 infants (Jan 2012-Dec 2013) were included (GA 38.6 wks, BW 3,320 g, M 70.7%). 42 received nCPAP, 40 O_2 therapy. NCPAP was started within the first 2 h of life and lasted 25.1 ± 23 h. No infant treated with nCPAP needed O_2 after discontinuation of non invasive ventilation. In the O_2 group, O_2 therapy lasted 48.3 ± 37 h. Univariate and multivariate analyses showed a reduction of NICU stay for nCPAP-treated infants (2.2 [2%] vs 4.4 [2.6%] days; adj-beta -1.9 [-2.9;-0.9]; $p < 0.001$), a shorter duration of O_2 therapy (0 vs 37 [30%] h; adj-beta -30 [-42; -19]; $p < 0.001$), and a lower FiO_2 max (25.8 [5.3%] vs 31.2 [10.7%]; adj-beta -5.4 [-9.2; -1.5]; $p = 0.006$). PNX was comparable ($p = 0.153$).

CONCLUSIONS

Our analysis, despite limitations, shows that nCPAP in infants with TTN reduces the duration of NICU stay and may represent the best therapeutic approach.

ABS 50

RENAL AND HEPATIC FUNCTION IN IUGR PREPUBERTAL CHILDREN

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BACKGROUND
Intrauterine growth restriction (IUGR) is associated with later development of biochemical and metabolic abnormalities that might cause possible dysfunction of vital organs in later life.
AIM
To investigate renal and hepatic biomarkers in children born IUGR *versus* children born appropriate for the gestational age (AGA).
MATERIALS AND METHODS
46 full-term IUGR (17 male and 29 female) and 52 healthy AGA (26 male and 26 female) children participated in this one-center, case-control study protocol. Informed consent was signed by parents. All participants had normal weight and were prepubertal (< 10 years old), native Greeks. Both IUGR and AGA were subdivided in groups according to gender and age (< 5 years old and > 5 years old). Serum creatinine, AST and ALT levels were measured.
RESULTS
Creatinine z-scores concentrations were significantly higher in IUGR female subjects < 5 years old than the respective female control subjects. AST z-scores concentrations were significantly higher in all IUGR subjects < 5 years old than the respective IUGR subjects > 5 years old and than the respective control subjects < 5 years old ($p < 0.05$). ALT z-scores concentrations were significantly higher in male IUGR < 5 years old than in respective male control subjects.
CONCLUSIONS
The higher concentrations of the tested compounds that IUGR subjects < 5 years old exhibit might indicate renal dysfunction in female IUGR and hepatic dysfunction in all IUGR subjects < 5 years old, which have their origin in fetal life due to intrauterine restriction.

ABS 51

SYSTEMIC MASTOCYTOSIS – REPORT OF A RARE CONDITION IN NEWBORN

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BACKGROUND
Systemic mastocytosis is very rare in children and is characterized by infiltration of mast cells in different tissues including bone marrow, skin, gastrointestinal tract, liver, and spleen.
CASE REPORT
We present a case of congenital aggressive mastocytosis with a bad prognosis and outcome.
A 4-hour-old male newborn was referred to our department because of skin rash, hepatosplenomegaly and suspected neonatal infection.
The skin was very dry, erythematosal, squamous with several bullous lesions containing clear fluid. Hepatosplenomegaly was present from birth (liver 8 cm, spleen 10 cm).
During the hospital stay there was significant progression in hematological disturbances with hyperleucocytosis up to 56.7 x 10^9/l, anemia and thrombocytopenia. The hepatosplenomegaly also progressed.
Skin biopsy showed infiltrates of uniform mononucleated cells below the epidermis, immunohistochemicaly positive for CD25, CD117, CD68 and mast cell tryptase. Serum triptase was significantly elevated.
The diagnosis of systemic mastocytosis was made according to the skin biopsy result and clinical signs of affection of extracutaneous organs.
The manifestation of the skin lesions changed from multiple tense bullas that ruptured spontaneously, to dry, thin, hyperpigmented and wrinkled skin giving the child appearance of an old man.
Treatment with H1 blockers, cromolyne sodium and leucotrien antagonist was provided.
Despite the treatment there was progression of the disease with abdominal distension, massive appearance of new bullae and progressive respiratory insufficiency, so the patient died at age of 2 months.
CONCLUSION
Systemic mastocytosis in neonates is extremely rare. Worldwide experience and available data in the literature are very limited.

ABS 52

TRANSFUSION-RELATED ACUTE LUNG INJURY IN NEONATES

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BACKGROUND
Transfusion-related acute lung injury (TRALI) in newborns is life-threatening and potentially fatal, which largely remains under-diagnosed and under-reported.
CASE REPORTS
The first case considers a newborn male GA 28 w born with caesarian section, due to placental abruption and PROM. He was admitted to our NICU for prematurity and RDS and was transfused with fresh frozen plasma (FFP) and packed red blood cells (PRBCs). One hour after the transfusion, under administrated O_2, he rapidly exhibited severe deteriorating respiratory failure and, as a result, he was intubated and ventilated with high frequency oscillated ventilation (HFOV). The chest radiography was typical of pulmonary edema in the absence of evidence of volume overload or cardiac dysfunction.
The second case concerns a newborn female GA 39 w. During the investigation of possible inborn errors of metabolism, she exhibited disseminated intravascular coagulation (DIC) and she was transfused several times with FFP, PRBCs, PLT and cryoprecipitate. Four hours after the last blood component transfusion, the newborn exhibited abrupt deterioration of lung function and fresh lung infiltrations in the chest radiograph. The neonate admitted to our NICU was initially under conventional mechanical ventilation and, eventually, under HFOV.
Despite of supportive therapy, both neonates died in 2 and 4 days, respectively, after the presence of TRALI.
CONCLUSIONS
The cases presented above indicate the importance of TRALI after transfusion in high-risk infants. There is a need of recording these cases, in order to base the transfusion of blood products on strict medical criteria and increase the clinical suspicion in early diagnosis of TRALI complication.

ABS 53

EARLY-ONSET NEONATAL INFECTION IN LITHUANIA

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AIM
The aim of the study was to analyze the etiology of early-onset neonatal infection, the risk factors, the forms and the time of its manifestation, and the tactics and outcomes of antibacterial treatment.
METHODS
During the prospective investigation, cases of newborns with diagnosed early-onset infection and initial treatment in 2011 were analyzed. Four in-patient departments of Lithuania took part in the investigation.
RESULTS
In total, 18,778 newborns were included in the investigation. During the studied period, 209 cases of early-onset neonatal infection (EONI) were diagnosed: unspecified early-onset infection (168 [80.4%]) cases, pneumonia (20 [9.6%]), and early-onset sepsis (EOS) (21 [10%]) cases. Group B Streptococcus (GBS) was responsible for 40% of microbiologically confirmed cases of sepsis. A negative blood culture was found in 11 newborns (52.4%) treated for sepsis. In all the cases, early-onset neonatal infection was empirically treated with penicillin and gentamicin. The duration of antibacterial treatment varied between in-patient departments in Lithuania. During the studied period, 51.5% of women were screened for GBS colonization during pregnancy, and 21% of them had a positive vaginal culture for GBS; 78% of GBS carriers received intrapartum prophylactic antibiotics.
CONCLUSIONS
The incidence of culture-confirmed early neonatal sepsis in Lithuania is similar to that indicated in the scientific literature, and is decreasing. Routine antenatal screening for GBS vaginal carriage in pregnant women is not universally performed in Lithuania. The duration of antibacterial treatment for early-onset neonatal infection should be standardized in Lithuania.

ABS 54

LONG-TERM TRENDS IN SURVIVAL AND CEREBRAL PALSY AMONG INFANTS BORN PREMATURELY (< 31 WEEKS) IN NORTHWEST GREECE

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BACKGROUND
In recent decades survival of very preterms (VPT) has improved dramatically. Prematurity is a major risk factor for cerebral palsy (CP).
AIM
To investigate the long-term trends of survival and CP rates among VPT cared for in the NICU at the Ioannina University Hospital – the tertiary perinatal centre for Northwest (NW) Greece.
METHODS
Retrospective study which includes the VPT with gestational age (GA) 24-31 weeks who were cared for over a 24-year period: 1989-2012. The survival rates were recorded from medical records and CP cases from the neonatal follow-up program. Changes in survival and CP rates were evaluated in three consecutive periods; A: 1989-1996, B: 1997-2004 and C: 2005-2012.
RESULTS
206 VPT were cared for in period A, 205 in B and 232 in C. Survival rates were 59.7%, 73.2% and 79.3% ($p < 0.0001$) and incidence of CP was 17.1%, 6.6% and 6% ($p < 0.01$) respectively.
CONCLUSION
Survival of VPT in NW Greece has significantly improved followed by a major decrease in the prevalence of CP, particularly in those with GA < 28 weeks (**Tab. 1**).

Table 1. Survival and cerebral palsy (CP) rates according to gestational age (GA).

Study period	GA 24-28 weeks			GA 28+1-31 weeks		
	n	Survival[a] % (n)	CP[b] % (n)	n	Survival[b] % (n)	CP[c] % (n)
A	54	16.7 (9)	66.7 (6)	152	75 (114)	13.1 (15)
B	77	42.8 (33)[d]	12.1 (4)[e]	128	91.4 (117)[e]	5.1 (6)[f]
C	95	66.3 (63)[d]	14.5 (9)	137	88.3 (121)	1.6 (2)

A: 1989-1996, B: 1997-2004 and C: 2005-2012.
A vs B vs C: [a]$p < 0.0001$, [b]$p < 0.001$, [c]$p < 0.01$. A vs B: [e]$p < 0.001$, [d]$p < 0.01$, [f]$p < 0.05$. B vs C: [d]$p < 0.01$

ABS 55

NEONATAL RESUSCITATION TRAINING COURSES. FROM PRACTICE TO RESEARCH

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BACKGROUND AND AIMS
Neonatal Resuscitation Training Courses (NRTC) have a positive impact on patient outcome. NRTC can also offer valuable information for trainers.
The aim of this study was to analyse the differences between trainees' perception and trainers' assessment related to reanimation tasks.
METHODS
Prospective observational study of 4 NRTC. Instructors performed a standardized algorithm assessment of resuscitation skills during simulation training (based on guidelines of Spanish Neonatal Society). Trainees filled out a survey and they rated the difficulty perceived about the techniques and resuscitation sequence, before and after the course.
RESULTS
74 trainees participated.
Trainees' survey: 34% previously attended NRTC, however 59% have performed resuscitation maneuvers in the delivery room, the most common of them being positive pressure ventilation (PPV).
Trainees' rating: the perception of difficulty in the sequence and techniques used in resuscitation decreased significantly after the course, especially regarding PPV and chest compression to ventilation (C/V) coordination.
Trainers' assessment: 77.5% of trainees carried out ventilation properly (fewer than expected). 48.5% started maneuvers in the recommended time (in an asphyxiated infant scenario, 73% started before 30-seconds interval). In 70.2% of cases, the C/V rate was asynchronous.
CONCLUSIONS
There are some differences between trainees' perception and trainers' assessment. In a simulated scenario, some tasks are not performed according to guidelines, and this could also happen in a real scenario. In our experience, the evaluation of the resuscitation tasks by trainers and trainees may help to improve training programmes as well as to promote further investigations on neonatal resuscitation guidelines.

ABS 56

SURVIVAL RATES IN PREMATURE INFANTS DEPEND ON INCLUSION CRITERIA

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BACKGROUND
Advances in perinatal care have improved the rates of survival for preterm babies. However, available data on survival rates display a wide variation.
AIM
To evaluate whether the degree of variation in survival rates in premature infants might reflect a denominator bias.
METHODS
This is a single centre (level III) prospective cohort study, over a period of 6 years (2008-2013). We included all preterm births between 22 and 31^{+6} weeks of gestation without major congenital anomalies.
We analysed and compared survival to hospital discharge with three different denominators: all births including stillbirths, live births and neonatal intensive care unit (NICU) admissions.
RESULTS
783 births less than 32 weeks of gestational age were included in this study. 570 patients survived to hospital discharge. Survival rates with these 3 denominators were: all births 72.8%, live births 82.3%, and NICU admissions 84%.
According to gestational age, there were no significant differences in survival rates between live birth and NICU admission denominators, except at 23 weeks gestational age ($p < 0.001$). In this group, only 5 patients survived to hospital discharge, and survival rates were 25% of live births (20 patients) and 38.4% of NICU admissions (13 patients).
At all gestational ages, there were significant differences in survival rates between all births and the other two denominators ($p < 0.005$).
CONCLUSIONS
Denominator bias can affect reported survival rates to hospital discharge, especially in more immature preterm babies.
Publications should report these three survival rates, or at least the inclusion criteria should be clearly identified.

ABS 57

RISK FACTORS ASSOCIATED WITH INTRAPARTUM STILLBIRTHS IN PREMATURE INFANTS

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BACKGROUND AND AIMS
Prematurity is one of the most important causes of perinatal mortality and stillbirths. Few studies have analysed risk factors associated with intrapartum stillbirths (IS) in preterm babies.
The aim of this review was to analyse potential risk factors associated with IS in infants born at less than 32 weeks gestational age.
METHODS
This is a single centre (level III) cohort study, over a period of 6 years (2008-2011 retrospective and 2012-2013 prospective). We included all preterm births between 22 and 31^{+6} weeks of gestation without major congenital anomalies. We collected maternal and pregnancy characteristics, perinatal interventions and some neonatal data.
Multivariable logistic regression analysis was used to identify independent risk factors associated with IS ($p < 0.05$).
RESULTS
66% of all stillbirths were preterm infants between 22 and 31^{+6} weeks gestational age. 783 births < 32 weeks of gestation were included in this study. There were 91 stillbirths (11.6%), 24 of them were IS (26.3% of all stillbirths). Both percentages decreased when gestational age increased. 75% of IS were preterm infants ≤ 25 weeks.
Lower gestational age ($p = 0.045$), pathologic foetal echography ($p = 0.009$), assisted reproductive techniques (ART) ($p = 0.045$) and no administration of antenatal steroids ($p < 0.001$) were independent risk factors associated with intrapartum death.
CONCLUSIONS
Most stillbirths occur in preterm babies.
In this study, lower gestational age, pathologic foetal echography, ART and no administration of antenatal steroids are risk factors associated with IS.
In our opinion, IS in preterm babies need more analysis to improve prenatal care and preterm survival.

ABS 58

URINE METABOLOMIC ANALYSIS IN NEONATES WITH LATE-ONSET SEPSIS. PRELIMINARY RESULTS

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BACKGROUND AND AIMS
Late-onset sepsis (LOS) is a major morbidity and mortality cause especially in preterm neonates. To date, most biomarkers evaluated in LOS lack high diagnostic accuracy hindering early and prompt initiation of treatment. The aim of the study was to evaluate the metabolic profile of neonates with LOS using liquid chromatography-tandem mass spectrometry (LC-MS/MS) and determine the possible value of LC-MS/MS urine metabolomics as an early diagnostic tool in LOS.
METHODS
Urine samples were collected at the time of initial diagnosis of LOS from 4 neonates with possible LOS and 5 ones with confirmed LOS (all due to *Klebsiella spp.*) as well as from 9 neonates without sepsis (controls). Urine metabolites were assessed using a newly developed sensitive LC-MS/MS. Data were analyzed with Principal Component Analysis (PCA) and Partial Least Square-Discriminant Analysis (PLS-DA) using the SIMCA 13.0 statistics software.
RESULTS
The PLS-DA model indicated a clear separation between septic neonates and controls. In addition, the model was able to differentiate among neonates with confirmed and probable sepsis as well as controls. The possible sepsis samples in the PLS-DA model were distributed closer to those of controls. Statistical models were controlled for validity with permutation tests. Multivariate statistical analysis (S-plots, VIP) and ANOVA showed variations in the metabolic profile mainly involving biogenic amines, certain amino acids and carbohydrate metabolites.
CONCLUSIONS
Preliminary results showed that neonates with LOS have a different metabolic profile from those without sepsis allowing their discrimination with the use of LC-MS/MS-based urine metabolomic analysis.

ABS 59

URINE METABOLOMIC ANALYSIS IN PRE-TERM NEONATES WITH NECROTIZING EN-TEROCOLITIS. PRELIMINARY RESULTS

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BACKGROUND AND AIMS
Necrotizing enterocolitis (NEC) is the leading cause of gastrointestinal morbidity and mortality in preterm infants. The aim of the study was to evaluate whether liquid chromatography-tandem mass spectrometry (LC-MS/MS) based metabolomic analysis could be used for diagnosis of NEC.
METHODS
Urine samples were collected at the time of initial diagnosis from 11 preterm neonates with suspected (n = 4) and definite NEC (n = 7). Eight preterm neonates without NEC or sepsis served as controls. Urine metabolites were assessed using a newly developed sensitive LC-MS/MS. Principal Component Analysis (PCA) and Partial Least Square-Discriminant Analysis (PLS-DA) were used for the data evaluation (SIMCA 13.0 statistics software).
RESULTS
The PLS-DA model was able to clearly differentiate between neonates with NEC and those without the disease. Furthermore, the model indicated a clear separation among neonates with suspected and definite NEC as well as controls. Applied statistical models were controlled by permutation testing and they were proved valid. Multivariate statistical analysis (S-plots, VIP) as well as ANOVA test showed that variations in the metabolic profile involved mainly biogenic amines, certain amino acids and carbohydrate metabolites.
CONCLUSIONS
Preliminary results show that LC-MS/MS metabolomic analysis of urine could be used for the discrimination of neonates with NEC showing differences in the metabolite profile compared to those without the disease.

ABS 60

THE PROPRE-SAVE STUDY: THE EFFECTS OF PROBIOTICS AND PREBIOTICS ALONE OR COMBINED (SYNBIOTICS) ON PREVENTION OF NECROTIZING ENTEROCOLITIS IN VERY LOW BIRTH WEIGHT INFANTS: A MULTICENTER, RANDOMIZED, CONTROLLED TRIAL

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AIM

To investigate the efficacy of probiotic and prebiotic, alone or combined (synbiotic) on prevention of necrotizing enterocolitis (NEC) in very low birth weight (VLBW) infants.

STUDY DESIGN

A prospective, randomized, controlled trial (RCT) was conducted at five neonatal intensive care units (NICUs) in Turkey. Four-hundred VLBW infants were assigned to four groups including one placebo (control) group. Study groups were given probiotic (*Bifidobacterium lactis*), prebiotic (inulin) or synbiotic (*Bifidobacterium lactis* plus inulin) added to breast milk or formula until discharge or death, at a maximum of eight weeks, whichever came first. The primary outcome was NEC (Bell's Stage ≥ 2).

RESULTS

There were 100 infants in each group.

The rate of NEC was lower in probiotic (2.0%) and synbiotic (4.0%) groups compared to prebiotic (12.0%) and placebo (18.0%) groups ($p \leq 0.001$). The time to reach full enteral feeding was faster ($p < 0.001$), the rate of clinical nosocomial sepsis was lower ($p = 0.004$), NICU stay was shorter ($p = 0.002$), and mortality rate was lower ($p = 0.003$) in infants receiving probiotic, prebiotic or synbiotic.

The use of antenatal steroid (OR = 0.5, 95% CI = 0.3-0.9) and postnatal probiotic (alone or in synbiotic) (OR = 0.5, 95% CI = 0.2-0.8) have decreased the risk of NEC, while maternal antibiotic exposure has increased this risk (OR = 1.9, 95% CI = 1.1-3.6).

CONCLUSIONS

In VLBW infants, probiotic (*Bifidobacterium lactis*) and synbiotic (*Bifidobacterium lactis* plus inulin) seem to be preventive for NEC, but not prebiotic (inulin) alone.

ABS 61

INDIVIDUALIZED MATERNAL MILK FORTIFICATION BASED ON MOTHER'S MILK ANALYSIS. EFFECT ON NUTRITIONAL INTAKE AND EARLY NUTRITIONAL STATUS

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BACKGROUND AND AIMS

The effectiveness of standard fortification of maternal milk (MM) in supporting appropriate protein intake of preterm neonates (PN) has been debated due to the high variability of nutrient content of MM. This study aimed at evaluating the effect of individualized MM fortification based on MM analysis and targeting the recommended daily protein intake on nutritional intake, nutritional status, and serum biochemistry of PN.

SUBJECTS AND METHODS

In a prospective randomized study, PN (GA < 32 weeks) fed their own mothers' milk were randomly assigned into the standard fortification group (SFG) and the individualized fortification group (IFG) in which fortification was based on MM analysis targeting to a protein intake of 3.5-4.5 g/kg/d. The intervention started when oral feeding reached the 100 ml/kg/d (T1) and lasted until a body weight of 2,000 g (T2). Nutritional intake, nutritional status and serum biochemistry were assessed weekly during the intervention period and at 40 weeks post-conceptionally (T3).

RESULTS

30 PN (14 and 16 in the SFG and IFG, respectively) were studied. In the IFG, mean protein and carbohydrate intake were lower, fat intake higher, and energy intake comparable to the SFG. The increase of weight (g/kg/d), length (cm/week), and HC (cm/week) during the intervention period as well as the z-scores of anthropometry and serum biochemistry on T1, T2, and T3 were comparable between the two groups.

CONCLUSION

Individualized MM fortification, based on mother's milk analysis and targeting the recommended

protein intake, resulted in lower protein intake without any significant effect on energy intake, nutritional status, and serum biochemistry.

ABS 62

LESS INVASIVE SURFACTANT ADMINISTRATION. FEASIBILITY STUDY

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BACKGROUND AND AIMS

Surfactant replacement is one of the main treatments for RDS in preterms. Until recently, surfactant administration required intubation and Positive Pressure Ventilation (PPV). Even short periods of endotracheal Mechanical Ventilation (eMV) can induce lung injury. New techniques to apply surfactant in spontaneous breathing infants (LISA) can effectively avoid eMV.

We perform a prospective controlled observational study to assess the efficiency and feasibility of LISA in < 32 w GA infants supported with nCPAP and compare short and long term outcomes with the INSURE method applied in historical controls.

METHODS

Surfactant administration technique has been modified in our NICU by using a specifically designed surfactant replacement tube, placed in the trachea without Magill forceps use (**Fig. 1**). We collected clinical data, details of the procedure and respiratory outcomes in study group and historical INSURE controls. This study was conducted with the approval of the Ethics Committee. Written consent was obtained.

RESULTS

We included 20 infants in the study group and 30 controls (**Tab. 1**). Surfactant was effectively administered (20% of FiO_2 reduction) in 85%. It was well tolerated without any major complication. eMV support in the first 3 days of life decreased in study group. There was a reduction in the BPD rate (38.7% INSURE to 18.7% LISA).

CONCLUSION

LISA is a feasible and effective technique for surfactant administration that reduces eMV exposure in preterm infants.

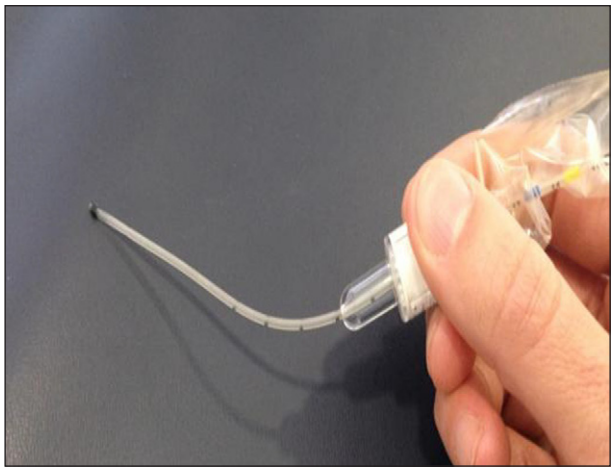

Figure 1. The specifically designed surfactant replacement tube used in the study.

Table 1. Main results in the LISA group and in the INSURE (control) group.

	LISA (n = 20)	INSURE (n = 30)
GA (median)	28^{+4} w	29^{+6} w
Age (at procedure)	14 h	11 h
≥ 2 attempts	15%	-
Bradycardia (> 10 sec)	15%	-
PPV	15%	100%
FiO_2 (before procedure)	38%	40%
eMV (> 1 h), first 3 days	50%	73%
BPD rate	18.7%	38.7%

PPV: Positive Pressure Ventilation; eMV: endotracheal Mechanical Ventilation.

ABS 63

SYNCHRONIZED NON-INVASIVE VENTILATION IN PRETERM. OUR EXPERIENCE

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BACKGROUND AND AIMS

Avoiding mechanical ventilation (MV) is the primary objective in the preterm respiratory management. NCPAP stabilization from delivery with selective surfactant administration is a standard of care in most neonatal units. Nasal

intermittent positive pressure ventilation (nIPPV) has been shown to increase the beneficial effects of nCPAP in prevention of extubation failure and seems to be more effective when synchronization is achieved. We have been using a neonatal nasal ventilator with a flow synchronization sensor (**Fig. 1**) in our unit since 2004. Our aim was to review our experience in synchronized non-invasive ventilation in preterms.

METHODS

A retrospective review of SNIPPV indications in preterms < 32 weeks and their respiratory outcome from January 2013 to August 2014. The study was conducted with the approval of the Ethics Committee.

RESULTS

There was an increased use in SNIPPV support from 9% in 2013 to 25% in 2014 due to improvements in flow sensor synchronization and more anatomic interface design. We included 24 patients. Median GA was 27^{+5} w. Indications were CPAP failure (63%) and elective SNIPPV extubation (37%). Median age was 25 days and 98.8% was previously exposed to MV. It was successful in 75% (no MV in 72 h).

The reintubation rate decreased from 39% in 2013 to 29% in 2014.

CONCLUSIONS

SNIPPV is a useful method to avoid reintubation in preterms. Technological improvement in neonatal non-invasive ventilators will extend their use. We are actually focusing our work on implementing SNIPPV in the initial phase of RDS, when there is more vulnerability to ventilatory induced injury.

Figure 1. Neonatal nasal ventilator with a flow synchronization sensor.

ABS 64

RESPIRATORY MANAGEMENT IN PRETERMS. ARE WE LESS INVASIVE NOW THAN 10 YEARS AGO?

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BACKGROUND AND AIMS

There is a trend in the last 10 years to implement a less invasive respiratory support in preterms, due to the important association between endotracheal Mechanical Ventilation (eMV) and BPD development.

We introduced in our unit prophylactic nCPAP support from delivery with early selective surfactant use and prompt nCPAP extubation in 2004.

Our aim was to assess improvements in non-invasive respiratory management over a 10 years period and analyze outcomes in the last 2 years.

METHODS

Observational retrospective comparison of data of respiratory management and outcomes in preterms < 32 w born in the period 2004-2006 with those born in the period 2012-2013.

This study was conducted with the approval of the Ethics Committee.

RESULTS

We included 562 patients. The rate of patients managed without intubation at delivery and in the first 2 h of life increased in 2012-13 (**Fig. 1**). In our review, being ventilated more than 2 h has a 9.8 increased risk for BPD when controlling for GA (p = 0.01, CI = 2.3-37.3). There is a significant less Survival-Free BDP (SF-BPD) if ventilation occurs in the first 2 h of life compared to being ventilated later, especially in less than 26 w: SF-BPD 6.2% eMV in the first 2 h vs 20% 2-72 h and 37% > 72 h. The SF-BPD in 26-29 w was 37.5% eMV in the first 2 h, 41.7% 2-72 h, 57.8% > 72 h and 94.4% no eMV.

CONCLUSION

We are on the way of a non-invasive respiratory approach and should continue working on it, trying to avoid Ventilator Induced Lung Injury especially in the extremely preterms in their first hours of life.

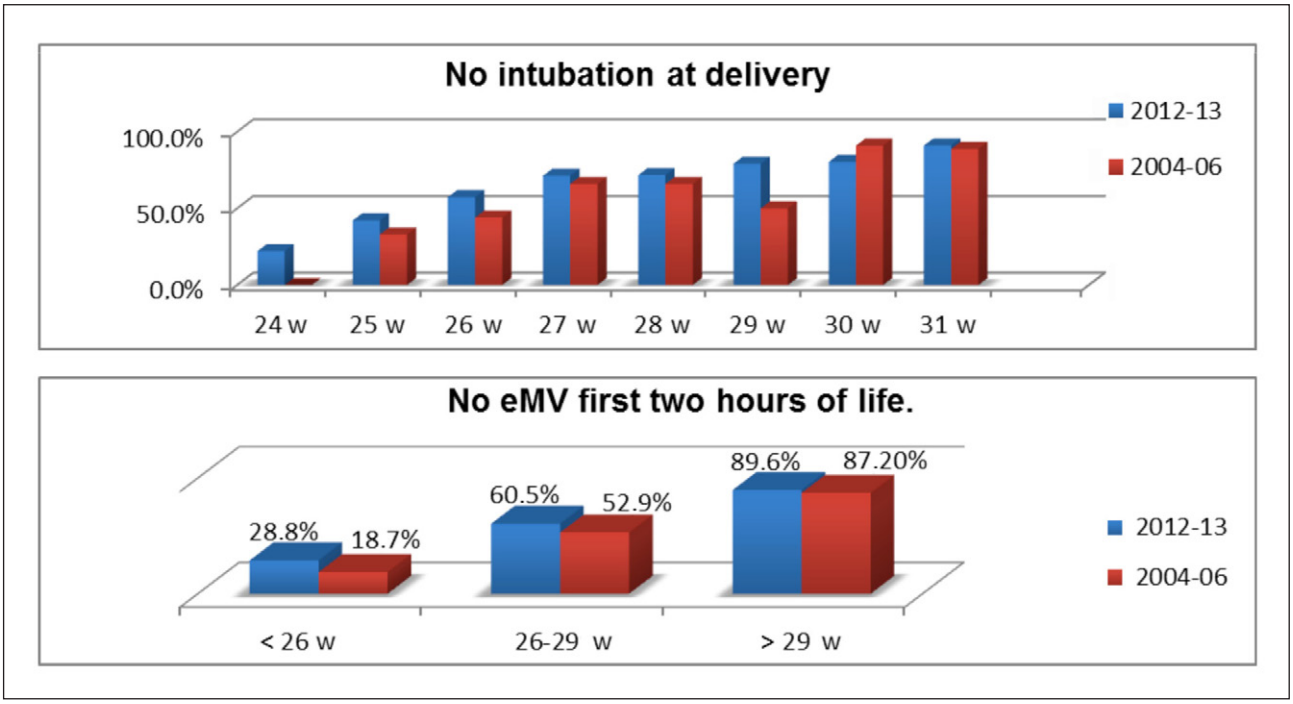

Figure 1. Respiratory management in preterms: comparison of data of respiratory management and outcomes in preterms < 32 w born in the period 2004-2006 with those born in the period 2012-2013. eMV: endotracheal Mechanical Ventilation.

ABS 65

KLEBSIELLA INFECTION IN AN EUROPEAN SURVEILLANCE NEONATAL NETWORK (neonIN: http://www.neonin.org.uk)

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BACKGROUND AND AIMS

Klebsiella spp. are a common cause of hospital-acquired, Gram-negative infections within neonatal units (NNUs) and responsible for outbreaks. This study describes characteristics of invasive *Klebsiella spp.* infections across European countries participating in a neonatal infection network.

METHODS

NeonIN is a web-based surveillance database for culture proven neonatal infections. *Klebsiella spp.* cases from 2004-2014 were extracted. Early-onset sepsis (EOS) was defined as occurring within 48 hours of birth.

RESULTS

158 episodes from 33 NNUs (involving 149 neonates) were reported. The incidence and prevalence by country is shown in **Tab. 1**, while details of the pathogens and the demographics are in **Tab. 2**. Overall, *K. pneumoniae* was the commonest subspecies (59, 37.3%) followed by *K. oxytoca* (55, 34.8%) and *K. aerogenes* (22, 14.0%). There were 22 reports of non-speciated *Klebsiella*. EOS was rare

Table 1. Incidence and prevalence of *Klebsiella spp.* infections by country.

	UK	Greece	Estonia	p-value
Number of Neonatal Units	20	7	5	-
Total number of infection episodes (IE)	3,050	136	163	-
Incidence of IE (NNU admissions)	39.2/1,000	63/1,000	50.3/1,000	< 0.001
Overall % of GNS (of all IE)	18.7	41.2	26.4	< 0.001
Incidence of GNS (NNU admissions)	7.3/1,000	26.0/1,000	13.3/1,000	< 0.001
% of *Klebsiella spp.* infection (of all GNS)	22.0	35.7	30.2	0.02
Incidence of *Klebsiella spp.* (NNU admissions)	1.6/1,000	9.3/1,000	4.0/1,000	< 0.001

GNS: Gram-negative sepsis.

Table 2. Details of isolated pathogens and demographics.

	UK (n = 125)	Greece (n = 20)	Estonia (n = 13)	p-value
Predominant *Klebsiella spp.* (n [%])	*K. oxytoca*: 40 (32.0%)	*K. pneumoniae*: 12 (60.0%)	*K. oxytoca*: 9 (69.2%)	-
Sex (male)	65 (53%)	14 (70%)	5 (38.5%)	0.173
Gestational age at birth (weeks)	26 (25-30)	33.5 (28-36.5)	29 (24-35)	< 0.001
Birth weight (g)	821 (666-1,140)	1,730 (1,000-2,230)	1,480 (846-2,740)	< 0.001
PNA (days)	34 (16-69)	23.5 (9.5-70.5)	15 (10-50)	0.257
cGA (weeks)	32.7 (26.7-39)	37.4 (34.9-44)	36.7 (31-38.1)	0.011
Treated for meningitis (n [%])	13 (10.4%)	1 (5%)	1 (7.5%)	0.920

Median (IQR).
PNA: post-natal age at the time of infection, cGA: corrected gestational age at the time of infection.

(3 episodes, all *K. pneumoniae*). *Klebsiella spp.* were predominantly isolated from blood (136, 86.1%) and were isolated together with other pathogens in 15% (24) of cultures. Median CRP was 102 mg/dl (IQR 30-145). Amongst the subspecies *K. aerogenes* infection occurred in more premature neonates (median 25 vs 28 weeks gestation-age, p = 0.05). Resistance to aminoglycosides (21/126, 16.7%) and 3rd generation cephalosporins (11/88, 12.5%) was detected while all tested isolates appeared susceptible to quinolones (62/62, 100%) and carbapenems (67/67, 100%).

CONCLUSIONS

Klebsiella spp. infections are an important cause of LOS in mainly very preterm infants. The epidemiology varies by country; knowledge of local antibiotic susceptibility is therefore required to guide empiric LOS therapy and to direct effective infection-control measures.

ABS 66

EPIDEMIOLOGY OF NEONATAL BACTEREMIA IN GREECE – DATA FROM A EUROPEAN SURVEILLANCE NETWORK (neonIN: www.neonin.org.uk)

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BACKGROUND AND AIMS

Neonatal sepsis carries significant morbidity and mortality. Data on the epidemiology of bacteremia leading to sepsis in Greece is limited despite knowledge that the prevalence of

healthcare-associated infections, antimicrobial consumption and multi-drug resistant organisms is among the highest in Europe. This study aims to describe the epidemiology of bacteremia in Greek neonatal-units (NNUs), patients' characteristics and antibiotic-resistance profile as recorded in neonIN.

METHODS

NeonIN is a web-based surveillance database for culture proven neonatal infections. Cases of positive blood cultures between January 2012 and March 2014 were extracted. Repeated growth within 7 days was considered the same episode. Early-onset sepsis was defined as occurring within 48 hours of birth.

RESULTS

107 pathogens were isolated from 90 infants (**Tab. 1**). The commonest pathogens were Coagulase-Negative *Staphylococci* (CoNS) (46, 43.0%) followed by *Enterobacteriaceae* (31, 29.0%), of which the most common were *Klebsiella spp.* (13, 41.9%) and *E. coli* (9, 29.0%).

11/14 (78.6%) of CoNS isolates were oxacillin resistant but there was no resistance to teicoplanin or vancomycin documented. *Enterobacteriaceae* resistance to 3rd generation cephalosporins was 29.0% (9/31), to carbapenems 9.7% (3/31) and 41.9% (13/31) to at least one aminoglycoside (23.3% [7/30] to gentamicin). Enterococcal resistance to vancomycin was 16.7% (1/6 cases).

CONCLUSIONS

CoNS and *Enterobacteriaceae* are the most common bacteria isolated from hospitalised infants in Greek-NNUs. We detected high rates of resistance to 3rd generation cephalosporins and carbapenems. Continuous robust surveillance data will enable better understanding of the local epidemiology which is of critical importance for the development of evidence-based guidelines for the empiric management of sepsis in Greek NNUs.

Table 1. Demographics at time of first documented infection.

	Median (IQR)
Birth weight (g)	1,900 (1,235-2,735)
Gestational age at birth (weeks)	33 (30-37)
Postnatal age (days)	10.5 (6-29)
Sex (male) (n [%])	60 (66.67%)
Early-onset sepsis (n[%])	16/90 (17.78%)

ABS 67

CRP ELEVATION ASSOCIATED WITH A POSITIVE BLOOD CULTURE IN INFANTS PARTICIPATING IN THE neonIN SURVEILLANCE NETWORK (www.neonin.org.uk)

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BACKGROUND AND AIM

Sepsis is the commonest cause of neonatal morbidity and mortality. Clinical and laboratory findings are often non-specific. C-reactive protein (CRP) has been shown to be a useful marker in the diagnosis of neonatal sepsis but with limited data on whether different organisms causing sepsis affect it differently.

This study aims to compare maximum CRP (maxCRP) elevation within 48 hours of a positive blood culture across different categories of organisms.

METHODS

We extracted data from neonIN, a multicenter web-based surveillance database for culture proven neonatal infections. 1,397 episodes were analyzed between January 2011 and April 2014.

RESULTS

Overall patients had a median gestational age of 27 (25-31) weeks and median birth weight 910 (685-1,535) g. 828 (59.3%) were males and the median postnatal-age at infection was 13 (7-28) days. MaxCRP elevation within 48 hrs of positive blood culture was higher when Gram-negative bacteria were isolated compared to either Gram-positive bacteria ($p < 0.001$) or fungi ($p < 0.001$) (**Tab. 1**, **Fig. 1**). Spearman's rank-order correlation coefficients calculated from the overall sample for CRP elevation and postnatal-age (rho = 0.2495, p = 0.000), birth weight (rho = 0.0412, p = 0.1260) and gestational age (rho = 0.0698, p = 0.095) show no significant correlations. The same analysis was done within the subsets of Gram-positive bacteria, Gram-negative bacteria, fungi and also by specific pathogen without significant correlation.

Table 1. Median and IQR of max CRP (mg/L) within 48 h of positive blood culture by type of pathogen and gestational age.

Pathogen	Overall sample n = 1,397	GA < 32 weeks n = 1,046	GA 32-37 weeks n = 191	GA > 37 weeks n = 160
Gram -	83 (20-144)	82.5 (18-141)	64.5 (11.5-170)	93 (32-147)
Gram + without CoNS	32 (5-81)[a]	29.5 (5.9-81)[a]	30.8 (1-65)[a]	48 (7-89)
CoNS	24 (5-68)[a]	24 (4-65.3)[a]	39 (9.5-108.5)	23 (6-44)[a]
Fungi	32 (9-96)[a]	45 (9-100)	18 (11-60)	35 (8-118)

[a]p < 0.001 compared to Gram-, after Bonferroni correction for multiple comparisons; GA: gestational age; CoNS: coagulase-negative *Staphylococci*.

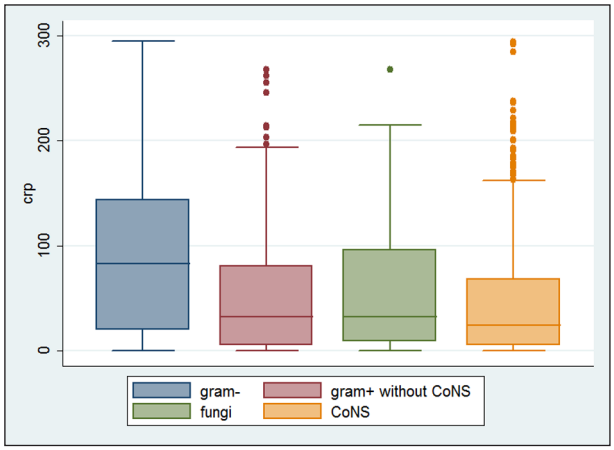

Figure 1. Maximum C-reactive protein (maxCRP) within 48 hours of positive blood culture by type of pathogen. CoNS: coagulase-negative *Staphylococci*.

CONCLUSIONS

Gram-negative pathogens are more likely to cause higher peak CRP elevation in neonates compared to Gram-positive pathogens. We identified no significant correlation between peak CRP responses and gestational age or birth weight or postnatal-age.

ABS 68

A NEWBORN BABY WITH SEVERE NON-IMMUNE NEONATAL HYDROPS AND CHYLOTHORAX – IS IT NOONAN'S SYNDROME?

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BACKGROUND

Neonatal hydrops is a serious condition. The aetiology has been divided into immune and non-immune. Non-immune hydrops is responsible for 80% of all hydrops. It poses a diagnostic dilemma because there are many causes and in the majority of cases the cause remains unknown. Noonan's syndrome is a well-reported cause when hydrops is associated with chylothorax.

CASE REPORT

The baby was born by emergency caesarean section at 34 weeks. He was grossly oedematous and weighed 3.4 kg (> 99.6th centile). The pregnancy was uneventful and antenatal scans normal. There was no obvious pleural, pericardial effusion or ascites at birth. On day 2 of life he developed significant bilateral pleural effusions and a mild pericardial effusion. The pleural effusion aspirate was transudate. A chest drain was inserted. As the baby was fed it was noted that the pleural fluid became chylous. The chylothorax responded well to medium chain triglyceride based feeds. Baby had some phenotypic features of Noonan's syndrome (including pulmonary stenosis) and mother and other maternal family members had the condition, so it was suspected that the baby might have inherited Noonan's. However his genetic testing was negative.

DISCUSSION

This baby posed some diagnostic dilemmas. There was a strong clinical suspicion corroborated by family history of Noonan's syndrome. The tests were however negative hence we propose the baby

might represent a special category: "phenotypic Noonan's". We also learnt that chylothorax can be delayed in parenterally fed newborn babies.

ABS 69

LOW BIRTH WEIGHT INFANTS OUTCOMES IN THE FEDERATION OF BOSNIA AND HERZEGOVINA

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AIM

Aim of this study was to assess the frequency of birth and mortality rate of low birth weight (LBW) infants in the Federation of Bosnia and Herzegovina (FB&H), based on the level of care offered by the neonatal institutions.

METHODS

Perinatal mortality rate of LBW infants from 22 to 42 gestational weeks (GW) was investigated in a one-year prospective study. Data were collected using a prospective standardized form for assessment: questionnaire with data concerning the last menstrual period, day, place and weight of birth, gestational age, time of referral and outcome of infants.

RESULTS

In a one-year period in the FB&H, 22,897 infants were born, 2.9% of which with LBW. The majority of LBW infants were born in Sarajevo Canton (3.7%), Middle Bosnia Canton (3.7%), Una-Sana Canton (3.6%) and Herzegovina-Neretva Canton (3.5%). Over 47% of LWB infants were born in neonatal institutions of first and second level. For frequency of births of LWB infants between the institutions of first and second level we found statistically significant difference (χ^2 = 272.1; $p < 0.0001$); we found a statistically significant difference for third and second level also (χ^2 = 13.4; $p < 0.0002$). Statistically significant discrepancy was found in mortality of LBW infants who were born in the institutions of first and second level (χ^2 = 0.71; p = 0.398) (RR = 0.507 [95% CI = 0.148-1.738]) and also in mortality rate of LBW infants born in the institutions of second and third level (χ^2 = 71.8; $p < 0.0001$) (RR = 6.349 [95% CI = 4.030-10.003]).

CONCLUSION

Regionalization of perinatal care significantly affects the mortality rate of LBW infants.

ABS 70

SUPPLEMENTATION OF VITAMIN D IN PRE-TERM INFANTS – MONITORING THERAPY

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AIM

To evaluate effectiveness and safety of vitamin D supplementation in preterm infants-monitoring therapy.

MATERIALS AND METHODS

Prospective analysis of 80 infants born ≤ 33 weeks PCA hospitalized in the Neonatal Intensive Care Unit in the Clinical Department of Neonatology and Neonatal Intensive Care of Medical University of Warsaw from July 2013 to July 2014. Daily vitamin D oral supplementation was provided from 1-3 weeks of age (when total parenteral nutrition was ended) in dose 500-1,000 IU/day. Dosage was modified according to serum 25-hydroxyvitamin-D concentration. Serum 25(OH)D concentration and calcium-phosphorus metabolism were assessed at 4 weeks of age, before discharge (≥ 34 weeks PCA) and in outpatient clinic (at 39-41 PCA).

RESULTS

Mean serum 25(OH)D level at 4 weeks of age was 40 ng/ml, 61 ng/ml before discharge, 53 ng/ml in outpatient clinic. Higher concentration was observed in ELBW infants. Deficiency was noted most often at the first measurement (9% of infants). Slightly more than half infants received 500 IU before discharge. 22% of the newborns had stopped supplementation due to overdosing. Based on the results vitamin D supplementation of high dose (1,000-1,500 IU) was provided in 33% of patients. Disturbance of calcium-phosphorus metabolism due to vitamin-D deficiency was observed in one patient. Hypervitaminosis was always associated with higher calcium-creatinine ratio. Mean decrease of 25(OH)D during stop of the supplementation was 23 IU/4 weeks. Mean increase during 500 IU supplementation was 12 IU/4 weeks. High individual heterogeneity was observed.

CONCLUSIONS
Supplementation of vitamin D among preterm infants is a little known topic. In the literature we can find research comparing results of different supplementation models without dosage modification. Mean conclusion of this research is that supplementation of vitamin D is a kind of hormonal therapy. Monitoring of therapy should be provided for good effectiveness and safety. The schema of the therapy needs further studies.

ABS 71

CITROBACTER DIVERSUS MULTIPLE BRAIN ABSCESSES IN A 28-WEEK PREMATURE FEMALE'S CASE REPORT

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BACKGROUND
Brain abscesses are very rarely diagnosed in newborns, though if present, they are associated with high risk of severe complications and mortality. The main causes of brain abscesses are meningitis and sepsis.
CASE REPORT
We are presenting a 28-week gestation age female newborn with a birth weight of 950 grams, which was born in the ambulance by spontaneous vaginal vertex delivery to a 26 year-old women. The pregnancy was complicated by a vaginal bleeding. Neither bacterial screening nor prenatal steroids therapy were performed. No signs of infection were present until the 35th day of hospitalization when the significant deterioration in the patient's condition had been observed in the course of late onset sepsis. Blood culture was positive for *C. diversus* (*C. koseri*) and although CSF culture was negative its smear was abnormal. Patient was treated with combined antibiotic therapy. Meropenem, gentamicin and vancomycin were used in treatment.
Cranial ultrasound taken within the first days of infection reveled hyperechogenic changes with a hypoechogenic halo compatible with brain abscesses image confirmed by MRI.
RESULTS
On the 91st day of life (39 PCA), the baby was discharged with the recommendation of permanent neurological and neurosurgical care.
CONCLUSIONS
Due to the severe course, high risk of complications and mortality, as well as the uncertain long-term prognosis of infants with infections complicated with brain abscesses, prevention of secondary infections in population of hospitalized neonates appears more important than a well-run treatment.

ABS 72

EPIDEMIOLOGY OF ANTIMICROBIAL RESISTANCE IN NEONATES WITH CENTRAL LINE ASSOCIATED BLOODSTREAM INFECTIONS (CLABSIS) IN GREECE

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BACKGROUND AND AIM
Central Line Associated Bloodstream Infection (CLABSI) is an important cause of mortality in neonates who are critically ill. Many are caused by multi-drug resistant organisms (MDROs) which results in treatment failure [1]. Excessive exposure to antibiotics is thought to increase the risk of colonization or infection with MDROs. The burden of CLABSIs caused by MDROs in hospitalized neonates in Greece is unknown. Our study examined the prevalence of MDRO pathogens causing CLABSIs in neonates.
METHODS
A 22-month prospective surveillance study was conducted in 10 NICUs, including public and private, as well as pediatric and adult hospitals in Greece. CLABSIs were prospectively identified using the National Healthcare Safety Network

definition [2]. Microbiological data regarding the pathogens were isolated from blood cultures of neonates with CLABSI were recorded.

RESULTS

Among 38 CLABSIs, Gram-negative bacteria were responsible for 16 (42.1%) of the CLABSIs, while 15 (39.5%) and 7 (18.4%) CLABSIs were due to Gram-positive bacteria and fungi, respectively. *Enterococcus spp.* were isolated most frequently (23.7%), followed by *Staphylococcus spp.* and *Candida spp.* (15.8%) (**Fig. 1**). All *Staphylococci*

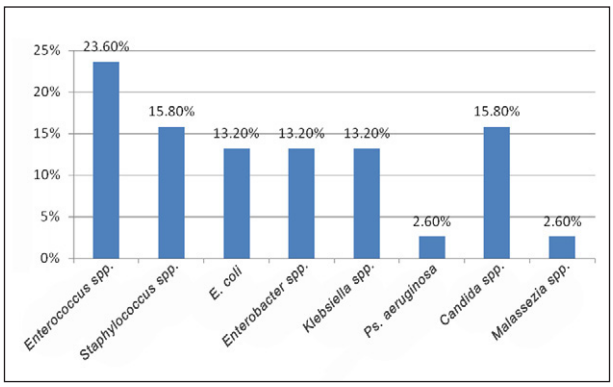

Figure 1. Distribution of pathogens.

were coagulase negative. 22.2% (2/9) of *Enterococci spp.* were found vancomycin resistant and 9/16 (56.3%) of the Gram-negative bacteria were resistant to third generation cephalosporins (likely ESBLs). Carbapenem resistance was seen in 1/16 (6.3%) of Gram-negative isolates.

CONCLUSIONS

Many of CLABSIs in hospitalised neonates in Greece were caused by resistant organisms. These findings call for rapid and effective adoption of infection control and antimicrobial stewardship strategies to prevent CLABSI and halt the further emergence and spread of MDROs.

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[2] Centers for Disease Control and Prevention, www.cdc.gov/nhsn.

ABS 73

CIRCULATING LIPID ALTERATIONS IN NEONATAL INFECTION/SEPSIS: PRELIMINARY RESULTS

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BACKGROUND

Circulating lipids/lipoproteins play a vital role in host defense and their levels are markedly altered during infection/inflammation in animals and human adults. However, the pattern of circulating lipid alteration during neonatal infection or sepsis has been minimally studied.

METHODS

Plasma triglycerides, total-cholesterol (total-C), HDL-C and LDL-C levels were determined in 51 full-term neonates with infection (21 of them were septic) and in 20 healthy full-term neonates of similar postnatal age and gender distribution, as controls. Lipid levels were serially measured on days 0, 1, 2, 3 and 7 following admission in all infected neonates, and once in controls.

RESULTS

Total-C levels were significantly lower in infected neonates than in controls on admission (day 0) and on day 1 ($p = 0.01$ and $p = 0.001$, respectively), but did not differ between patients and controls thereafter (days 2, 3 and 7). HDL-C levels were significantly lower in infected neonates than in controls on day 0 ($p = 0.008$), day 1 ($p = 0.003$), day 2 ($p = 0.004$) and day 3 ($p = 0.002$), but not on day 7. Triglycerides and LDL-C levels did not differ significantly between patients and controls. Plasma total-C and HDL-C on admission correlated negatively with serum CRP levels ($rs = -0.46$; $p < 0.001$ and $rs = -0.55$; $p < 0.001$, respectively).

CONCLUSIONS

Total-C and HDL-C levels are reduced in the acute phase of neonatal infection and correlate negatively with serum CRP levels, but increase when infection subsides reaching to the control levels.

Total-C and HDL-C levels may be used as complementary biomarkers in the diagnostic workup of neonatal infection.

ABS 74

TAIL IN A NEWBORN: A RARE FEATURE OF AMNIOTIC BAND SYNDROME

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BACKGROUND
Amniotic band syndrome is a rare disorder affecting approximately 1 infant every 15,000 births. It presents with a wide spectrum of malformations presumably related to amnion rupture (i.e. constriction rings of limbs/fingers), but also with complex structural abnormalities including cleft lip/palate, brain malformations and neural tube defects. The existence of a tail at birth is also rare, counting less than 100 cases reported so far; its association with amniotic band syndrome has only been described in quite a few cases.
CASE REPORT
We report a case of a full-term male neonate, born to healthy, non-consanguineous, Caucasian parents who presented with a constriction ring of the left arm, hypoplastic left upper limb, and a caudal appendage of 7 cm long.
RESULTS
Ultrasonography of the lumbosacral region revealed spinal dysraphism and a lipomeningocele. Liver microcalcifications and a bilateral mild hydronephrosis were also seen on abdominal ultrasound.
CONCLUSIONS
The existence of a tail at birth consists an additional clinical feature of amniotic band syndrome. Whether liver calcifications can be added to the clinical spectrum of the disease remains to be elucidated. Recognition of the associated manifestations of amniotic band syndrome may be of help in prenatal diagnosis and management. A multidisciplinary follow up of these patients is essential.

ABS 75

THE EARLY NEONATAL MORTALITY AFTER CESAREAN SECTION

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BACKGROUND
Despite obstetric practice advancements, cesarean delivery rates are still rising, mainly due to maternal morbidity. Mortality during neonatal period is a good indicator of both maternal and newborn health and care. Advancements in the care of premature infants and prevention of spontaneous preterm labour and hypertensive disorders of pregnancy could lead to a substantial decrease in perinatal mortality.
METHODS
We analyzed a five-year period with 34,775 births in Clinics of Gynecology and Obstetrics, Clinical Centre of Serbia in Belgrade. The cesarean section rate in the analyzed period was 28.7%.
RESULTS
Our analysis showed that, regarding mothers, placenta praevia, hypertensive disorders in pregnancy, breech presentation and fetal distress are most frequent risk factors contributing to early neonatal deaths. Fetal risk factors include prematurity, postnatal asphyxia, RSD and intracranial hemorrhage, confirmed by autopsy reports.
CONCLUSIONS
Increasing the number of cesarean sections in cases when certain risk factor are identified in mother or fetus, early neonatal mortality rate can be decreased, especially in preterm newborns.

ABS 76

MODE OF DELIVERY AND DEVELOPMENT OF ATOPIC DISORDERS DURING THE FIRST THREE YEARS OF LIFE

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BACKGROUND AND AIMS
It has been suggested that cesarean section (CS) is associated with development of allergic disorders in early childhood. The aim of our study was to examine the association between mode of delivery, atopic dermatitis (AD) and food allergy (FA) during the first three years of life.
METHODS
We prospectively evaluated 459 children from birth (gestational age ≥ 34 weeks) to three years of age. Participants were followed-up every six months and cases of doctor-diagnosed AD and FA were recorded. The effect of CS was assessed by multivariable logistic regression, after taking into account potential confounders, such as maternal age, parity, gestational age, gender, birth weight, exposure to tobacco smoke or antibiotics during pregnancy, NICU admission, exposure to antibiotics during the first month of life, exclusive

breastfeeding, duration of breastfeeding and parental atopy.

RESULTS

The prevalence of FA and AD was 5.2 and 13.5%, respectively. Children born by CS (n = 233; 50.8%) had higher probability of FA (OR 3.0 [1.1-8.4]). Parental atopy (OR 4.7 [1.9-11.7]) and higher gestational age (OR 1.5 [1.0-2.3]) were also significant risk factors. The combination of CS and parental atopy was associated with significantly higher probability of FA, as compared to vaginal delivery and absence of parental atopy (OR 10.0 [3.1-32.7]). CS (OR 1.4 [0.8-2.5]) was not associated with increased risk of AD.

CONCLUSIONS

Delivery by CS seems to increase the risk of FA but not AD during the first three years of life, independently of other perinatal, familial and environmental factors.

ABS 77

GRADES I-II INTRAVENTRICULAR HEMORRHAGE IN VERY LOW BIRTH WEIGHT INFANTS: EFFECTS ON NEURODEVELOPMENT

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BACKGROUND AND AIMS

Grades I-II intraventricular hemorrhages (IVH), diagnosed by ultrasound, are currently the most common brain lesions in the preterm infant. The effects of such hemorrhages on neurodevelopment are studied.

METHODS

Preterm neonates born with a birth weight ≤1,500 g and admitted to level III referral Neonatal Intensive Care Unit in a period of 6 years, from 20/6/2005 to 31/12/2011 were included. Group A included neonates with IVH grade I-II as an isolated lesion on ultrasound, group B included neonates with normal ultrasound. Neurodevelopmental outcome was assessed at the age of 1, 2, 3, 4 years. Infants with severe deficits were excluded from statistical analysis because of the small number.

RESULTS

Records of 160 neonates were examined. Group A (n = 54): BW = 1,121 ± 221, GA = 29 ± 2.5. Group B (n = 106): BW = 1,133 ± 225, GA = 29 ± 2.5. In Group A, IVH grade I-II was shown on day 1-5 in 88.9%, day 6-10 in 94.4% after day 11 in 87% and at term equivalent age in 59.3%. Between the two groups, neurological examination at term equivalent age was without any difference (p = 0.668). There was no difference regarding mild-moderate neurological/developmental deficits at age 1, 2 years. A significant difference was shown on neurological deficits at age 3 (p = 0.027) and a trend to significant difference on developmental deficits at age 4 (p = 0.077).

CONCLUSIONS

Grades I-II intraventricular hemorrhages in preterm infants were mostly related to mild-moderate neurological/developmental deficits after age 2. Difficulties may emerge at that age as demands are increased. Long term follow up with standardized tools is necessary.

ABS 78

PSYCHOLOGICAL CONSEQUENCES OF PREMATURITY ON THE INFANT-MOTHER DYAD

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BACKGROUND AND AIMS

The advances of perinatal medicine enable the survival of infants in extreme prematurity.

The mother's posttraumatic reactions may be considered as a variable influencing the infant's development.

Similarly, living conditions of the infant-mother dyad during the first months following birth differentiate maternal stress and influence the process of infant bonding.

METHODS

The *Perinatal Posstraumatic Stress Disorder Questionnaire* evaluates posttraumatic maternal stress symptoms. The semi-structured clinical interview *Clinical Interview for Parents of High-Risk Infants (CLIP)* enables mothers to consolidate emotionally their experiences related to the infants' high-risk status. The severity of the infant is evaluated through the *Perinatal Risk Inventory*.

RESULTS

A number of studies suggest that there is a correlation between the results stemming from the following instruments: a) the *Perinatal Risk*

Inventory; b) the *Perinatal Posstraumatic Stress Disorder Questionnaire*. The *CLIP* has utility both for planning psychosocial care in the intensive care nursery, and for discharge preparation.

CONCLUSIONS

The findings suggest that maternal response to premature birth mediates the risks of later adverse outcomes. Preventive intervention should be promoted. This study may help care teams, midwifes, obstetricians, neonatologists and nurses in their work in Neonatology Units.

ACKNOWLEDGEMENTS

To the Director and team of the Neonatology Unit of "Agios Panteleimonas" Hospital.

ABS 79

ROLE OF PARACETAMOL IN THE CLOSURE OF PATENT DUCTUS ARTERIOSUS IN PRE-TERM NEONATES

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BACKGROUND AND AIM

Hemodynamically significant Patent Ductus Arteriosus (sPDA) can cause serious problems in preterm neonates (PTN) during their recovery from respiratory distress syndrome. Indomethacin and ibuprofen (IB) both potentially can cause serious side effects such as gastrointestinal perforation, renal failure and bleeding. Recently it was reported that paracetamol (PCT) promotes PDA closure in PTN. We treated the sPDA of our PTN with PCT to check its safety and effectiveness.

STUDY METHOD

PCT was given intravenously (IV) as the treatment of choice in ventilated PTN with a sPDA, using a dose 15 mg every 6 hours for 3 days. The extent of the PDA closure was ascertained by ECHO cardiogram before and after treatment. When PDA closure failed, a second course of PCT was given. Should the second course also fail, IB IV was given. If the PDA failed to close, ligation was then undertaken.

RESULTS

A total of 23 neonates were studied (BW: 1,345 ± 313 g, GA: 29.2 ± 3.1 wk). In 18 (78%) of the study neonates sPDA closed following the first or second dose of PCT. In 3 neonates in witch PDA closure failed after two attempts, closure was achieved with a course of IB and in the last 2 surgical ligation was required. Transaminase values measured before and after treatment were within normal limits for the age. No other side effects were noted.

SUMMARY

Paracetamol, apart from being less expensive than ibuprofen, appears to be a safe and effective treatment option when given to preterm neonates for closure of PDA.

ABS 80

ACTIVE SURVEILLANCE FOR CENTRAL LINE ASSOCIATED BLOODSTREAM INFECTIONS IN HOSPITALIZED NEONATES IN GREECE

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BACKGROUND AND AIM

Central Line Associated Bloodstream Infection (CLABSI) is one the most common healthcare-associated infections in hospitalized neonates and is associated with significant mortality, increased length of hospital stay and increased healthcare costs. Since there are limited data about neonatal CLABSI, our aim was to prospectively assess the epidemiology of CLABSIs in 10 Neonatal Intensive Care Units (NICUs) in Greece.

METHODS

A 22-month prospective surveillance study was conducted in 10 NICUs, including both public and private, as well as pediatric and adult hospitals in Greece. CLABSIs were prospectively identified using the National Healthcare Safety

Network definition [1]. Data, including central line and patient days, were collected daily by volunteers in each unit. CLABSI rates (per 1,000 central line-days) and device utilization (DU) ratios (total number of device-days divided by the total number of patient-days) were calculated. Epidemiological and clinical data of the children who developed CLABSI were recorded.

RESULTS

During the 22-month surveillance period, we detected 38 CLABSIs in 34 patients. The overall CLABSI rate was 3.80/1,000 central-line days. Unit specific CLABSI rates ranged from 0 to 15.7 per catheter days. Overall DU ratio was found to be 0.17 (DU range 0.008 to 0.39).

The main patient-related and infection-related characteristics are described in **Tab. 1**. Median patient age was 31.5 days (interquartile range, 10-97 days).

CONCLUSIONS

We found high CLABSI rates in 6 of the NICUs compared to rates reported in the United States and European Union, while rates in the other units were comparable. Infection control efforts should be developed and focused on units with high CLABSI rates.

Table 1. The main patient-related and infection-related characteristics.

Characteristics of neonates with CLABSI (n = 34)	
Gender (Male)	18 (52.9%)
Age (days)	31.5 (10-97)
Transfer from another hospital	24 (70.6%)
Characteristics of CLABSIs (n = 38)	
Hospitalization within past 30 days prior to CLABSI	29 (78.4%)
Type of central catheter	
Tunneled	18 (47.4%)
Non tunneled	4 (10.5%)
Umbilical	10 (26.3%)
Peripherally Inserted Central Catheter (PICC)	5 (13.2%)
Blood transfusion within 1 week (Yes)	16 (42.1%)
Surgical procedure within 30 days (Yes)	9 (23.7%)
Mechanical ventilation at time of CLABSI	12 (31.6%)
Urinary catheter at time of CLABSI	4 (10.8%)
Immunosuppressive agents within 30 days	1 (2.6%)
Fever	29 (76.3%)
Removal of catheter as adjunctive treatment	
No central catheter present at infection onset	1 (2.6%)
Central catheter removed as part of treatment	15 (39.5%)
Central catheter left in place during treatment	22 (57.9%)

REFERENCE

[1] Centers for Disease Control and Prevention, www.cdc.gov/nhsn.

ABS 81

ASSESSMENT OF RISK FACTORS FOR NECROTIZING ENTEROCOLITIS IN PRETERM INFANTS

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BACKGROUND

Necrotizing enterocolitis (NEC) is a serious condition that affects mostly preterm infants, with high mortality rate.

AIM

To estimate the influence of potentially contributing factors of this multifactorial disease.

MATERIAL AND METHODS

The study group included 51 preterm infants < 37 gestational weeks with diagnosis of NEC, hospitalized in NICU during 5 years period. The control group consisted of 71 patients with approximately the same gestational age and birth weight. Average gestational age in the study group was 30.2 weeks (SD 3.7), average birth weight 1,502.75 g (SD 781.5). Average postnatal age in the time of the presenting NEC was 18.2 days (SD 12.8).

RESULTS

The model of logistic regression is done to estimate the influence of risk factors related to the treatment of sick preterm infants on the likelihood of NEC development. Model consisted of 7 independent variables (nosocomial infections, MV, nCPAP, morphine, inotrops, blood transfusions, and H2 blockers). The model was statistically significant, χ^2 (7, n = 1,222) = 49,522, $p < 0.0001$; two independent variables (nosocomial infection and H2 blockers use) made statistically significant contribution to the model. Preterm infants with nosocomial infection have 3 times greater chance of developing NEC, and infants receiving H2 blockers have the chance to develop NEC 1.5 higher than other.

CONCLUSION
Underlying pathology contributes to NEC development and identifying risk factors can be crucial for the early diagnosis and outcome of disease.

ABS 82

FACTORS ASSOCIATED WITH THE PROVISION OF HUMAN MILK IN THE PRETERM INFANT IN GREECE

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BACKGROUND AND AIM
Although human milk (HM) is considered the optimal nutrition for both term and preterm infants the breastfeeding rate in Greece is low and limited information exists about HM feeding for the preterm infant. This study aimed to investigate the prevalence and factors associated with HM provision in preterm infants admitted in a Neonatal Intensive Care Unit (NICU) in Greece, in and beyond their NICU stay, during a 2-year period.
METHOD
The study was conducted on 100 premature admissions from year 2009 to 2010. Information was collected by retrospective review of all medical records and with the use of telephone interviews using a fully structured questionnaire.
RESULTS
The mean gestational age and length of NICU stay were 33.1 and 34.2 days respectively. Approximately half (48%) of the mothers received treatment to suppress lactation. Of the 100 preterm infants studied 12% initiated exclusive HM feeding, and 17% and 24% were exclusively HM fed at discharge and for an adequate duration following discharge respectively. Factors such as duration of pregnancy ($p = 0.07$) and NICU stay ($p = 0.001$), birth weight ($p = 0.01$), intention to breastfeed during pregnancy ($p = 0.003$) and previous breastfeeding experience ($p = 0.003$) appear to be important features associated with the provision of HM and the process of breastfeeding.
CONCLUSION
The percentage of preterm infant fed with HM is low in our country. Understanding the factors associated with HM provision is a key feature for appropriate interventions to support mothers and increase HM provision in this high risk population in and beyond NICU.

ABS 83

SAFETY AND EFFICACY OF LINEZOLID IN NEONATES: AN INDIAN EXPERIENCE

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BACKGROUND AND AIMS
Linezolid, an oxazolidinone antibiotic, exhibits a broad spectrum of activity against Gram-positive bacteria. It has been licensed for adult use in methicillin-resistant *S. aureus* (MRSA) infections, and has also been used off-label for pediatric patients. There is paucity of evidence regarding the safety and efficacy of this drug in neonates from resource limited developing countries like India. The objective of this retrospective analysis is to study the efficacy and safety of linezolid in the treatment of multidrug resistant Gram-positive neonatal sepsis.
MATERIALS AND METHODS
An audit of the data from neonates who have received linezolid in a neonatal intensive care unit of a tertiary care centre from September 2012 to September 2014 was carried out.
RESULTS
Thirty one neonates received intravenous linezolid (15 preterm and 16 term) for treatment of bloodstream infections, abscesses, pneumonia and meningitis. The isolated pathogens in decreasing order of frequency were methicillin-resistant coagulase-negative *Staphylococcus* (MRCONS) (n = 15, 48.38%), MRSA (n = 8, 25.80%), *Enterococcus spp.* (n = 5, 16.12%), group A beta haemolytic *Streptococcus* (n = 3, 9.67%). All the neonates were administered intravenous linezolid at the dose of 10 mg/kg/dose twice or thrice daily. The median duration of administration was 14 days (range 10-21 days). The overall efficacy was 90.32% (28/31). None of the neonates developed any evidence of hepatoxicity monitored by liver enzymes elevation. Two neonates developed

thrombocytopenia necessitating switch over to vancomycin.

CONCLUSION

Our study in 31 neonates found that intravenous linezolid is safe and efficacious in the treatment of multidrug resistant Gram-positive neonatal sepsis.

ABS 84

GREEK AND FOREIGN PARENTAL SATISFACTION BY THE CARE PROVIDED TO NEONATES

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BACKGROUND AND AIMS

The quality of health services is the underlying principle of a country's health policy and is directly linked to patient satisfaction. The aims were to assess the level of satisfaction of Greek and foreign parents by the care provided to hospitalized newborns, and to examine the factors that influence this satisfaction.

METHODS

A cross-sectional, non-experimental study was based on a Parental Satisfaction Questionnaire of recognized reliability. The study population consisted of 301 parents (154 Greeks and 147 foreigners). The response rate was high (92.9%) and the Cronbach's coefficient alpha for the questionnaire was 0.87. To determine predictive factors associated with satisfaction, multivariate linear regression with the method of successive abstraction was applied. The level of statistical significance was $p = 0.05$.

RESULTS

The neonatal inpatients had an average of 31.2 days of hospitalization and were mostly hospitalized for prematurity (26.6%). According to multiple linear regression that was performed, (a) Albanian parents were more satisfied than Greek parents, (b) parents from countries other than Albania were more satisfied than Greek parents and (c) parents whose infants were hospitalized in the Level I were more satisfied than parents whose infants were hospitalized in the Level III.

CONCLUSIONS

The study shows that satisfaction of Greek and foreign parents, by the care provided at the Neonatal Intensive Care Unit, is influenced by their nationality as well as by duration of hospitalization.

ABS 85

THE NURSES' PERCEPTIONS ON GIVEN SUPPORT TO PARENTS OF NEONATAL PATIENTS

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BACKGROUND AND AIMS

The aim of the international closeness study within the SCENE project was to get the solid data of physical parent-infant closeness and of support for parent participation in different neonatal units internationally. The current substudy analysed the support nurses report they are giving to the parents of neonatal patients at Tartu University Hospital.

METHODS

The nurses from the 3 units with different level of neonatal care in Tartu University Hospital were invited to answer anonymously one random daily question through a website on scale 1-7 (1 = not at all – 7 = very much) within September-November 2013. The perception of nurses on parent support they had given that day was measured with 8 questions.

RESULTS

In Tartu maternity unit (231 answers) the nurses experienced providing the best support to parents by considering parents' opinions in decisions concerning their baby. They gave the lowest scores on themselves in providing emotional support to parents. In PNICU (90 answers), the nurses experienced providing the best support to parent by trusting them in their baby's care. They gave the lowest scores on themselves in supporting parental participation in their baby's care. In the step down unit (238 answers), the nurses experienced providing the best support to parents by supporting parental participation in

their baby's care. They gave the lowest scores on themselves in considering parents' opinions in decisions concerning their baby.

CONCLUSION

The nurses' perceptions on given support to parents reflect the type of care and conditions of the patients in the unit.

ABS 86

DIAGNOSTIC MARKERS OF MECHANICAL VENTILATION-ASSOCIATED PNEUMONIA IN NEWBORNS

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BACKGROUND AND AIMS

Microbiological cultures used for the diagnosis of pneumonia associated with mechanical ventilation (VAP) are slow and cannot be used for initiation of treatment. Hence, the suitability of cytokines and metabolic biomarkers of inflammation in Bronchoalveolar Lavage Fluid (BALF) and Tracheal Aspirates (TA) of neonates suspected with VAP was tested.

METHODS

All infants were subjected to invasive mechanical ventilation for 48 hours or more. They all had pulmonary pathology with suspected VAP. BALF samples and TA were extracted for culture and analysis.

Twenty cytokines were analyzed using the immunoassay kit Human RTU 20 plex FlowCytomix eBioscience by flow cytometry. Concentrations were normalized to the protein concentration (Bradford assay). Metabolic biomarkers of inflammation, glutathione sulfonamide (GSA) and 3-Cl-tyrosine (3-Cl-Tyr), were determined by UPLC-MS/MS.

RESULTS

Of the 13 patients suspected of VAP, 5 (38%) were confirmed by culture. No correlation between TA and BALF was observed in any measured biomarker. Significant differences were found for interleukin 17A (IL-17A) in BALF samples (**Fig. 1**). However, for GSA an increase in patients with VAP was detected, which was not significant probably due to the limited sample number.

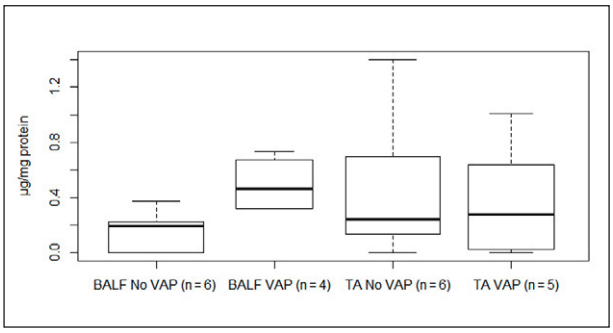

Figure 1. Box plots for interleukin 17A levels (*p-value < 0.05).

CONCLUSIONS

The IL-17A appears to be discriminating among infants with lung disease who develop VAP. Future studies including a larger cohort will be necessary to confirm the use of IL-17A as an early marker for future diagnosis of VAP and to study the suitability of GSA for early detection of VAP.

ABS 87

CESAREAN SECTION EPIDEMIOLOGY IN A PROVINCIAL GREEK MATERNITY UNIT

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BACKGROUND AND AIMS

Cesarean Section (CS) rate in Greece has been reported to be high. The aim of this study was to determine the CS rate in our maternity unit, in a province of Crete, along with the risk factors and related complications.

METHODS

This is a retrospective study of all live births occurred in the maternity unit of General Hospital of Chania, during 2013. Maternal age and ethnicity, mode of delivery, neonatal GA and BW along with the need for neonatal resuscitation in the delivery room and an admission in a NICU were recorded.

RESULTS

There were 728 neonates born after 714 singles and 7 twin pregnancies, 70% to mothers of Greek Nationality. Most mothers (64.5%) were between 25 and 35 years old. Of the neonates, 6.5% were preterm, 37.7% early term and 50.7% full term.

Overall CS rate was 61.1% (64.5% in Greeks). All neonates with a BW 1,500-2,000 g, 74% of late preterms and 77% of early terms were born by CS. Only 14% of all CSs were carried out during weekends and 21.5% after 3:00 pm. Common CS causes were previous CS, cephalopelvic disproportion and failure in labor progress. Need for neonatal resuscitation in the delivery room rate was 4% in neonates born via CS (1% in vaginal birth [VB]), 15.7% of them were admitted in the NICU (11.8% in VB). Neonatal mortality rate after a CS was 0% (0.7% in VB).

CONCLUSIONS

Although CS rate in our maternity unit was high, neonatal morbidity and mortality after a CS were not significantly increased compared to VB.

ABS 88

FETAL AND NEONATAL ALLOIMMUNE THROMBOCYTOPENIA (FNATP) IN CROATIA DURING THE PERIOD 2009-2013: CLINICAL AND LABORATORY CHARACTERISTICS

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BACKGROUND

Fetal and neonatal alloimmune thrombocytopenia (FNATP) develops because of maternal alloimmunization against paternally inherited specific platelet antigens (HPA) of the fetus. Clinical course varies from asymptomatic or mild to severe cases with intracranial haemorrhage resulting in death or long-term disability.

AIM

To analyze laboratory and clinical data of 75 newborns undergoing serologic testing for neonatal thrombocytopenia.

METHODS

FNATP was confirmed by serological anti-HPA testing and genotyping. Clinical data were collected from the infants medical records.

RESULTS

Serology screening yielded positive results in 52 out of 75 (69%) cases. Anti-HPA antibodies were detected in 37 out of 52 (71%) cases of serologically positive NATP. Anti-HPA-1a alloantibodies were the most frequently detected (n = 16 or 31%), followed by anti-HPA-5b (n = 11 or 21%), other were sporadically found. In another 15 out of 52 (29%) cases, anti-HPA specificity could not be demonstrated. The average lowest platelet count was 50 x 10^9/L (min = 5 and max = 107) and duration of thrombocytopenia 1.7 weeks (min = 0.5 and max = 6).

According to the available clinical data for 30 neonates, almost a half of them (n = 14 or 47%) were asymptomatic. In others, the only clinical signs were petechiae. None had intracranial haemorrhage. Majority did not require any therapy (n = 22 or 73%). Eight neonates (27%) were treated as follows: 4 with platelet transfusions; 2 with platelet transfusions, immunoglobulins and corticosteroids; 1 with immunoglobulins and corticosteroids and 1 with immunoglobulins only. All neonates reached full recovery.

CONCLUSION

Serologic testing for FNATP in case of isolated thrombocytopenia in the newborn contributed considerably to timely detection and favorable outcome.

ABS 89

IS LOCALIZED NEC A DIFFERENT CONDITION FROM CLASSIC NEC?

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BACKGROUND AND AIM

Bowel perforation with short segments of necrosis in neonates is often classified as localized necrotising enterocolitis (NEC) owing to histological bowel necrosis. We compared the clinical profile of localized NEC with classical NEC and focal intestinal perforation (FIP) in order to delineate its possible aetiology.

METHOD

A retrospective review of 26 patients diagnosed histologically as NEC (18) and FIP (8) between 2010 and 2013 was performed. Classical NEC (11 cases) was defined as a diffuse multi-segmental bowel necrosis with or without perforation. 7

cases of bowel perforation with surrounding short segments of necrosis were classified as localized NEC. Focal perforation without obvious bowel necrosis was considered as FIP.

RESULTS

Average resected bowel length was 21.1 ± 15.9 vs 8.2 ± 5.6 vs 3.8 ± 4.8 cm for classical, localized NEC and FIP respectively. Classic NEC was distinguished from localized NEC and FIP by presence of pneumatosis (10/11 vs 0/7 vs 0/8, $p < 0.01$), larger volumes of feeds before symptom onset (132.5 ± 32.0 vs 5.6 ± 9.5 vs 6.9 ± 7.9 ml/kg/day, $p < 0.01$), older gestation age at birth (29.7 ± 2.7 vs 25.7 ± 0.8 vs 26.9 ± 2.9 weeks, $p < 0.05$) and later onset of disease (23.7 ± 23.9 vs 6.7 ± 2.7 vs 7.8 ± 2.9 days, $p < 0.05$). The cases of localized NEC had almost identical clinical profiles as FIP.

CONCLUSIONS

Classical NEC is strongly associated with pneumatosis and large volumes of feeding, which is different from localized NEC. Focal perforation with localized bowel necrosis but no pneumatosis should be classified as FIP rather than NEC.

ABS 90

EPIDEMIOLOGICAL DATA ON BIRTHS IN A GREEK PROVINCIAL HOSPITAL MATERNITY, DURING THE LAST DECADE

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BACKGROUND AND AIMS

There has been a significant reduction in the rate of births in Greece in the recent years. However, the Cesarean section (CS) rate remains high. The aim of this study was to record any changes in the epidemiological data of births in a public, provincial maternity unit during last decade.

METHODS

This is a retrospective study of all births that occurred in the maternity ward of General Hospital of Chania (GHC) during three time periods: 01/01/2004-31/12/2004, 01/01/2009-31/12/2009 and 01/01/2013-31/12/2013. We recorded maternal ethnicity, gestational age and mode of delivery.

RESULTS

There were 698, 851 and 728 live births at GHC, in the years 2004, 2009 and 2013, respectively. Births to Greek origin mothers increased slightly in 2009 and 2013 compared to 2004 (500 and 504 compared to 424 in 2004). Prematurity rate did not change significantly (7.9%, 5.4% and 6.5% in 2004, 2009 and 2013, respectively). The overall CS rate increased from 53.6% in 2004 to 56.7% in 2009 and 61.1% in 2013. Specifically in Greek mothers, CS rate also increased in 2009 and 2013 (64.5%) compared to 2004 (51%).

CONCLUSIONS

We observed a mild decrease in the number of births that occurred in GHC, in 2013, compared to 2009 but it still remained above 2004 levels. The reduction was primarily due to fewer births by non-Greek mothers. The already high CS rate in 2004 showed a significant increase during last decade, particularly in the Greek mothers.

ABS 91

LEPTIN WAS NOT ALTERED AS A RESULT OF PREBIOTICS SUPPLEMENTATION IN A PRETERM POPULATION

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AIM

To measure anthropometric characteristics in comparison to serum leptin values change at birth and day 16 after consumption of a prebiotic enriched preterm formula, as compared to a common preterm formula without prebiotics.

MATERIAL AND METHODS

Ninety cases of preterm infants were randomized to either a prebiotics enriched formula (intervention) containing dietary oligosaccharides scGOS/lcFOS, at 0.8 g/100 ml or a common preterm formula (controls). Day 1 and 16 basal leptin concentrations were evaluated together with anthropometric

measurements, such as weight, length, and head circumference. Subcutaneous adipose tissue was also assessed with the use of a skinfold caliper (Harpenden Skinfold Caliper, Model: HSB-BI, Batty International, UK) at standardized sites.

RESULTS

Mean leptin values at birth and day 16 did not differ significantly between intervention and control groups (mean: 1.6 [SD: 1.0] vs mean 3.1 [SD: 8.0], p: 0.199) and (mean 1.7 [SD: 1.6] vs mean 1.3 [SD: 0.8], p: 0.120) respectively. Change of leptin values from birth to day 16 was not either significantly different between the control and intervention group (mean 0.1 [SD: 1.6] vs mean 1.8 [SD: 7.5], p: 0.094). Mean weight was increased significantly in the control group (p = 0.020,) as compared to the intervention, but this did not apply for height and head circumference. Subcutaneous adipose tissue measurements were not significantly different in between intervention and control group.

CONCLUSION

Leptin was not significantly changed during follow up in none of the two study groups and was not related to the reduction of weight in the intervention group.

ABS 92

ADAMS-OLIVER SYNDROME: A SEVERE PRESENTATION

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BACKGROUND

Adams-Oliver is a multiple congenital malformations syndrome, including aplasia cutis congenita, terminal transverse limb defects, cardiovascular and central nervous system anomalies.

CASE REPORT

The authors report the evolution of a huge skull defect in an Adams-Oliver syndrome.

We report the case of a boy, born from non consanguineous parents, with healthy first child. Malformation of feet and right hand were diagnosed prenatally. Born at term, normal delivery, Apgar score 10 at first and tenth minutes, 3.475 kg, 34.5 cm head circumference. A malformation of the skull was observed, at midline and right frontal parietal region, 12 x 5 cm long, with meningeal exposition, abnormal feet and right hand with hypoplastic fingers, cutis marmorata telangiectatica (**Fig. 1**). Remaining physical examination including neurological were normal. Brain CT at birth showed long defect of frontal parietal skull, at midline and right side, about 6.5 cm long. Cardiac, abdominal and central nervous system malformations were excluded. He started daily dressing with silver sulfadiazine cream and fat gauze followed by nanocrystalline silver covered with hydrogel. Betamethasone was used intermittently for hypergranulation areas. Finaly, daily dressing with maltodextrin was made. At 4 months he shows normal growth and neurologic development. The scalp defect has closed (**Fig. 2**).

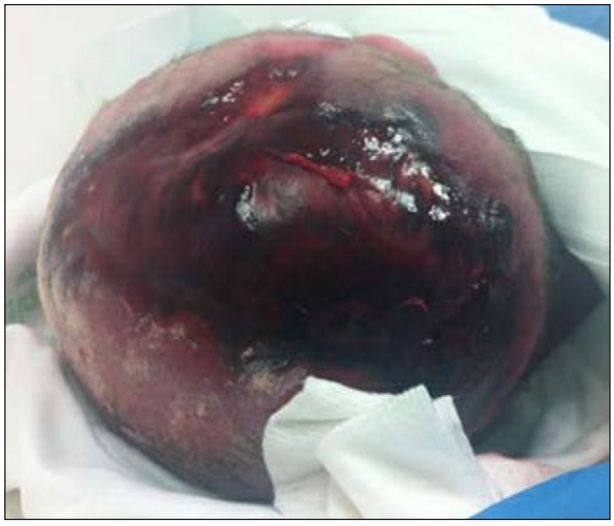

Figure 1. Malformation of the skull at birth.

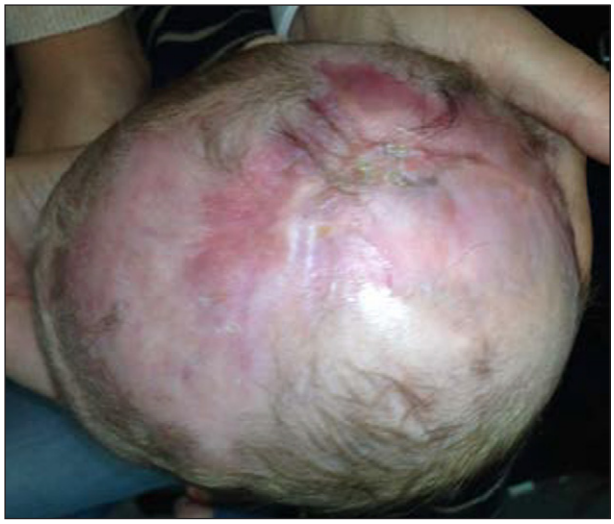

Figure 2. Malformation of the skull at 4 months.

A skull defect about 5 cm long is still perceptible palpating the area.

CONCLUSIONS

This case shows a successful therapeutic approach for an extense defect of scalp in an Adams-Oliver syndrome. So far, no neurologic complications were reported.

ABS 93

STUDY ON BIRTHS IN YEAR 2013 AT A PROVINCIAL GREEK MATERNITY UNIT

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BACKGROUND AND AIMS

The birth rate in Greece has decreased recently and more Greek families seem to prefer public maternity hospitals. We studied births at a provincial Greek public hospital in the midst of the recent financial crisis.

METHODS

This is a retrospective study of all live births that occurred at General Hospital of Chania (GHC) during 2013. We recorded maternal age and ethnicity, level of prenatal care, mode of delivery, neonatal GA and BW, the need for resuscitation in the delivery room and NICU admissions.

RESULTS

There were 721 deliveries that resulted in the birth of 728 babies. Most mothers (70%) were of Greek origin. Most of Greek mothers were 25 to 35 years old. Almost all had an adequate prenatal care. Only 15% of Greek mothers had more than 2 children. Most of neonates were full term (50.7%), 37.7% were early term and 6.5% were preterm (2 ELBW). The overall CS rate was 61.1% (64% for Greeks). CS rate in early term deliveries was 77%, while 58% of all elective CSs were early term. Up to 66% of deliveries occurred in office hours. NICU admission was needed for 15.7% of the neonates born via CS, mostly due to RDS compared to 11.8% of those born by VB. Perinatal asphyxia rate was 0% in CS (0.7% in VB).

CONCLUSIONS

The vast majority of babies were born to Greek mothers with up to 2 children, CS rate was very high and more than half of elective CSs were early term. Neonatal morbidity rate was low.

ABS 94

THE EFFICACY OF PROPRANOLOL IN PREMATURE RETINOPATHY AND ITS CORRELATION WITH PLATELET MASS INDEX

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AIM

Retinopathy of prematurity (ROP) is a proliferative vitreoretinopathy among the most frequent causes of blindness in children. In our study planned for this reason, we aimed to research the effects of propranolol treatment applied to the cases of ROP in various stages during the second (neovascularization) phase and the correlation of these effects with platelet mass index (PMI).

METHOD

A total of 171 preterm infants at risk of ROP were randomly selected to be included in the study. All the patients were classified according to their stage of ROP and divided into control and treatment groups. While the cases in the control group were administered physiological saline solution, the cases in the treatment group were administered propranolol in the period that corresponded to the second stage of the disease. The thrombocyte and PMI values were recorded in the second stage of each study group.

RESULTS

No statistically significant difference of need for laser photocoagulation was found between the control and treatment groups in stages 0-1 of ROP ($p > 0.05$). However, a significant difference was found between the control and treatment groups in stage 2 of ROP, indicating the platelet effect of propranolol ($p = 0.024$). On the other hand, in stage 2 of ROP significant differences were also detected between the control and treatment group in terms of PMI values ($3,059 \pm 1,353.2$, $2,814 \pm 198.5$, $p = 0.014$).

CONCLUSION

In the study it was detected that in stage 2 of ROP propranolol had an effect to diminish the need

for laser photocoagulation significantly. Also in parallel with the efficacy of propranolol in this study group, decrease was observed in PMI values, indicating low level of VEGF. In stage 0-1 of ROP, however, no statistically significant difference was found between the treatment and control group in terms of the efficacy of propranolol. Since the efficacy of propranolol in this study group was limited, no significant difference of PMI values were observed between the control and treatment groups.

ABS 95

BREAST MILK LEVELS OF MMP-9/NGAL COMPLEX IN WOMEN WITH INSULIN-DEPENDENT GESTATIONAL DIABETES MELLITUS DURING THE FIRST POSTPARTUM DAYS

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AIM

The aim of our study was to investigate whether Matrix Metalloproteinase-9/Human Neutrophil Gelatinase-Associated Lipocalin complex (MMP-9/NGAL) is present in colostrum and if there is a difference in the complex levels between women with normal pregnancy and women who developed, insulin dependent, gestational diabetes mellitus (GDM).

MATERIAL AND METHODS

A total of 35 postpartum women were included in our study. Twenty two of them constituted the control group and 13 women who had insulin dependent GDM, the patient's group. Women of both groups delivered healthy full term neonates. Two colostrum samples were taken from each woman. The 1st sample was taken on the first day of colostrum secretion and the 2nd sample two days later. Concentrations of MMP-9/NGAL complex were determined with a commercially available ELISA kit (R&D Systems, USA).

RESULTS

The MMP-9/NGAL complex was detected in colostrum. In normal women, median complex concentration (ng/mL), decreased significantly from the 1st sample: 70.8 to the 2nd sample: 23.3 ($p < 0.032$). In women with GDM median complex concentrations were higher in both samples compared to normal women (1st sample: 150.4; 2nd sample: 121.9) but the difference was statistically significant only in the 2nd sample ($p = 0.024$).

CONCLUSION

- In our study, concentration of MMP-9/NGAL complex was measured for the first time in colostrum. The physiological role of the complex in colostrum is not yet elucidated.
- Milk concentrations of MMP-9/NGAL complex decreased with time.
- Women with GDM had higher milk MMP-9/NGAL complex concentrations.

ABS 96

CARDIOPULMONARY HEMODYNAMICS IN PRETERM INFANTS WITH RESPIRATORY DISTRESS SYNDROME

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BACKGROUND AND AIM

The hemodynamics of cardiovascular system in preterm infants are complex with the problems of the transitional circulation and changing pulmonary vascular resistance. Although invasive and non-invasive ventilation techniques are widely practiced in neonatal intensive care, their hemodynamic consequences have not yet been investigated. The aim of the study is to evaluate the hemodynamic changes in preterm infants with respiratory distress syndrome (RDS) by echocardiography.

PATIENTS AND METHODS

We conducted a prospective study on preterm infants (gestational age ≤ 32 weeks) with RDS who were receiving respiratory support. We performed two-dimensional M-mode and pulsed Doppler echocardiography on all infants during invasive and non-invasive ventilation.

RESULTS

A total of 40 preterm infants were enrolled. Left ventricular end diastolic diameter, left ventricular

end systolic diameter, right ventricular end diastolic diameter, pulmonary maximum velocity, aortic maximum velocity and tricuspid regurgitation gradient were statistically different between invasive and non-invasive ventilation, whereas ventilation type did not show any relation with fractional shortening and mean inferior vena cava diameter. The cardiac output was significantly decreased during invasive ventilation mode (218 ± 32.9 vs 232 ± 35.4 mL/kg/min, p = 0.005).

CONCLUSION

The study provides echocardiographic data and measurements of cardiac chambers and the flow into the great vessels during invasive and non-invasive ventilation in preterm babies.

ABS 97

COLLODION BABY – A RARE FORM OF CONGENITAL ICHTHYOSIS: PRESENTATION OF A CASE WITH GOOD OUTCOME

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BACKGROUND

Ichthyosis is a heterogeneous group of genodermatosis characterized by keratinization disorder. Collodion baby (CB) is a rare clinical entity, occurring in 1 out of 50,000 to 100,000 births, in which the newborn has a thick and transparent membrane that covers the body surface and gives a reddish colour and a wet look. Most of the CB patients are diagnosed with lamellar ichthyosis or congenital ichthyosiform erythroderma, although variable range of clinical presentation and outcome is described. We report a newborn with this condition who had successful outcome.

CASE REPORT

A 1-day-old female neonate was transferred to our hospital for further evaluation and management of collodion membrane on his whole body. She was born at 38 weeks of gestation, weighting 3.35 kg, and Apgar 9/10. She was the first baby of nonconsanguineous parents. There was no family history of any related disorders. At birth the patient had a thick, taut and shiny skin with multiple fissures and scaling. The diagnosis was based on the clinical picture. Emollients were applied continuously, as well as antibiotic treatment to prevent secondary infection. Temperature, fluid and electrolyte balance were maintained. Desquamation of the whole body appeared at 2 weeks, leaving nearly normal-appearing skin. This is known as "self-healing CB" or "lamellar exfoliation of the newborn", and occurs in only about 10% of the CB patients.

CONCLUSION

CB is a rare disorder and the outcome depends on the initial assessment of the patient, adequate skin care and treatment. Multidisciplinary approach is often needed regarding the multiple possible complications.

ABS 98

NECROTIZING ENTEROCOLITIS AND RISK FACTORS

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BACKGROUND AND AIM

Necrotizing enterocolitis (NEC) is an important cause of mortality and morbidity especially for extremely low birth weight neonates. The incidence and risk factors vary between units. Determining the risk factors is important because pathogenesis and etiology of disease is not well explained. Our aim is to determine the risk factors of NEC among the neonates followed up in our neonatal intensive care unit.

METHODS

One hundred and ninety-eight neonates with NEC, followed up between January 2008 and December 2012, were evaluated retrospectively and defined as Group 1. Group 1 was further divided into 2 subgroups; 66 infants with suspected NEC (Group 1a) and 132 with definite NEC (Group 1b). Ninety-nine infants without NEC were defined as control group (Group 2). Multivariate analysis was used used to determine independent risk factors.

RESULTS

The incidence and mortality of NEC were found as 9.7% and 6.8%, respectively. Multivariate

analysis revealed the independent risk factors for the development of NEC: preeclampsia, abnormal Doppler blood flow, episodes of hypothermia, presence of hypomagnesemia and anemia. When Group 1b and 2 were examined, the independent risk factors for definite NEC were found as low birth weight, abnormal Doppler blood flow, mechanical ventilation, episodes of hypothermia, hypomagnesemia and anemia. When Group 1 a and 1b were examined, the independent risk factors for definite NEC were blood transfusion given 48 hours before the development of NEC, presence of anemia and O_2 therapy.

CONCLUSION

Risk factors found in our study are compatible with the risk factors associated with NEC in other studies.

Avoiding anemia, hypothermia and hypomagnesemia, stopping O_2 and mechanical ventilation as soon as possible, as well as avoiding unnecessary blood transfusions, avoiding feeding the infants with abnormal Doppler blood flow and managing maternal preeclampsia more carefully would be beneficial in preventing the development of NEC.

ABS 99

NEONATAL OVARIAN TORSION IN FOUR NEWBORN INFANTS

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BACKGROUND

Neonatal ovarian cysts have been related to fetal exposure to maternal and fetal gonadotropin. Complications including torsion and haemorrhage rarely occur, and lead to symptoms related to mass effect similar with bowel or urinary obstruction.

CASE REPORTS

Here, we present the clinical presentation, sonographic features, surgical and pathological findings of four newborn infants with ovarian torsion which probably occurred in intrauterine life (**Tab. 1**).

CONCLUSION

Surgical treatment is necessary in symptomatic, complicated and torsioned cysts.

Table 1. Clinical, radiological, surgical and pathological characteristics of newborn cases with ovarian torsion.

Cases	Diagnosis day and presentation	Radiological findings (US and CT Scan)	Surgical findings	Pathological findings
Case 1	1st DOL: abdominal mass on PE	Central cystic abdominal mass measuring 47 x 41 x 37 mm	Chocolate coloured right ovary seemed torted. Right SO	Infarcted ovarian cyst (5 x 4 x 3.5 cm) containing dark brown fluid compatible with torsion
Case 2	4th DOL: abdominal mass on PE	A cystic mass 52 x 41 mm in diameter which starts from the neighbourhood of right ovary separated from kidneys	A twisted cyst of the right ovary (5 x 4 x 3.5 cm) containing dark brown fluid was found. Right SO	Hemorrhagic infarct of right ovary with areas of calcification within it
Case 3	Antenatally diagnosed	A complicated large cyst in the right abdominal region 65 x 42 x 35 mm in diameter with thick cyst wall and punctat echogenicity in cyst fluid	Large right ovarian cyst, haemorrhagic and fragile. Ovary torted. Right SO	The right ovary was totally necrotic and, in cystic structure, tuba uterina was totally calcified
Case 4	5th DOL: abdominal mass on PE	A complicated cyst 50 x 45 x 26 mm in diameter in the right side of the abdomen	Cystic mass with chocolate coloured fluid. Right SO	A fibrotic cyst (5 cm diameter) which contains calcified areas

DOL: day of life; US: ultrasound; CT Scan: computerized tomography scan; SO: salpingo-oophorectomy; PE: physical examination.

ABS 100

NEONATAL AORTIC THROMBOSIS MIMICKING CONGENITAL HEART DISEASE

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BACKGROUND
Arterial thrombosis is rare in neonatal period and mostly connected with use of umbilical arterial catheters. Spontaneous arterial, especially aortic, thrombosis occurs sporadically and mortality is over 40% despite treatment.
CASE REPORTS
We report three cases during 3-year period, all presented in first days of life with absent pulses, immeasurable pressures on legs and leg's cyanosis, and sent in our Unit because of suspicion of aortic coarctation. Doppler ultrasound of the abdominal aorta and its branches was performed after heart echocardiography showed no pathology. Complete occlusion of abdominal aorta has been found in all three cases. Screening for thrombophilia was performed and showed that first patient had PAI-1 mutation, the second was homozygote for MTHFR T677T mutation with slightly elevated homocysteine and also prothrombin G20210A mutation. Thrombophilic screening didn't reveal any pathology in our third patient. All patients were treated with continuous intravenous heparin and later with subcutaneous LMWH until resolution of thrombus were completed although third patient required thrombectomy and use of tissue plasminogen activator in the beginning.
CONCLUSION
Arterial thrombosis may be present in newborns with congenital heart disease and it's necessary to distinguish the underlying pathologies because of totally different therapeutic approach.

ABS 101

INDICATIONS FOR ACUTE DIALYSIS IN NEONATES OVER THE PAST THREE DECADES AT UNIVERSITY HOSPITAL CENTER ZAGREB

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BACKGROUND AND AIMS
Acute kidney injury (AKI) is a common occurrence in critically ill neonates in the intensive care unit. Over the past several decades, the epidemiology of acute kidney failure (AKF) in neonates (defined as need for dialysis) has changed significantly. We analysed indications for dialysis in Croatia over the past three decades.
METHODS
Medical records of newborns from 1982 and 2014 were investigated to discover patients who needed renal replacement therapy (RRT) before age of 30 days. Age, gender, diagnosis, method of dialysis, and survival were recorded for all patients.
RESULTS
Acute dialysis was done in 47 newborns. Most of them were boys (63.8%). Until 2004, the only available method was peritoneal dialysis and over the past decade in 90% of cases we used continuous RRT. Before 2005 the most common indication for acute dialysis were sepsis (41.9%) and AKF after surgery for congenital heart defect (CHD) (35.5%). Sixteen newborns needed RRT after 2005 and indications were as follows: asphyxia (4), hyperammoniemia (3), sepsis (2), CHD (2), thrombosis of abdominal aorta and renal arteries (2) and multiorgan failure after volvulus surgery, renal hypoplasia and unknown cause (each one case). Mortality is still high, and before and after 2005 was 68% and 56.3%, respectively.
CONCLUSION
Survival of critically ill neonates in the ICU has improved over the past decades reflecting improvements in obstetrics, delivery room and neonatal intensive care; the indication for dialysis moved from sepsis and CHD to rare metabolic disorders.

ABS 102

TRENDS IN MORTALITY AND MAJOR MORBIDITY AT DISCHARGE AMONG VERY LOW BIRTH WEIGHT INFANTS (22-25 WEEKS OF GESTATION). REVIEW OF SIX YEARS (2008-2013)

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BACKGROUND AND AIMS
To assess changes in mortality rates and morbidity at hospital discharge in infants born between 22 and 25 weeks' gestation over a period of 6 years (2008-2013).

METHODS
Single center cohort study of preterm infants between 22^{+0} and 25^{+6} weeks' gestation. Period: 2008-2013. Stillbirths and delivery room deaths were included. We analysed mortality rates. Major morbidity in survivors were defined as major cerebral injury on ultrasonography (intraventricular haemorrhage grade III-IV, periventricular leucomalacia and hypoxic-ischemic injuries), chronic lung disease (CLD) stage II-III, retinopathy of prematurity (ROP) ≥ stage III or surgical treated necrotizing enterocolitis (NEC).
RESULTS
Over the six year period, 163 infants were included. 134 were born alive and 63 patients survived to hospital discharge. Of all preterm babies less than 32 weeks, the percentage of infants ≤ 25 weeks' gestation increased from 12.7% to 22.6%. Perinatal mortality decreased significantly from 58.8% (10/17) to 19.2% (5/26). Mortality before discharge of live births decreased from 60% (6/10) to 28% (7/25). Survivors with major neonatal morbidity decreased from 100% (4/4) to 94.4% (17/18). There were no significant differences in neurologic morbidity (25% vs 33.3%), CLD stage II-III (75% vs 77.8%) and ROP ≥ stage III (50% vs 44.4%). However, the surgical treated necrotizing enterocolitis decreased from 25% to 5.5%.
CONCLUSIONS
Over this period, we observed that even though the number of registered infants ≤ 25 weeks' gestation increased, mortality rates significantly decreased. Proportion of survivors with major neonatal morbidity was unchanged except surgical treated NEC that decreased significantly.

ABS 103

MANAGEMENT OF HYPERBILIRUBINEMIA IN PRETERM INFANTS IN TURKEY: A SURVEY STUDY

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BACKGROUND AND AIM
Prematurity is a significant risk factor for the development of unconjugated hyperbilirubinemia. The study aimed to investigate the current approach in the management of hyperbilirubinemia among the preterm newborns in Turkey.
STUDY DESIGN
A study specific questionnaire for management of jaundice in preterm infants was sent to 100 level III neonatal intensive care units in Turkey.
RESULTS
84 centers from all region of Turkey responded. 75.3% of centers used Turkish Neonatology Society guidelines for deciding to start phototherapy while 24.7% of centers used different guidelines. Monitoring of bilirubin varied among participants. 53.6% of participants believed that prophylactic phototherapy was necessary if the infant's birth weight was under 1,000 g. A total of six cases of kernicterus in preterm infants in recent years were reported by participants.
CONCLUSION
There is no single standardize approach to management of neonatal hyperbilirubinemia in preterm infants in Turkey. In addition, prophylactic phototherapy for extremely low birth weight infants may be added to the novel guidelines of our country.

ABS 104

HEALTHCARE-ASSOCIATED INFECTIONS

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BACKGROUND
Healthcare associated infections (HAI) are the most frequent adverse event in health care units, leading to significant morbidity and mortality.
AIMS
Compare the incidence and epidemiology of HAI before and after implementing sustainable infection control strategies, evaluating their effectiveness.
METHODS
Retrospective, observational study of HAI occurring in a level III NICU between 2011-2013. Implemented measures were: training of health-care professionals, hand hygiene, practical strategies to reduce central line-associated bloodstream infections and antibiotic use.
RESULTS
Of 1,208 admitted newborns, 124 had HAI. The overall incidence of HAI (2011-2013) was 18%, 13.1% and 14.6% with a mean of 1,46 HAI per infected newborn. Most common HAI were: sepsis (48%), enterocolitis (12.5%), conjunctivitis (8.7%),

respiratory tract infection (6%) and phlebitis (4.4%). Microbial aetiology was established in 56.1% cases: *Enterobacteriaceae* (26.7%), coagulase-negative *Staphylococcus* (26.7%) and *S. aureus* (19.8%). Methicillin resistance occurred in 57.4% of staphylococcal infections and 48.1% of infections due to *Enterobacteriaceae* producers of extended-spectrum beta-lactamases. There was an initial decrease in infections by *S. aureus* (9.9% vs 4% vs 6%) and by *Enterobacteriaceae* (12.9% vs 7.9% vs 5.9%) while coagulase-negative *Staphylococci* infection increased (7.9% vs 8.9% vs 9.9%). Broad-spectrum antibiotic use also decreased: vancomycin (30.7% vs 30% vs 11.3%), meropenem (13.3% vs 19.3% vs 3.3%) and cephalosporins (21.4% vs 7.1% vs 3.9%). The median time for HAI was 16 hospital days, and at diagnosis central line and mechanical ventilation were present in 52.6% and 20.8%, respectively. Mortality was 5.4%.

COMMENTS

Reduction in the incidence of HAI reinforces the importance of infection control strategies. Continuous training of professionals as well as conducting internal audits are essential in order to understand their effectiveness, durability and interpret epidemiological changes that may occur.

ABS 105

APGAR SCORE – HOW OBJECTIVE COULD WE BE?

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BACKGROUND AND AIMS

APGAR determines how well the baby tolerated the birthing process and describes the early neonatal adaptation. Question related to its objectivity remains controversial in every day practice, often being the matter of dispute between neonatologist and obstetrician. In order to determine the objectivity of the APGAR tests, we conducted a research and compared the test scores to the cord blood values (pH, base excess – BE, lactate).

METHODS

A randomized trial was conducted. A total of 215 term newborns were included in the study, and their cord blood samples obtained. APGAR scores at 1st (API1) and 5th (API5) minute to each newborn were correlated with the values of pH, BE and lactates measured from the cord blood sample. Spearman rank correlation test was used.

RESULTS

There is statistically significant positive correlation between API1 and pH ($r = 0.350$; $p = 0.000$), and API1 and BE ($r = 0.272$; $p = 0.000$). There is statistically significant negative correlation between API1 and lactate ($r = 0.291$; $p = 0.000$). Stepwise multiple regression analysis revealed only pH values significantly contribute to the values of API1 variable (18.8%). There is statistically significant positive correlation between API5 and pH ($r = 0.240$; $p = 0.000$), and API5 and BE ($r = 0.139$; $p = 0.000$). There is statistically significant negative correlation between API5 and lactate ($r = 0.204$; $p = 0.003$). Stepwise multiple regression analysis revealed only pH values significantly contribute to the values of API5 variable (12.8%).

CONCLUSION

Results demonstrate that the strongest positive correlation exist between API1 and pH. Moreover, it is evident that API1 scores, that in fact relate to the actual birthing process, correlate stronger to the cord blood tests.

ABS 106

DIGITAL AND ANALOG RADIOGRAPHIC IMAGING OF NEONATES: DOSE AND IMAGE QUALITY EVALUATION

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BACKGROUND AND AIMS

Neonates admitted in the NICU frequently undergo several radiographic examinations. Due to increased neonatal radiosensitivity and longer life expectancy, it is important to keep radiation doses to a minimum without image quality (IQ) degradation.

METHODS

An optimization study on radiation dose and IQ was conducted on 195 chest or chest-abdomen radiographs

(75 screen film [SF] images, 60 computed radiographic [CR] images in printed form [printed images] and 60 CR in electronic form [digital images]). Exposure parameters (tube voltage [kVp] and tube load [mAs]) were recorded and entrance surface dose (ESD) was estimated. IQ evaluation was performed independently by two observers, based on the visibility of certain anatomical features and catheters.

RESULTS

ESD values increased with neonatal weight, ranging from 16.8 to 64.7 μGy. Mean ESD was 35.9 ± 9.3, 34.8 ± 8.4 and 36.9 ± 10 μGy for all, CR and SF images, respectively. Most values (93%) were lower than 50 μGy (Dose Reference level proposed by the National Radiological Protection Board). Linear regression showed positive correlation of ESD with mAs ($r = 0.80$, $p < 0.001$) and negative correlation with kVp ($r = -0.25$, $p > 0.05$). IQ evaluation revealed the feasibility of achieving diagnostically satisfactory images using low or high kVp, the latter resulting in reduced ESDs. IQ is independent of kVp in the range used, for all images ($r = 0.02$). Digital images processed by windowing technique are superior to printed images ($p < 0.0001$).

CONCLUSION

High tube voltage techniques result in reduction in neonatal radiation dose, without IQ degradation. Digital images are superior to printed images, due to processing capability.

ABS 107

HOW TO ASSESS NEONATAL PAIN

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BACKGROUND AND AIM

In the last years, it has become evident that repeated painful experiences in neonates can lead to serious short- and long-term consequences, demonstrating that there's still a gap between scientific knowledge on neonatal pain and the use of methods for pain assessment.

We investigate the current state on pain management in the neonatal intensive care units (NICUs) of different areas of the world.

METHODS

We performed a PubMed research in studies published from 2013 to 2014, using as keywords: pain assessment, pain management, newborn.

RESULTS

We retrieved 5 studies. The most relevant data are the following: in Europe (United Kingdom), a study shows that 56.9% of ventilated neonates and 32.5% of non-ventilated neonates underwent pain assessments in NICU ($p < 0.001$); in Japan, over than 60% of health-care professionals (HCP) don't use pain scales; 63% among them has no rules on pain relief during painful procedures; about 25% consider that HCP collaborated in pain management. In South India, a questionnaire shows that nurses are more perceptive than physicians about painful procedures. In Sweden, all NICUs have national guidelines for pain prevention and treatment, but these aren't used consistently. In Brazil, participation in training is reported by 86.4% of HCP and 94.4% use pain scales.

DISCUSSION

These data show that pain assessment is still far from satisfying and new tools for acute pain management in neonatology are needed. Instead, scales for prolonged pain should be used with no exception, because they are easy to use and useful for babies' relief.

ABS 108

DEVELOPING A QUESTIONNAIRE FOR THE MEASUREMENT OF PATIENT SATISFACTION IN A NICU

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BACKGROUND

Patient satisfaction (PS) is considered one of the key indicators for measuring quality of health services.

AIM

The aim of this study was to record and evaluate parental views for PS of NICU care in order to estimate provided health services.

METHODS

A developed questionnaire from hospital's quality department for data collection was used. The study conducted during March 2006 to December 2008 at discharge from NICU from a sample of 571 parents whose neonates were hospitalized.

37 items expressed in a Likert scale comprising four domains (information, nurses' intervention, interpersonal relationships, caring [consistency-reliability], confidence-security) for doctors and nurses and hospital environment-hygiene as the fifth were evaluated respectively. Factor analysis and internal consistency reliability examined with Cronbach's alpha coefficients in order to format appropriate summated scales were used. An overall satisfaction score was measured, also in relation to psychotherapy process, gravida status and previous experience from other NICU's.

RESULTS

The response rate was 39.6%. The summated scales derived were medical staff (4 items), nursing staff (12 items) and hospital environment (2 items). The overall mean (median) satisfaction score for doctors was 4.573 (4.75), nurses 4.184 (4.41) and hospital environment 4.52 (5). There was no statistical difference in relation to psychotherapy, gravida status and previous experience.

CONCLUSIONS

The questionnaire used was found to have satisfactory reliability properties. Mean satisfaction for doctors, nurses and hospital environment was extremely high. Further research is required for a more robust design towards proper validation with the use of larger samples from NICUs of different hospitals.

ABS 109

SURGICAL ANOMALIES IN A COHORT OF TWINS: THE ROLE OF ASSISTED REPRODUCTION TECHNOLOGY

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BACKGROUND AND AIMS

Twin pregnancies are associated with increased incidence of fetal anomalies and neonatal complications. Iatrogenic twinning is an important side-effect of assisted reproduction technology (ART) and the increasing number of twin pregnancies has generated numerous debates regarding the need for additional healthcare provision in the offspring. We studied the incidence of surgical disorders in a population of twins and its association with type of conception.

METHODS

Data concerning 875 live-born twins of whom at least one was admitted in the Neonatal Intensive Care Unit between 1995 and 2012 were analysed. Forty five % of the gestations (199/445) were the result of ART, defined as *in vitro* fertilisation or intracytoplasmic sperm injection.

RESULTS

In the ART group 21/390 neonates (5.4%) had surgical anomalies (gastrointestinal, urogenital, musculoskeletal, central nervous system), compared to 15/485 (3.1%) in the non-ART group (OR = 1.79; 95% CI = 0.91-3.52). More specifically, 11 neonates (2.8%) in the ART group were diagnosed with urogenital defects *versus* 5 (1.0%) in the control group (OR = 2.79; 95% CI = 0.96-8.11). Multivariable logistic regression analysis showed that ART was a risk factor for surgical disorders in general (OR = 2.33; 95% CI = 1.00-5.46, p = 0.05) and for urogenital anomalies in particular (OR = 4.73; 95% CI = 1.16-19.3, p = 0.03) after adjustment for maternal age, parity, fetal chorionicity and gender.

CONCLUSIONS

Our results suggest that twins resulting from ART are at increased risk for surgical anomalies and especially urogenital defects. Therefore, increased surveillance during early infancy may be suggested to prevent surgical complications in these populations.

ABS 110

HOW PAINFUL IS A HEEL PRICK OR A VENIPUNCTURE IN A NEWBORN?

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BACKGROUND AND AIM

Heel pricks and venipunctures are commonly performed in Neonatal Units to obtain blood samples for analyses. The Premature Infant Pain Profile (PIPP) is a widely used scale for evaluate acute pain in term and preterm babies. Our aim was to assess how effective are the analgesic strategies commonly used during painful routine procedures, and to identify the most effective analgesic strategy.

METHODS
We performed a PubMed research from 1999 to 2013. We retrieved all papers in English language that evaluated pain during neonatal heel prick or venipuncture. We included only papers that expressed PIPP score as mean and standard deviations, or mean and 95% confidence intervals.
RESULTS
Fifteen papers met the inclusion criteria. Among them, only two studies used the same analgesic method. We did not find any significant difference between heel prick and venipuncture. A significative difference with placebo is present when oral sugar is used at concentrations greater than 10%. Sensorial saturation and non-nutritive sucking along with 10% glucose seem to be the most effective analgesic tools.
CONCLUSIONS
A large amount of analgesic methods was used. Newborns' pain is still far to be correctly treated; which is the best type of analgesia is still to be decided, thus we claim for further homogeneous studies in this field.

ABS 111

HIGH-DOSE IBUPROFEN FOR PATENT DUCTUS ARTERIOSUS IN TERM AND PRETERM NEONATES

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BACKGROUND AND AIMS
Patent ductus arteriosus (PDA) is a frequent complication in preterm infants associated with various morbidities, ranging from bronchopulmonary dysplasia, prolonged ventilation and necrotizing enterocolitis to intracranial and pulmonary hemorrhage and death. Ibuprofen and indomethacin have been effectively used for pharmacological closure of PDA. However ibuprofen appears to be the drug of choice. Our aim was to estimate the closure rate of clinically significant PDA using high-dose regimen of ibuprofen and record possible side effects.
METHODS
Sixteen neonates with haemodynamically significant PDA, hospitalized in two neonatal units from June 2013 until August 2014, were treated with high dose of ibuprofen 14, 7 and 7 mg/kg. A second and a third course of 20, 10 and 10 mg/kg of ibuprofen was given when failure of closure of PDA was noted. Nineteen neonates, who were treated for hemodynamically significant PDA, with the standard dose of ibuprofen (10, 5 and 5 mg/kg), from January 1012 until May 2013, were used as controls and were compared with those treated with the high dose regimen.
RESULTS
A higher rate of closure in group 2 could be observed (93.8 vs 80%, p = 0.347), which was not significant but indicated a clear positive trend. Of the neonates treated with the standard dose regimen, 52.6% had persistent PDA and needed a second dose as compared with 25% of those treated with the high dose regimen. No differences in the occurrence of adverse effects were observed between the two groups.
CONCLUSIONS
High dose ibuprofen seems able to increase the rate of effective pharmacological PDA closure without causing any further side effects.

ABS 112

CARDIAC TAMPONADE AS A COMPLICATION OF PERIPHERALLY INSERTED CENTRAL CATHETER IN PRETERM INFANTS: A RETROSPECTIVE REVIEW OF THE CASES REPORTED AT AN ITALIAN LEVEL III NEONATAL UNIT

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BACKGROUND AND AIMS
Cardiac tamponade (CT), is a life-threatening complication associated to peripherally inserted central catheter (PICC). Aims of this study were to determine the incidence of CT and to identify associated risk factors in the VLBW infants admitted at our institution in the last two years.
METHODS
Records of VLBW infants from April 2012 to June 2014 were retrospectively reviewed.

RESULTS

109 VLBW infants were admitted and 71 PICCs were placed. Mean BW and GA were 977 g and 28 ± 3 weeks. Chest X-ray was done in all infants after PICC placement and in the 56.3% after 48 hours. The 23.9% needed repositioning of the catheter after 48 hours due to PICC migration. The 9.8% (n = 7) had a CT. This event occurred on average within the 3rd day after placement. In four cases the catheter was introduced from the right upper limb. The osmolarity of TPN in babies with CT was greater than in those without CT (1,053 and 911 mOsm/L respectively, $p < 0.05$). Three patients died despite adequate resuscitation, four patients promptly improved after echo-guided pericardiocentesis.

CONCLUSIONS

Our data confirm that the CT is a complication of PICC with a high mortality rate. Site of insertion and osmolarity of infusion are likely to play a key role, as well as PICC migration. Chest X-ray does not show to reduce the incidence of CD, therefore this condition should be suspected in any newborn developing symptoms of shock, despite a central catheter with a radiological correct position.

ABS 113

POSTOPERATIVE C-REACTIVE PROTEIN COURSE IN NEONATAL POPULATION AFTER MAJOR CARDIOVASCULAR OPERATIONS

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BACKGROUND AND AIMS

Increase in biomarkers such as C-reactive protein (CRP) or White Blood Cells (WBC) is related to inflammation after surgery. However, this association is less clear in neonates after cardiovascular operation. We examined the postoperative course of inflammation measured by CRP and WBC after major cardiovascular operations in neonates and explored possible associations with gender, gestational age (GA) and birth weight (BW).

METHODS

We measured CRP (mg/l) and WBC (cells/μl) preoperatively and in days 1 to 6 after major cardiovascular surgery in neonates hospitalized in our Neonatal Intensive Care Unit from November 2007 to April 2010. Demographic characteristics, along with GA, BW, type of surgery and use of cardio-pulmonary bypass (CPB) were analyzed. One-way Analysis of Variance (ANOVA) and multiple linear regression analysis were performed.

RESULTS

Study population included 22 neonates. Mean GA was 36.9 ± 2.6 weeks and BW was 2,721 ± 652.5 g. CPB was used in 3 neonates. All postoperative blood cultures were negative. A significant increase in mean CRP was recorded in the 1st (CRP_1 = 61.3 ± 50.2; $p = 0.001$) and 2nd (CRP_2 = 72 ± 50; $p < 0.001$) postoperative day, compared to baseline (CRP_0 = 1 ± 1.1). We did not record significant increase in WBC during the postoperative course. The difference in CRP between the 1st or 2nd day and the baseline was associated with male gender ($p < 0.01$) and increased birth weight ($p < 0.01$) or increased gestational age ($p = 0.01$).

CONCLUSIONS

Cardiovascular operations appear to influence the inflammatory response during the first 48 hours in neonates. This response appears to be more apparent in males and more mature neonates.

ABS 114

THE DIAGNOSIS OF TOXOPLASMOSIS IN PREGNANT WOMEN PROVIDES GOOD RESULTS OF TREATMENT OF CONGENITAL TOXOPLASMOSIS

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BACKGROUND

Congenital toxoplasmosis can result in spectrum of serious clinical manifestations that include mental retardation, seizures, blindness, and death. In our country the diagnosis of congenital toxoplasmosis mostly is made in neonates with typical clinical signs, or in neonates whose mothers acquire toxoplasmosis what is confirmed with serology. After laboratory confirmation of disease with serology and polymerase chain reaction (PCR) the neonate with congenital toxoplasmosis are treated with pyrimethamine and sulfadiazine for one year.

CASE REPORTS

In this work we present four neonates with diagnosis of congenital toxoplasmosis. The clinical

presentation of disease was various. In one child the diagnosis of toxoplasmosis was false, and in the second the disease was asymptomatic. In the third child the disease caused severe brain damage, and in the fourth child toxoplasmosis was presented with brain damage and ocular manifestation mostly unilateral. The treatment with pyrimethamine and sulfadiazine showed very good effects and the toxoplasmosis in all cases was cured.

CONCLUSION

The final conclusion is that there is the need for prompt diagnosis of toxoplasmosis during pregnancy and adequate treatment. This can be done with more serological tests during pregnancy repeating it three to four times.

ABS 115

CONGENITAL CMV INFECTION: SEVERE DISEASE OR ADDITIONAL INFECTION?

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BACKGROUND

Cytomegalovirus (CMV) infection is the most common congenital infection, occurring in about 1% of all liveborns. Symptomatic disease occurs in 10% of congenitally infected resulting in a spectrum of diseases that include prematurity, encephalitis, deafness, hematologic disorders, pneumonitis and death.

CASE REPORTS

We present six severe cases of congenital CMV infection with various clinical presentation of the disease. In all cases the diagnosis of CMV infection was confirmed with the polymerase chain reaction (PCR) method. The courses of all 6 CMV diseases were severe and there was a question about of importance of CMV infection in clinical courses and final outcomes. Sometimes the clinical suspicion about other diseases arised and in two cases other diagnosis was confirmed. The treatment was mostly performed with ganciclovir through 3 weeks and continuated with valganciclovir through 3 weeks. The toxicities of drugs were not seen but their inability to cure patients of the disease sometimes was seen.

CONCLUSION

Finally many questions arise including the importance of congenital CMV infection, the need for diagnostic evaluation of other diseases and the need for better drugs.

ABS 116

HEMATOLOGICAL PROFILE OF NEONATAL HEMOLYTIC JAUNDICE

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BACKGROUND AND AIMS

Neonatal jaundice is a common pathology requiring immediate detection and management. Clinical challenge is to differentiate between the majority of infants with physiological jaundice and those with pathological causes, thus to establish appropriate management plan. Certain diagnostic tests such as hemoglobin (Hb) and hematocrit (Htc) levels, erythrocyte (Er) and reticulocyte counts, and blood grouping might hasten the diagnosis. Purpose of the study was to analyze the hematological profile of neonatal hemolytic jaundice due to ABO and Rh incompatibility and compare it to other etiologies of indirect hyperbilirubinemia.

METHODS

The study group included 284 patients admitted for treatment of jaundice at the University Pediatric Clinic's Neonatology Department.

RESULTS

Most prevalent was jaundice of undefined etiology 44.37%, followed by neonatal infection, prematurity, hemolysis (ABO and Rh incompatibility), and birth trauma. Post-hoc analysis showed statistically significantly lower Hb values in hemolytic jaundice compared to jaundice due neonatal infection ($p = 0.01$). Er and Htc levels were statistically significantly lower for hemolysis compared to undefined etiology and infection. The peak bilirubin level (± SD) in hemolytic jaundice of 379.8 ± 133.6 mmol/l was statistically significantly higher than the other groups of causes. The analyzed groups significantly differ considering the bilirubin peak day (Tukey's HSD test).

CONCLUSIONS

Hyperbilirubinemia is a frequent neonatal morbidity; the leading cause being jaundice of

undefined etiology. Approximately 15% cases are of hemolytic origin and carry a significant risk for early and severe hyperbilirubinemia. Hematological parameters together with blood grouping are simple diagnostic methods that assist the etiological diagnosis of neonatal hyperbilirubinemia.

ABS 117

FEASIBILITY OF USING LOW DELIVERED TIDAL VOLUMES AND HIGHER FREQUENCIES IN HIGH-FREQUENCY OSCILLATORY VENTILATION AS LUNG PROTECTION STRATEGY

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BACKGROUND AND AIM

Invasive mechanical ventilation is a known causative factor for neonatal lung injury, and HFOV has been proposed as potential protective ventilation. Recently the use of increasing frequencies directly correlated with improved CO_2 clearance when keeping the tidal volume (Vt) fixed and using lower delivered tidal volumes and high frequencies may has been proposed to improve ventilation efficacy while minimizing lung injury. The aim of the study was to evaluate the feasibility of using this strategy in the clinical practice.

METHODS

Newborn infants with severe respiratory insufficiency on HFV were included. After adequate ventilation using standard protocol on HFV the tidal volume was fixed and the frequency was gradually increased until the highest possible and the tidal volume was decreased to maintain a constant CO_2 diffusion measurement (DCO_2) to keep a constant PCO_2. Both situations pre and post highest frequency with constant DCO_2 were compared.

RESULTS

It was possible to increase in all the patients the frequency while decreasing the Vt maintaining a constant DCO_2 (**Tab. 1**).

CONCLUSIONS

It is possible to use low delivered tidal volumes and higher frequencies in HFV to allow minimizing lung injury.

Table 1. Newborn infants with severe respiratory insufficiency on HFV.

Gestational age, weeks	Birth weight, g	Vt(1), ml/kg	Vt(2), ml/kg	*f*(1), Hz	*f*(2), Hz	DCO_2, ml²/sec
23^{+2}	670	2	1.5	12	16	18
25^{+2}	790	1.8	1.5	11	18	23
25^{+5}	460	1.7	1.3	9	18	6
26^{+4}	680	2	1.6	11	18	22
30	720	1.8	1	11	18	14
35^{+1}	1,700	2	1.5	10	16	110
38^{+6}	3,610	2.8	2.2	8	12	775

Vt: tidal volume; DCO_2: CO_2 diffusion.

ABS 118

HELIUM TO PROTECT THE IMMATURE LUNG FROM OXYGEN TOXICITY

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BACKGROUND AND AIMS

Helium is an inert gas that due to its low density has been used as a therapy of obstructive up and low small and has been suggested to prevent acute airway lung disease.

The aim of this study is to verify that a prolonged exposition to oxygen in nitrogen (nitrox) is more toxic than oxygen in helium (heliox), at different oxygen concentrations, normoxia and hyperoxia, in newborn rats during the rapid growth phase of the lung.

METHODS

Experimental study in spontaneous breathing newborn rats during 14 days at different oxygen concentrations, 20% and 60% in nitrogen or helium. In all the groups, serial pulmonary function test was done during spontaneous breathing using total body pletismograph. At day 14 pups were sacrificed and lung histology and inflammatory reaction of the lungs (immunohistology) were analyzed.

RESULTS

Spontaneous breathing of 60% oxygen enriched air from birth produces histological, functional and cytochemical changes similar to those observed in bronchopulmonary dysplasia. The same proportion of heliox reduces histological changes in the immature lung, decreases methacholine-induced airway hyperresponsiveness and decreases lung inflammatory

response, with a lower expression of IL1, IL6 and IL10.

CONCLUSIONS

In selected neonates, the administration of heliox could reduce the work of breathing, improve elimination of CO_2 and reduce lung damage.

ABS 119

CEREBELLAR HAEMORRHAGE AND SIGNIFICANT SUBSEQUENT ATROPHY IN AN EXTREMELY LOW-BIRTH WEIGHT (ELBW) INFANT

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BACKGROUND

Cerebellar haemorrhage and subsequent atrophy in preterms has been increasingly recognised recently with the more frequent use of brain MRI. It occurs in up to 17% of the preterm infants with birth weight < 1,000 g. A combined cerebellar and cerebral lesion represent the severe end of the spectrum of brain damage and is associated with notable perinatal risk factors, high mortality rates and severe neurodevelopmental deficits.

CASE REPORT

We describe a male preterm, with a complicated postnatal course, diagnosed post-discharge with cerebellar haemorrhage and atrophy. He was born in a primary maternity unit, at 25 gestational weeks, due to abrupt onset of labor and maternal chorioamnionitis, by vaginal delivery, birth weight 810 g, with no respiratory effort, requiring immediate intubation and surfactant administration. He arrived in NICU at 6 hours of life; after different complications, he was discharged at 39 gestational weeks.

Neonatal sepsis, BPD (40 days ventilation, 6 weeks supplemental O_2, steroids course), PDA (ibuprofen course) and ROP stage 3 complicated his progress. IVH grade IV with left frontal parenchymal haemorrhagic infarction was early demonstrated on ultrasound. Brain MRI at 44 gestational weeks showed PVL, porencephaly in the previous infarction and bilateral cerebellar haemorrhage with significant atrophy. Currently, he is a 9 month old (corrected age) with 4-limb motor disorder, dystonic and ataxic features, global developmental delay and evolving microcephaly.

CONCLUSIONS

It is important to identify early on MRI cerebellar injury in high-risk preterms, since it is missed on ultrasounds, for prognostic and therapeutic reasons.

ABS 120

RISK FACTORS OF CATHETER-RELATED BLOODSTREAM INFECTIONS IN NEONATES WITH CENTRAL VENOUS CATHETERS

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BACKGROUND AND AIMS

Central Venus Catheters (CVC) are widely used in Neonatal Units, providing a permanent way for intravenous administration of medication and hyperosmotic fluids, with, however, catheter-related bloodstream infections (CRBSI) remaining a major complication. Aim of our study was to evaluate the risk factors of CRBSI in neonates with an indwelled CVC.

METHODS

We reviewed the records of all neonates admitted to the 2nd NICU of the Aristotle University of Thessaloniki, from 1/2012 to 9/2013, who had a CVC placed. The neonatal data were recorded and two groups were further identified: group 1 (neonates that developed CRBSI) and group 2 (controls).

RESULTS

A total of 123 neonates with an indwelled CVC (Umbilical Venus Catheter, PICC Line, Hickman) were identified. Group 1 consisted of 29 neonates (42% males), with mean GA 32 weeks and BW 1,695 ± 787 g, while second group of 94 neonates (41% males), with mean GA 31^{+4} weeks and BW 1,535 ± 824 g. No differences were recorded between the two groups, regarding the type of the catheter placed (Group 1: UVC 69%, PICC Line 28%, Hickman 3%, Group 2: UVC 79%, PICC Line 21%, Hickman 0%). Nevertheless, the placement of multiple CVCs (CRBSI group: 38%, control group 11%, $p < 0.05$) and the prolonged duration of CVC *in situ* (16 ± 12 days vs 9.9 ± 8 days, $p < 0.05$) were associated with increased risk of CRBSI. The overall CVC rate was estimated in 20 CRBSI/1,000 CVC-days.

CONCLUSION
The placement of multiple CVCs and the prolonged duration of CVC *in situ* are main risk factors for CRBSI.

ABS 121

LIMB ARTERIAL THROMBOSIS IN NEONATES: SINGLE CENTRE EXPERIENCE

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BACKGROUND
Neonatal arterial thrombosis is diagnosed fairly rarely, but may be associated with increased mortality and serious disabilities. Indwelling catheters are considered to be the most important risk factor in neonates. Decision-making and management of arterial thrombosis can be challenging during the neonatal period, due to little published data on appropriate strategies and interventions.
CASE REPORTS
We report the management of 2 cases diagnosed with neonatal arterial thrombosis.
Two male preterms (30^{+2} and 35 gestational weeks), presented soon after birth showing clinical signs of arterial occlusion of a lower extremity, such as limb swelling, poor perfusion and absent peripheral arterial pulse. Doppler ultrasound confirmed the occlusion. Coagulation screening and brain ultrasound were closely monitored. Within a few hours, thrombolytic treatment with rt-PA was initiated due to severe ischaemia, followed by treatment with low molecular weight heparin.
Clinical improvement of the affected limb was seen within a few hours in both cases. Maternal diabetes was the only risk factor for arterial occlusion in the first case whereas the second infant is being followed-up for hereditary thrombophilia, having been on long term antithrombotic prophylaxis.
CONCLUSIONS
Arterial thrombosis in neonates is a medical emergency that requires immediate decision-making. Despite the fact that well designed clinical trials giving guidelines for antithrombotic therapy are still evolving, thrombolysis using rt-PA is justified for severe ischemia during the neonatal period.

ABS 122

CASE REPORT: POSTNATAL DIAGNOSIS OF RING CHROMOSOME 18 – R(18)

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BACKGROUND
R(18) is a rare disorder (10/82,000) in which one or both ends of chromosome 18 are lost and joined forming a ring-shaped figure. R(18) patients can show several phenotypic features depending on the size of the deleted regions, such as facial dysmorphisms, developmental delay, hearing and visual loss, brain, heart, genitourinary, musculoskeletal and immunological disorders.
CASE REPORT
We report the case of a neonate diagnosed with r(18) in our department.
This male neonate was born at 35 gestational weeks by C-section after the first, uncomplicated pregnancy of his healthy mother, with normal Apgar scores and 2,670 g birth weight. Desaturations and cyanotic spells occurred during oral feeding.
On examination, he had down-slanting palpebral fissures, flat nasal bridge, abnormal outer ear helix, increased nuchal thickness, wide space between hallux and second toes, heart murmur, hypotonia, weak neonatal reflexes, no response to light, not tracking objects, peripapillary melanoma on fundoscopy.
Blood count and biochemistry, septic screen, chest x-ray, ECG, hyperoxia test, head ultrasound: normal. Cardiac echo: atrial septal defect (ASD); renal ultrasound: increased echogenicity of renal cortex; karyotype: 46XY, r(18). MRI brain showed thin corpus callosum, delayed myelination, aplasia or hypoplasia of the olfactory bulbs, facial and cochlear nerves.
Currently, he is 15 months old, with profound global developmental delay, no speech and defective vision and hearing.
CONCLUSIONS
Family planning and genetic counselling is recommended as there is a significant chance of a second child with r(18) if a chromosomal change has been identified in one of the parents.

ABS 123

MATERNAL RISK FACTORS FOR NEONATAL NECROTIZING ENTEROCOLITIS: A RETROSPECTIVE STUDY

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BACKGROUND AND AIMS

Necrotizing enterocolitis (NEC) remains one of the most serious complications in newborn infants, particularly those of low birth weight. Despite the repeated literature attempts, there is still no validated algorithm to prevent development of NEC.

This study aims to examine whether specific maternal risk factors correlate with the development of NEC.

METHODS

This is a retrospective case-control study of newborn infants diagnosed with NEC in our NICU from 2010 to 2014. We examined possible NEC risk factors such as maternal body mass index, smoking, chorioamnionitis, premature rupture of membranes, hypertension, diabetes mellitus of pregnancy, multiple pregnancy, medical history of IVF process, exposure to antibiotics, neuroleptic drugs and steroids in the prenatal period, delivery mode and number of pregnancy. Data have been subtracted from medical records.

RESULTS

A group of 18 neonates with NEC and 36 matched controls were identified and analyzed. Exposure to maternal neuroleptic medication in the prenatal period was significantly correlated with the development of NEC ($p = 0.042$). The history of multiple gestation ($p = 0.014$) and IVF process ($p = 0.014$) were also strongly correlated with NEC. The neonates born by vaginal delivery tended to have a 62.5% reduced risk for NEC (OR 0.375), although this variable didn't reach statistical significance ($p = 0.232$). Our pooled results showed no significant association between chorioamnionitis and NEC.

CONCLUSIONS

In our cohort, the exposure to prenatal maternal neuroleptic medication, the history of multiple gestation and IVF were the only maternal variables statistically correlated with NEC, while the vaginal delivery may have a protective role.

ABS 124

NEONATAL RISK FACTORS FOR NEONATAL NECROTIZING ENTEROCOLITIS: A RETROSPECTIVE STUDY

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BACKGROUND AND AIMS

Necrotizing enterocolitis (NEC) remains nowadays an important cause of mortality within the neonatal population.

The aim of this study is to identify the neonatal risk or protective factors possibly associated with the development of NEC.

METHODS

This was a retrospective case-control study of infants with confirmed diagnosis of NEC in our NICU from 2010 to 2014. Statistical analysis was performed for potential risk factors for NEC such as epidemiological data, gestational age, resuscitation at birth, surfactant administration, prolonged respiratory and mechanical ventilatory support, formula vs breastfeeding, timing of enteral feeds introduction, septic events, red blood cell transfusions, antenatal exposure to antibiotics and steroids, umbilical catheterization. Data have been subtracted from medical records.

RESULTS

18 neonates with NEC and 36 matched controls were identified and evaluated. Variables which were shown to be significantly associated with NEC were gestational age less than 34 weeks ($p = 0.02$), LBW ($p = 0.009$) and VLBW ($p = 0.014$), advanced resuscitation at birth ($p = 0.02$), administration of surfactant ($p = 0.01$), prolonged mechanical ventilation ($p = 0.038$), late introduction of enteral feedings ($p = 0.01$), antenatal exposure to antibiotics ($p = 0.01$) and red blood cell transfusions ($p = 0.0001$). Males were found to have twice the risk for NEC (OR 2). Protective factors against NEC were breastfeeding (OR = 0.36, 95% CI = 0.6-3.38) and early introduction of enteral feeds ($p = 0.06$).

CONCLUSIONS

A reliable and validated scoring algorithm composed of many neonatal risk factors may facilitate earlier NEC diagnosis, interventions and treatment.

ABS 125

UNEXPLAINED APNOEAS IN AN OTHERWISE HEALTHY APPEARING TERM NEONATE: HADDAD SYNDROME

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BACKGROUND

Haddad syndrome refers to Congenital Central Hypoventilation Syndrome (CCHS) with Hirschsprung. CCHS occurs 1/200,000 live births, with Hirschsprung complicating 20% of them. Haddad is considered an autonomic nervous system dysregulation, with deficient response of central chemoreceptors to hypercarbia and hypoxaemia.

CASE REPORT

We report the unusual presentation of a female term, non-dysmorphic neonate, with recurrent apnoeas from day 1, with no primary respiratory, cardiac or neurometabolic disturbance, also complicated by abdominal distention and irregular bowel movements.

The neonate developed apnoeas in the first hours of life. She was ventilated in NICU, but was soon extubated. Apnoeas reoccurred mostly during sleep and nasal IPPV on sleep was offered with good response.

Intermittent episodes of abdominal distention and irregular defecation eventually led to an extended colectomy with a colostomy. After a complicated ICU admission, she had a tracheostomy.

A complete respiratory, septic, cardiac, neuro-metabolic and genetic investigation panel was performed. Biopsies were also sent from the colectomised tissue.

RESULTS

Septic markers, chest x-rays, ECG, cardiac echo, brain MRI, sleep and 24-hr EEG, neurometabolic tests, and CF genetics were all negative. Colon biopsies were confirmatory of Hirschsprung.

Haddad syndrome was the clinical diagnosis. Extended Haddad genetics (*PHOX2B*, *ASCL1*, *EDN3*, *GDNF*, *BDNF*, *RET* mutations) have been negative, indicating an unidentified new mutation.

Currently, she is a 12 month-old neurologically intact infant, with a tracheostomy, ventilatory support during sleep and a colostomy.

CONCLUSION

The clinical suspicion should be raised in NICUs when otherwise normal neonates present with unexplained apnoeas, mostly during asleep state.

ABS 126

CASE REPORT: CONGENITAL CNS TOXOPLASMOSIS AFTER APPROPRIATE ANTIMICROBIAL TREATMENT DURING PREGNANCY AND NEGATIVE AMNIOTIC FLUID PCR

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BACKGROUND

Identification of positive toxoplasma IgM during pregnancy is related with congenital toxoplasmosis of the foetus. Negative amniotic fluid PCR has been considered to rule out the possibility of foetal infection.

CASE REPORT

We report a case of a term male neonate diagnosed with CNS toxoplasmosis, born after a lady who developed positive toxoplasma antibodies during pregnancy, treated appropriately, with a negative amniotic fluid PCR.

The mother developed positive toxoplasma IgM in the 22nd gestational week. She was treated with spiramycin until delivery. Amniocentesis in the 23rd week confirmed a negative amniotic fluid PCR. Anomaly scans and foetal growth were normal. Maternal IgM became negative during pregnancy.

After delivery, the neonate was clinically examined and thoroughly investigated for the possibility of congenital toxoplasmosis.

The male neonate was born term, by vaginal delivery, in good condition, with physical parameters plotting between 25-50th centiles, without clinical features suggestive of active toxoplasmosis.

Blood count, blood biochemistry, toxoplasma immunoglobulins, blood septic markers, head and chest X-rays, abdominal ultrasounds were normal. CSF had 52 white cells (Lymph 42%, Poly 3%), protein 154 mg/dl, glucose 39 mg/dl, and positive PCR for toxoplasma. Brain USS and MRI demonstrated widespread calcifications.

Treatment initiated with pyrimethamine, sulfadiazine and leucovorin.
Currently, he is a 2-month-old boy with no obvious neurodevelopmental problem so far, on treatment.

CONCLUSION

It is important to rule out a congenital toxoplasmosis in an exposed neonate with thorough investigations post-delivery, since amniotic fluid PCR seems not 100% sensitive.

ABS 127

THE ANALYSIS OF SUCKING AND SWALLOWING VIA A NEW METHOD IN TERM INFANTS: PRELIMINARY REPORT

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AIM

The aim of this study is to analyse sucking and swallowing using swallowing sound in healthy term infants.

METHODS

Forty-two healthy term infants were analysed during the first week of life. Feeding performance was assessed based on swallowing data collected during 2-minutes audio recordings that were captured via a digital stethoscope. Software was used to automatically generate the following variables for each evaluation: total number of swallows (S), total number of rhythmic swallows (RS), total number of resting intervals (RI), average time between resting intervals (ATRI), average time between swallows (ATS), average time between rhythmic swallows (ATRS), maximum number of rhythmic swallows (MRS) and volume of milk ingested (VM).

RESULTS

Mean gestational age of 42 infants was 38.4 ± 0.9 weeks and mean birth weight was 3,255.7 ± 403 g. The term infants' percentile results for sucking and swallowing parameters are given in **Tab. 1**. Although the study composed of healthy term infants, we showed that term infants present wide distribution range in the sucking and swallowing performance. Feeding performance results are given in **Tab. 2**.

Table 1. Percentile (p) results for the feeding performance parameters during the feeding evaluations for the term infants (n = 42).

	5th pa	10th pa	25th pa	50th pa	75th pa	90th pa	95th pa
VM (ml)	16.6	20	28	30	40	45	49.2
S	28.1	31.5	39	43.5	51.2	61	68.5
ATS (ms)	1.3	1.6	1.9	2.3	2.8	3.2	3.6
RS	23.1	25	33	37.5	46	54.4	61
ATRS (ms)	1	1.1	1.4	1.7	2	2.3	2.6
RI	1	2	2	5.5	8.2	12	15
ATRI (ms)	3	3.3	4.8	7.1	12.6	15.9	19.5
MRS	10	10	12	18.5	29	33.7	35.7

[a]p: percentile. VM: volume of milk ingested; S: total number of swallows; ATS: average time between swallows; RS: total number of rhythmic swallows; ATRS: average time between rhythmic swallows; RI: total number of resting intervals; ATRI: average time between resting intervals; MRS: maximum number of rhythmic swallows.

Table 2. Feeding performance results for the healthy term infants (n = 42).

	Mean ± SD	Median (range)
VM (ml)	32.2 ± 9.1	30 (10-55)
S	45.7 ± 11.4	43 (24-84)
ATS (ms)	2.3 ± 0.6	2.3 (1.2-4)
RS	39.6 ± 11.5	37.5 (23-82)
ATRS (ms)	1.7 ± 0.4	1.7 (1-3)
RI	6.07 ± 4	5 (1-16)
ATRI (ms)	8.9 ± 5.1	7 (1.6-24.4)
MRS	20.5 ± 8.6	18 (8-37)

VM: volume of milk ingested; S: Total number of swallows; ATS: average time between swallows; RS: total number of rhythmic swallows; ATRS: average time between rhythmic swallows; RI: total number of resting intervals; ATRI: average time between resting intervals; MRS: maximum number of rhythmic swallows.

CONCLUSION

Successful oral feeding in infants requires well coordinated sucking, swallowing and respiration. Swallowing sound can be used to assess feeding maturation in infants. The wide distribution range in feeding parameters in term infants may be related with the small sample size. Further studies are needed with larger patient groups to show feeding maturation with this method in the term infant population.

ABS 128

NEONATAL ABSTINENCE SYNDROME DUE TO OPIOID ABUSE IN PREGNANCY

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BACKGROUND
Opioid abuse during pregnancy is increasing in women of childbearing age in Turkey.
Intrauterine exposure to opioids may cause congenital anomalies and/or fetal growth restriction, increase the risk of preterm birth, produce signs of withdrawal or toxicity in the neonate, or impair normal neurodevelopment.
The frequency of clinical signs of withdrawal in infants who were exposed to heroin *in utero* are varying between 16-90%.
These infants may require prolonged treatment and weeks of hospitalization.
Symptoms and signs resulted in heroin withdrawal are as follows; irritability, hyperactivity, tremors, high-pitched cry, excessive sucking and seizure.
In the literature, seizure has been reported in 2-11% while abnormal EEG results without overt convulsion activity have been reported in > 30% of newborn infants withdrawing from opioids.
CASE REPORTS
Here, we present 6 newborn infants with neonatal abstinence syndrome who were hospitalized in Neonatal Intensive Care Unit of Mersin Maternity and Children's Hospital. All of the 6 infants were symptomatic including irritability, tremors, high-pitched cry, excessive sucking and seizure. Hyperirritability was the predominant sign. Seizure was observed in 3 out of the 6 infants that clinically presented between the 1st and the 5th day of life and was controlled with phenobarbital. We have experienced seizure due to withdrawal of opioid more than the past reports and we think that interrupting breastfeeding may facilitate seizure.
CONCLUSION
Breastfeeding may slow down the decrease of opioid level in blood and may reduce the symptoms. In conclusion, opioid abuse in pregnancy is a growing sociological problem in Turkey and a protocol for management is required for neonatologists.

ABS 129

TUBEROUS SCLEROSIS COMPLEX: LIMITATIONS OF THE ANTENATAL GENETIC STUDY

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BACKGROUD
Tuberous sclerosis complex (TSC) is a rare autosomal dominant disorder that causes hamartomas in multiple organs. It has lifelong manifestations, including the fetal period, and is caused by loss of function of either the *TSC1* (encodes hamartin) or *TSC2* (encodes tuberin) genes located on chromosome 9 and 16, respectively.
CASE REPORT
We report on a case of TSC diagnosed during the neonatal period, with a negative antenatal study.
Male, no relevant family history, with antenatal diagnosis of intra-cardiac rhabdomyomas, and negative mutational TSC1+2 study. The first echocardiographic evaluation (D1) confirmed the presence of multiple intracardiac rhabdomyomas without hemodynamical compromise. On ophthalmologic examination (D3) a retinal hamartoma (left eye) was detected, and the clinical diagnosis of TSC was established. The brain MRI (D10) revealed subependymal nodules and left frontal cortico-subcortical nodular lesions. At 3 months of age, focal seizures of the right upper limb with ocular retroversion were detected. The electroencephalographic evaluation demonstrated outbreaks of epileptiform activity in the left fronto-centro-temporal region. Seizures were controlled with vigabatrin therapy.
DISCUSSION
The diagnosis of TSC was established due to the presence of two major criteria of the disease, despite a negative antenatal molecular analysis. This analysis neither excludes the disease, nor is predictive of its severity, however it can be useful to confirm the diagnosis in individuals with TSC criteria.

ABS 130

ASPECTS OF HEMOLYTIC DISEASE OF THE NEWBORN IN CLINICAL HOSPITAL SKB MOSTAR DURING THE PERIOD 2008-2013

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AIM

The main purpose of the research was to determine the most frequent types of haemolytic disease in the newborns.

SUBJECT AND METHODS

The research included the newborns with the developed clinical picture of haemolytic disease, who were treated at the Children's Diseases Department of the Clinical Hospital SKB Mostar. The data were statistically evaluated by a χ^2 test, whereby the PASW Statistics 18 programme was applied (18.0.0 version from 2009).

RESULTS

124 newborns with clinical picture of HBN were treated at the Children's Diseases Clinical Hospital, i.e. 1.78% of 6,949 newborns. Out of the total of 109 newborns with AB0 haemolytic disease, 14.52% were DCT positive with a moderate clinical picture.

CONCLUSION

However, the frequency of occurrence of HBN and its consequences for mother and child has not been reduced, not even 30 years after introduction of immunological prophylaxis. The reason is that no prevention measures exist yet for anti-RhD sensitization, which makes it a neonatal and a public health problem.

ABS 131

CONGENITAL STEINERT DYSTROPHY: WHEN SHOULD WE CONSIDER IT?

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BACKGROUND AND AIMS

Congenital Steinert Myotonic Dystrophy (SMD) is an autosomal dominant neuromuscular disorder characterized by muscular weakness and myotonia, which can affect both mother and child. The diagnosis can be confirmed by direct DNA analysis in serum.

Four patients are described.

CASE REPORTS

Case 1

Female, 37 weeks of gestation, polyhydramnios, poor fetal movements. Apgar score 3/7/8, myopathic facies, global hypotonia, hyporeactivity, required resuscitation and mechanical ventilation. Cranial ultrasound: ventriculomegaly. DNA analyses revealed 1,400 CTG repeats.

Case 2

Male, 31 weeks of gestation, polyhydramnios, C-section (fetal distress), Apgar score 1/3, severe hypotonia and hyporeflexia, no spontaneous respiratory movements, cryptorchidism and equinovarus feet. Resuscitated and mechanically ventilated. Chest x-ray: small lung fields and thin ribs. He died on D9 with NEC IIIb. CTG repeat size 1,400 copies.

Case 3

Female, 38 weeks of gestation, myotonic mother. C-section, Apgar score 1/5/5, hypotonia, hyporeflexia, expressionless facies, high palate. Resuscitated and mechanically ventilated. Thompson score (H1): 14, hypothermia therapy for 72 h. Extubated (D6). Cranial ultrasound: ventriculomegaly. CTG repeat size 1,500 copies.

Case 4

Male, 34 weeks of gestation, polyhydramnios. Echocardiography revealed right ventricle hypertrophy (RVH) and dilation, occasional extrasystoles. Apgar score 1/5/8, global hypotonia, myopathic faceis, thumbs adducts, cryptorchidism, requiring resuscitation and mechanical ventilation. Chest radiograph: elevation of the right hemidiaphragm. Echocardiography (D21): normal. Cranial ultrasound: ventriculomegaly. CTG repeat size 50 copies.

DISCUSSION

Polyhydramnios, poor fetal movements, low Apgar score, hypotonia, quadrangular ventriculomegaly, and myopathic mother are strongly suggestive of SMD.

In three cases the child's diagnosis led to the diagnosis in the mother.

ABS 132

USE OF HUMAN MILK DURING NEONATAL INTENSIVE CARE HOSPITALIZATION

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BACKGROUND AND AIMS
Research, practice and quality improvement initiatives focused on the use of human milk in the neonatal intensive care units (NICU) have been limited by the lack of a precise, quantitative measure of "human milk feeding". The aim of this study was to calculate the rate (%) of breast milk during hospital stay.
METHODS
Retrospective descriptive study of all very-low/low-birth weight and/or less than 32 weeks of gestation newborns (NB) admitted to the NICU in 2013. Demographic data, type and duration of breastfeeding and weight gain were analyzed.
RESULTS
A total of 59 NB were evaluated: the median birth weight and gestational age was 1,070 g (460-2,555 g) and 29 weeks (24-34 w), respectively. The median maternal age was 28 years (17-41) and 61% were cesarean sections.
Half (57.63%) of the NB initiated feeding with human milk with a median age of 36 h (2-135 h). Overall, in 45% of NB at least half of the feedings were breast milk, whilst 78% received at least one human milk feeding/day. The percentage of human milk was higher in the extreme low birth weight group (60% vs 40%, p = 0.014) and at discharge only 18.3% of infants were exclusively breastfed. Weight gain (> 15 g/day) was achieved more easily with mixed feedings.
DISCUSSION
During NICU stay there was decline in breastfeeding, which reinforces the need for continuous intervention, through training of health-care professionals and maternal awareness, during hospital stay but also after discharge. Professional support/trained groups improve the rate of breastfeeding during hospitalization and subsequently increase maternal breastfeeding.

ABS 133

PLACENTAL HISTOLOGICAL PATTERNS AND NEONATAL MORBIDITY/MORTALITY

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BACKGROUND
Placenta is a diary of intrauterine environment. Histological analysis reflects maternal diseases and pregnancy complications related to fetal growth restriction (FGR) and preterm delivery. Despite the current knowledge, the relationship between histological placental patterns and adverse outcomes in the offspring needs to be clarified.
AIM
To test the hypothesis that histological placenta features were associated with morbidity and mortality in a cohort of preterm infants.
METHODS
A population of 89 preterm babies (mean gestational age [GA]: 28.2 ± 2.5 wks) with placental lesions classified as histological chorioamnionitis (CA) (n = 41) or vascular underperfusion (VU) (n = 48), following the Redline classification, was retrospectively enrolled. Major neonatal diseases of prematurity and mortality data were collected. Associations between preterm diseases and different histological placental patterns were checked using univariable and multivariable logistic regression analyses adjusting for confounding factors.
RESULTS
A significant association was found between CA and ROP, IVH high grade and mortality (respectively p = 0.040, OR 9.31; p = 0.009, OR 8.12; p = 0.017, OR 13.29). After correcting for confounding factors (GA, birth weight and total days of O_2 therapy), no associations were found and the total duration of O_2 therapy was the major influencing factor for ROP development. VU was significantly associated with FGR after adjusting for maternal age and morbidity (p = 0.033, OR 5.84).
CONCLUSIONS
FGR is strongly associated with placental VU feature during pregnancy. The relationship existing between CA and major diseases of prematurity still require better investigation, adjusting for potential confounding factors.

ABS 134

LONG-TERM IMPACT OF VLBW ON PSYCHO-NEUROLOGICAL DEVELOPMENT IN YOUNG ADULTS: A SINGLE CENTRE POPULATION-LINKAGE STUDY

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BACKGROUND AND AIM
Despite improvements in survival, very low birth weight (VLBW) adolescents remain disadvantaged on cognition, behaviour and social adaptation. This study aimed to examine long-term impact of VLBW on psycho-neurological development.
METHODS
43 young adults (mean current age: 20.20 ± 3.40; mean GA 30.02 ± 2.29; mean BW 1,217.44 ± 234.38) born between 1990-1997 and admitted to NICU, were enrolled in a single centre population-linkage study. Cognitive, learning, memory and behavioural abilities were assessed through the Weschsler Abbreviate Scale of Intelligence, obtaining Total, Verbal and Performance Intelligence Quotient (TIQ, VIQ, PIQ). Rorschach and Wartegg tests examined personality traits.
RESULTS
TIQ, VIQ and PIQ were normal (respectively mean: 90.95 ± 22.45; 89.85 ± 21.8; 92.40 ± 22.90). In 32.6% of cases emotional immaturity and in 48.8% anxiety and lack of self-confidence were found. BW showed a positive linear correlation with TIQ ($p = 0.000$), VIQ ($p = 0.000$) and PIQ ($p = 0.000$). The multivariable regression model showed a significant positive association between adulthood TIQ, VIQ, PIQ and BW. A negative association was found with days of MV ($p < 0.05$). The analyses were adjusted for GA, hospital stay (months), parenteral nutrition (days), grade of intraventricular haemorrhage, being born small for gestational age and maternal academic degree. Emotional immaturity was significantly associated with duration of MV ($p = 0.035$), while problems in social adaptation were significantly associated with longer hospital stay ($p = 0.000$)
CONCLUSIONS
TIQ is independently related to BW and MV, suggesting that optimal intrauterine environment and shorter duration of MV play a key role in preterm newborns for psycho-neurological health, psychosocial functioning and well being later in life.

ABS 135

EVALUATION OF BONE MINERAL DENSITY BY QUANTITATIVE ULTRASOUND IN ADOLESCENTS AND YOUNG ADULTS BORN PRETERM

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BACKGROUND AND AIMS
Prematurity is associated with reduced bone mineral density (BMD) in the adult age. Implicated factors still need to be elucidated. The aim of this study was to evaluate the influence of anthropometric data and perinatal clinical management on BMD in adolescents and young adults born preterm.
METHODS
55 patients, 16-23 years (20.2 ± 3.4 yrs), with mean gestational age 30.5 ± 2.4 weeks, and birth weight (BW) 1,398 ± 301.3 g were enrolled. Current height (CH) and weight (CW), body mass index (BMI), duration of total parenteral nutrition in days (TPN), length of hospital stay and duration of mechanical ventilation were recorded. BMD was assessed using quantitative ultrasound (DBM Sonic BP, Igea, Italy). Amplitude-Dependent Speed of Sound (AD-SoS, m/s), Bone Trasmission Time (BTT, mS) and correspondent z-scores were measured.
RESULTS
BTT was significantly correlated to age ($r = 0.210$, $p < 0.001$); CH ($r = 0.534$, $p < 0.001$), CW ($r = 0.279$, $p < 0.001$); AD-SoS was significantly correlated to age ($r = 0.275$, $p < 0.001$) and CH ($r = 0.159$, $p < 0.001$). Univariate linear regression showed a significant association between BTT z-score and BW ($p = 0.039$, 95% CI = 0.005-0.002) and TPN ($p = 0.024$, 95% CI = -0.053-[-0.004]). The multivariable regression analysis adjusted for BW and BMI showed that TPN was significantly associated to BTT z-score ($p = 0.024$, 95% CI = -0.053-[-0.004]).
CONCLUSIONS
The duration of TPN influences BMD in adolescents and young adults born preterm suggesting that long TPN duration in the perinatal period may compromise peak bone mass in adulthood.

ABS 136

SERUM PROCALCITONIN IN HEALTHY NEONATES

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AIM
Procalcitonin is a potential useful tool for the diagnosis of early neonatal sepsis. Discrepancies regarding its normal values in the first days after birth are present. The aim of our prospective study was to explore serum PCT levels in healthy neonates within the first 3 days of life.
MATERIALS AND METHODS
One blood sample for PCT testing was obtained from each of 152 healthy newborns, aged 0-72 h. Samples were separated in groups, according to the age of the subjects at the time of PCT testing: group 1 (0 h), group 2 (1-12 h), group 3 (13-24 h), group 4 (25-36 h), group 5 (37-48 h), group 6 (49-60 h) and group 7 (61-72 h).
PCT was tested with a sensitive direct chemiluminescence-based assay.
RESULTS
Mean PCT serum concentration immediately after birth was 0.03 (95% CI = 0.02-0.06) ng/ml; subsequently an increase of PCT levels above the normal range for adults was observed, peaking at the period 13-24 h (group 3) – 1.43 (95% CI = 1.00-2.04) ng/ml. Thereafter PCT decreased nearly reaching the normal values for adults at 61-72 h of age. Sex, mode of delivery and parity showed no effect on PCT levels.
CONCLUSIONS
Physiological increase and broad variations of PCT values are observed in the first 72 h after birth. Interpretation of PCT test results as a part of sepsis evaluation in neonates in the first few days of life should be done according to specific age-related reference ranges.

ABS 137

EFFECT OF MODE OF DELIVERY ON BIOMARKERS OF NEONATAL CARDIAC INJURY AND INFLAMMATION

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BACKGROUND
Labour is a stressful condition for both the mother and the fetus. Vaginal delivery (VD), requiring urgent cesarean section (CS) and/or instrumental delivery, is associated with even more increased perinatal stress and a number of adverse maternal and neonatal outcomes.
AIM
To examine the potential effects of mode of delivery on biomarkers of neonatal cardiac injury and inflammation.
METHODS
We performed a prospective data analysis of neonates born with VD and CS. Neonatal cord blood units were analyzed to measure serum levels of biomarkers indicative of perinatal stress, in particular myocardial injury, and assess their association with mode of delivery.
RESULTS
A total of 185 full term neonates were included in the study, 163 born by VD and 22 by CS. Troponin (Tn) I, CRPS were found elevated in neonates delivered following VD compared to those born CS ($p = 0.009$, $p = 0.017$, respectively) (**Tab. 1**).

Table 1. Effect of mode of delivery on biomarkers of neonatal cardiac injury and inflammation.

	Vaginal delivery (n = 163)	Caesarean section (n = 22)	P
US Troponin T (ng/L)	7.8 ± 11.1	8.9 ± 7.7	0.155
US Troponin I (µg/L)	1.04 ± 3.07	0.91 ± 1.18	0.009
CRPS (mg/L)	2.55 ± 9.88	2.41 ± 1.79	0.017
NT-proBNP (ng/L)	331 ± 335	210 ± 123	0.435
Copeptine (pmol/L)	180 ± 261	141 ± 169	0.855

US: ultrasensitive.

CONCLUSIONS
VD is associated with higher levels of biomarkers of cardiac injury indicating that it possibly carries a greater risk for organ dysfunction and neonatal morbidity than uncomplicated CS.

ABS 138

PERINATAL BRAIN INJURY AND DYNAMICS OF THE CLINICAL SYMPTOMATOLOGY

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AIMS
To determine the prevalence of perinatal brain injury in two years period (2011-2012).

To follow up on the dynamics in neurological status after brain damage, then to determine the outcome regarding the duration of neurological clinical symptoms and severity of the manifested encephalopathy.

METHODS

In a retrospective study at the Neonatology Department of University Hospital Mostar, we recorded infants with the diagnosis of perinatal hypoxia and brain symptomatology.

RESULTS

The prevalence was 30.3 per 1,000 per births. There was a higher prevalence of intracranial hemorrhage in premature infants and brain edema in the group of mature newborns. Most common clinical manifestation was moderate encephalopathy, both in premature and mature infants. All the infants who died had severe encephalopathy.

CONCLUSION

Our prevalence of brain injury is much higher than in other parts of Europe.

Clinical simptomatology is depending on gestational age and duration of postnatal days of life. Most of the infants with encephalopathy lived less than seven days.

ABS 139

CONGENITAL ANOMALIES IN TWO ONE-YEAR COHORTS OF NEWBORNS IN UNIVERSITY HOSPITAL MOSTAR

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AIM

The aim of analysis was to identify change of the annual appearance of newborn's major congenital malformations (MM) in the period 2012-2013.

MATERIALS AND METHODS

Data were collected from medical archives of the Neonatology department and Maternity Hospital Mostar. Study included 3,556 newborns born in the two observed years.

RESULTS

In 2012 there were 47 (2.68%) and in 2013 – 73 (4.03%) infants with visible MM. In both cohorts, anomalies of the cardiovascular system (CVS) were the most common, followed by genitourinary system (GUS) – MM (15.0%). Significant difference in gender, gestational age, Apgar score and maternal age did not exist. In 74.2% of cases, mothers were younger than 35 years. Subjects in both cohorts did not differ significantly in pre/perinatal history. Most common event in maternal history was previous miscarriage (10.8%). 40% of newborns with MM developed postnatal complications. One child died in the neonatal period due to sepsis.

CONCLUSION

Do we have higher incidence of MM through the time? We need a longer period for observation. However, thanks to progresses in perinatal care at University Hospital Mostar, we have very good outcome of infants with MM.

ABS 140

THE INFLUENCE OF METEOROLOGICAL CHANGES IN PREMATURITY

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AIM

To study the relation between frequencies of preterm deliveries (PTD) ≤ 36^{+6} weeks of gestation, and meteorological parameters observed at same time period.

STUDY DESIGN

Hospital records of neonates from November 2012 to April 2014 were reviewed in a retrospective cohort study, which was performed investigating meteorological parameters. Analysis was on diurnal and seasonal base.

Meteorological parameters used in study are maximum and minimum temperature (T_{max}, T_{min}) and relative humidity (RH_{max}, RH_{min}) as well as daily differences of T ($\Delta T = T_{max} - T_{min}$) and of RH ($\Delta RH = RH_{max} - RH_{min}$).

Multivariate analysis, time series approach and Poisson regression were used.

RESULT

There is a negative correlation between PTD occurrence and minimum temperatures meaning that PTD increases with very low temperatures (**Tab. 1**). Furthermore, PTD decreases when RH_{max}

Table 1. Meteorological parameters and prematurity.

RR	Deliveries	GA < 37	GA ≥ 37
T_{mean}	-0.15176	-0.23691	-0.09897
T_{max}	-0.14688	-0.14688	-0.10151
T_{min}	-0.15792	-0.27104	-0.09278
Pres	0.259958	-0.01998	0.306361
RH_{mean}	0.103811	-0.07908	0.156575
RH_{max}	-0.01161	0.038139	-0.02646
RH_{min}	0.113974	-0.13012	0.188262
Prec	-0.07413	0.125929	-0.14089
ΔT	-0.04774	0.106312	-0.10845
ΔRH	-0.21798	0.277819	-0.36854

T: temperature; RH: relative humidity.

and RH_{min} are very close ($p < 0.01$). Study shows that April 2013 had the maximum ΔRH (54.15867), and maximum percentage of prematurity (about 42%, compared to mean percentage 30%). Maximum ΔRH results in maximum percentage of PTD.

It is noticeable that atmospheric pressure affects infants with gestational age ≥ 37 wks, there is a significant positive correlation between frequency of normal delivery and high pressure (anticyclonic) systems.

CONCLUSION

Premature deliveries are affected by meteorological parameters as relative humidity, temperature and atmospheric pressures. Neonatologists and obstetricians should be aware of climate impact on prematurity rates.

ABS 141

CAN WE RELY ON AVAILABLE REFERENCE RANGES FOR BIOCHEMICAL LAB TESTS IN YOUNG INFANTS? EXAMPLE WITH ALPHA-1-ANTITRYPSIN

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BACKGROUND AND AIMS

Reference ranges for less common biochemical tests for newborns are often derived from cord blood samples (reflecting maternal levels); the next available time point is 1 month. Even new paediatric textbooks present references from 1985 or 1995 and usually lack data from infants aged 1-23 weeks. Alpha-1-antitrypsin (AAT) is a glycoprotein mostly secreted by hepatocytes. Low AAT level in infants has been related to prolonged obstructive hyperbilirubinaemia with elevated liver enzymes. Serum AAT level of < 1.6 g/l alone is an indicator for evaluating phenotype for AAT deficiency. The aim of our study was to analyse AAT levels in infants aged 1-12 weeks in relation to the current age-appropriate reference ranges.

METHODS

Search of the database of Tartu University Hospital for measured AAT levels in infants at the age of 1-12 weeks and analysis of hospital records for other biochemical tests and health chacteristics. One infant with PIZZ phenotype and AAT < 0.5 g/l was excluded.

RESULTS

All infants (n = 169, mean age at testing 24 ± 17 days) had AAT levels (mean [SD] 0.88 ± 0.17 g/l) significantly lower than the reference limit of 1.6 g/l for AAT phenotyping. They also had good weight gain, mild indirect hyperbilirubinaemia (breast milk jaundice), normal liver enzyme and CRP levels.

CONCLUSION

Healthy infants may have a transient period of low AAT (and perhaps other biomarkers) significantly below currently suggested reference levels. Detailed review of current biochemical reference ranges for young infants is important to help clinicians in decision making. Targeted studies with larger patient groups are needed.

ABS 142

PARACETAMOL FOR CLOSURE OF PATENT DUCTUS ARTERIOSUS (PDA) IN A PRETERM NEONATE

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BACKGROUND

PDA occurs commonly in premature infants, especially in those with respiratory distress syndrome. In very low birth weight infants (birth weight < 1,500 g) the incidence of PDA is about 30%. Ductal patency is regulated by the circulating prostaglandin-H2 synthetase (PGHS). Paracetamol, an inhibitor of peroxidase component of PGHS, has

been recently proposed for the treatment of PDA.
We present a case study that illustrates the safety and efficacy of paracetamol in the treatment of PDA in an extremely preterm newborn.

CASE REPORT

A premature baby 27^{+2} weeks of GA (the second of a twin pregnancy), BW = 1,085 g, was born after air transportation of the mother because of PROM.
Soon after (3rd hour of life) she was intubated because of respiratory distress. She received mechanical ventilation and one dose of surfactant. She remained in A/C for 3 hours, then in SIMV for 36 hours and in nCPAP for 17 days.
During her 7th day of life, an open ductus arteriosus was detected after a 3/6 murmur was heard. Subsequently a hemodynamically significant PDA was found in the ultrasound scan. She started receiving paracetamol, 15 mg/kg/dose x 4. During the treatment, there were no complications (laboratory tests of urea, creatinine, platelets, SGOT, SGPT were normal).
By the 4th day of treatment there were neither murmur nor other ultrasound findings.

CONCLUSION

Paracetamol was safe and efficient as a first choice agent in the treatment of PDA in this extremely preterm newborn.

ABS 143

THE INCIDENCE OF TRIPLETS PREGNANCY DURING THE LAST 10 YEARS. ARE THERE ANY VARIATIONS?

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BACKGROUND

Assisted reproductive technology (ART) for infertility treatments is a major source of the increase in triplet pregnancies (TPs) and this must be perceived as a fertility treatment complication.

AIM

To record the incidence and perinatal mortality of TPs during the last 10 years.

METHODS

Prospectively collected data from TPs who were delivered in our perinatal center over a 10-year period.

RESULTS

In a total of 13,928 deliveries, 69 (4.9‰) were TPs. TPs proportion was gradually increased from 1.4‰ (2007) to 7.8‰ (2010, 2011) in the period 2004-2013. In the last two years there has been a decline in the rate of deliveries (**Tab. 1**). TPs perinatal mortality rate was 0‰ to 2.8‰.

Table 1.

Year	Deliveries	TPs, n (‰)	GA (weeks), mean ± SD (range)	BW (g), mean ± SD (range)	Perinatal mortality of TPs newborn, n (‰)
2004	644	5 (7.7‰)	31.4 ± 2.2 (29-34)	1,630 ± 468 (1,060-2,330)	0
2005	1,123	7 (6.2‰)	31.4 ± 2.1 (28-35)	1,450 ± 307 (750-1,830)	0
2006	1,407	8 (5.6‰)	30.5 ± 3.5 (24-34)	1,252 ± 307 (750-1,830)	4 (2.8‰)
2007	1,388	2 (1.4‰)	34	1,903 ± 147 (1,730-2,130)	1 (0.7‰)
2008	1,613	4 (2.4‰)	31.7 ± 1.5 (30-34)	1,657 ± 325 (1,290-2,190)	0
2009	1,511	9 (5.9‰)	33.1 ± 2 (29-36)	1,631 ± 461 (570-2,270)	2 (1.3‰)
2010	1,626	13 (7.8‰)	32 ± 1.88 (27-34)	1,600 ± 426 (430-2,500)	4 (2.4‰)
2011	1,542	12 (7.8‰)	32 ± 1.3 (31-36)	1,691 ± 347 (950-2,730)	4 (2.6‰)
2012	1,581	4 (2.5‰)	32,2 ± 2 (29-34)	1,409 ± 394 (550-1,840)	0
2013	1,472	5 (3.4‰)	31 ± 2.4 (27-34)	1,584 ± 474 (680-2,230)	0

TPs: triplet pregnancies; GA: gestational age; BW: birth weight.

CONCLUSIONS

All our TPs neonates were premature contributing to overall TPs mortality. Additionally, a seasonal year-by-year variation of TPs proportion and consequent mortality was observed, suggesting a proper adaptation.

ABS 144

SURVEILLANCE CULTURES IN OUR NICU

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BACKGROUND
Surveillance cultures (SCs) are universal or targeted microbiological screening cultures for patients admitted to a department. Knowledge of the bacteria colonizing neonates might be used: to provide an early warning of nosocomial infection in the NICU, to identify babies who are colonized with an epidemic bacterial strain, to identify specific babies who are at increased risk of developing a nosocomial infection.
AIM
Screening of the surveillance cultures in the NICU at Attikon University Hospital in Athens, Greece.
MATERIAL AND METHODS
Between June 2013 and March 2014 we collected surveillance cultures from the neonates hospitalized in our NICU. Study samples were obtained from the infants' noses, umbilicals and rectums, twice weekly, from admission until discharge.
RESULTS
Over 6 months 99 neonates were hospitalized in our NICU We had results from 97 surveillance cultures. Isolates from nasal cultures were: 2% (2/99) *K. pneumoniae* carbapenemase (KPC)-producing bacteria, 1% (1/99) *Staphylococcus spp.*, 1% (1/99) MRSA *Staphylococcus*, and 3% (3/99) MSSA *Staphylococcus*. From rectal cultures 2% (2/99) of KPC were detected. Finally, from the umbilical cultures, 2% (2/99) KPC, 1% (1/99) *Staphylococcus spp.*, and 1% (1/99) MRSA *Staphylococcus* were detected.
Among neonates in mechanical ventilation (11 [11%]), only 1 (9%) had positive cultures.
13.6% of the neonates born with vaginal delivery had positive cultures and 8.8% of those born with caesarean section (not statistically significant).
CONCLUSIONS
Overall carriage rate in our NICU is low (9.1%). We didn't find statistically significant differences in carriages, between term and preterm neonates, or between neonates in mechanical ventilation and those with no mechanical ventilation. The modality of labor doesn't seem to affect the carriage's percentage.

ABS 145

BRONCHOPULMONARY DYSPLASIA IN VERY LOW BIRTH WEIGHT INFANTS OF MOTHERS WITH PREECLAMPSIA

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AIM
To evaluate whether the frequency of BPD in very low birth weight infants (VLBW) of mothers with preeclampsia and hypertension is different from that of "normal" preterm infants with the same gestational age.
METHODS
A prospective study for a period of two years. Patients were divided into two groups: 1. infants < 30 weeks of gestation of mothers with preeclampsia, treated in NICU of Clinics of Neonatology; 2. infants < 30 gestational weeks of mothers without preeclampsia or hypertension. Infants were divided by gender, weight and gestational age. The following parameters were analyzed: presence of corticosteroid prophylaxis before birth, presence of intrauterine growth restriction (IUGR), severity of respiratory distress syndrome (RDS), duration of assisted ventilation, duration of O_2 therapy. The infants were followed for complications: bronchopulmonary dysplasia.
RESULTS
There was corticosteroid prophylaxis in about 80% in both groups. Infants in the first group were growth restricted. The severity of RDS and duration of assisted ventilation were higher in the second group. Infants of mothers with preeclampsia had longer O_2 therapy. The frequency and severity of BPD in the infants from the first group were higher.
CONCLUSION
There are three major contributions to BPD: lung development, injury and repair. The lungs of most infants with VLBW are not at a normal stage of development for gestational age. Vascular developmental abnormalities (preeclampsia, hypertension) alter lung development in VLBW infants. Abnormal lung development before birth results in higher frequency and severity of BPD in IUGR infants, despite the less severe RDS.

ABS 146

LONG TERM OUTCOME OF RETINOPATHY OF PREMATURITY IN A COHORT OF PRETERM INFANTS

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AIM
The identification of vision defects of premature neonates with Retinopathy of Prematurity (ROP) on follow-up ophthalmological examination.
METHODS
Preterm neonates admitted to level III referral Neonatal Intensive Care Unit in a period of 5 years, from May 2004 to May 2009. Inclusion criteria were premature infants born at ≤ 32 weeks of gestation or a birth weight ≤ 1,500 g. Ophthalmological examination for ROP was performed during their hospitalization, laser treatment was performed according to indications. A detailed ophthalmological examination was performed at 12 months.
RESULTS
Records of 392 neonates were examined. 312 neonates (80%) presented with ROP. Of the neonates with ROP, 120 (38.5%) underwent Laser treatment (95.6% successfully) while 192 (61.5%) were followed up until complete vascularization of the retina. At the age of 12 months, 288 infants were tracked. Abnormal findings on ophthalmological examination were: strabismus in 71 infants (24.7%), myopia in 30 (10.4%), blindness in 9 (3.1%), cataract in 3 (0.9%) and other in 27 (9%). Significant difference was seen in the proportion of abnormal findings at 12 months among infants with ROP compared to those without ROP ($p = 0.005$) and among infants with ROP which had Laser treatment compared to those which did not need Laser treatment ($p = 0.017$). Corresponding results were seen regarding the main abnormal findings: myopia ($p = 033$ and $p = 0.000$ respectively) and strabismus ($p = 0.000$ and $p = 0.000$ respectively).
CONCLUSIONS
ROP is frequently complicated with abnormal findings on follow-up. Detailed ophthalmological follow-up is important for the early detection of abnormal findings and intervention.

ABS 147

NEURODEVELOPMENTAL OUTCOME IN A PRETERM NEONATE WITH METABOLIC ACIDOSIS AND HYPOTHERMIA AT BIRTH AND DURING TRANSPORT TO TERTIARY NICU

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BACKGROUND
Induced therapeutic hypothermia is proven to have a neuroprotective effect in hypoxic ischaemic encephalopathy. No evidence exists for preterms less than 28 GA.
CASE REPORT
A female, born from a II gravida in 26 GA, with BW 870 g, acute birth in the ambulance. The newborn was resuscitated, intubated, however she was transported wrapped in a blanket, kept in the arms of the father during helicopter transport. On arrival at NICU, the neonate's temperature was noted to be < 32°C, $SatO_2$ 70%, HR 90 mmol/L. At the 4th hour of life: pH 6.99, pCO_2 55 mmHg, pO_2 118 mmHg, BE -14 mmol/L, Lac 10.5 mmol/L. Rewarming was gradual till the 8th hour of life. The neonate remained intubated for 14 days, and was treated for RDS, pulmonary bleeding and PDA. Subsequently, she was placed in BCPAP for 6 weeks. Breastfeeding was initiated on the 11th day of life.
Cranial ultrasound: at the 48th hour of life, IVH grade II, bilateral increased periventricular echogenicity; at 36 weeks PMA, clot in right ventricle with mild microcystic defects; at 40 weeks PMA, no abnormalities. Hearings and eye examinations were normal.
She was discharged home on the 98th day of life, in a stable condition.
After discharge the baby was seen in follow-up examination. At Bayleys III® scales of development no pathology was found. At corrected age of 6 months she is sitting, at 9 months is standing and makes a few steps, at 12 months walks and at 15 months runs. Follow up is being continued.
CONCLUSION
We report the possible effect of accidental hypothermia in a neonate of 26 GA.

ABS 148

ETHICAL ISSUES IN NEONATAL CARE: GREEK NICUs POLICIES AND PRACTICES

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BACKGROUND AND AIM
This study investigates policies and practices applied in Greek Hospitals in relation to ethical issues raised in the intensive care of neonates.
METHOD
Survey research was conducted on a sample of 251 health care professionals (HCP) (medical doctors [MD], midwives and nurses) working in neonatal intensive care units (NICUs) in 15 different Greek public hospitals. The questionnaire included closed-ended questions and was partly adopted from the one used in the project "Euronic" (1996-97).
RESULTS
Participants (87.7%) report that restrictions of neonatal intensive care are rarely implemented as ethically unsound. In contrast, 66.1% of participants argue that excessive intensive care is provided to a significant number of neonates. HCP disagree over parents' role/views regarding decisions on critical matters. Furthermore, 69.2% of participants argue that department policies – when existing – do not support parents' active participation in decision making. A different opinion is held by 21.7% of respondents. Most of the participants argue that policies and practices on handling ethical issues are not in effect in NICUs. Clinical cases (44.9%) or ethical dilemmas (52.7%) tend to be discussed mainly on the basis of informal meetings among colleagues. MDs more often than other HCPs argue that critical clinical cases ($p = 0.001$) and ethical dilemmas ($p = 0.001$) are discussed in professional meetings.
CONCLUSION
Adoption of appropriate practices on ethical issues related to neonatal care in Greece is considered to be necessary.

ABS 149

FRACTURES IN A NEONATAL INTENSIVE CARE UNIT

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BACKGROUND
Fractures during the neonatal period are rare. Some fractures, especially long bones, may occur during birth. Moreover, neonates hospitalized in the Neonatal Intensive Care Unit (NICU) have an increased risk of fractures for several reasons.
AIM
To evaluate the incidence and characterize fractures in newborns admitted in a tertiary NICU.
METHODS
A retrospective analysis of the newborns admitted to the NICU with a diagnosis at discharge of one or more bone fractures from January 1996 to June 2013.
RESULTS
Eighty neonates had one or more fractures. In 76 (95%) infants, the fractures were attributed to birth injury. The most common fracture was the clavicle fracture in 60 (79%) neonates, followed by skull fracture in 6 (8%). In two (2.5%) neonates, extremely low birth weight infants, fractures were interpreted as resulting from osteopenia of prematurity. Both had multiple fractures, and one of them in several ribs.
CONCLUSION
A change in obstetric practices allied with improvements in premature neonates' care contributed to the decreased incidence of fractures in neonatal period. However, in premature infants the diagnosis may be underestimated, given the high risk of fracture that these infants present.

ABS 150

URINARY TRACT INFECTIONS IN NEWBORNS – UROPATHOGENIC ANTIMICROBIAL RESISTANCE

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AIMS
The goal of this study was to determine the epidemiologic and clinical characteristics of urinary tract infections (UTI) in newborns. Additionally, the goal is to determine uropathogenic resistance to the standard antibiotic therapy.
SUBJECTS AND METHODS
Retrospective research included sample of all full-term newborns with reports of significant bacteriuria at $\geq 10^5$ of one uropathogenic organism in a milliliter of urine at the Children's Hospital of the University Clinical Hospital Mostar, Bosnia and Herzegovina, from the 1st January 2009 until 31st December 2013. In the above

period, 105 newborns with UTI were selected. Parameters that were analyzed during research included: gender, presence of mother's prenatal UTI, isolated causes, symptoms of the UTI, and wheter the infection was treated with the standard antibiotics (combination of ampicillin and gentamicin) or reserve antibiotics (third generation cephalosporin or meropenem).

RESULTS

Incidence of UTIs in newborns was 1.6%. UTIs represent 20.4% of all perinatal infections in newborns. Male newborns (65.7%) were diagnosed with UTIs more than girls (34.3%). Mothers of newborns diagnosed with UTIs were diagnosed with UTIs in 15.2% of cases. Anomalies in urinary tract were present in 35.2% newborns with UTIs. The most frequent cause of UTI was *E. coli*, isolated in 37.1% of patients. *E. coli* was the leading cause of UTIs in male newborns (43.5%), while *K. pneumoniae* was the leading cause of UTIs in female newborns (50%). The majority of patients were without symptoms (31.4%). Jaundice was the most frequent clinical manifestation in these patients (24.8%). The 70.5% of patients were treated with standard antibiotic therapy. High sensitivity to standard antibiotic treatment was shown in *E. coli* and *K. pneumoniae*, while *Enterococcus spp.* was the most frequent reason for usage of reserve antibiotic therapy.

CONCLUSION

This study showed high sensitivity to standard antibiotic treatment of urinary tract infections in newborns.

ABS 151

TREATMENT STRATEGIES FOR BRONCHO-PULMONARY DYSPLASIA

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Bronchopulmonary dysplasia (BPD) is the main pulmonary morbidity affecting premature infants. Since many factors (including genetic, antenatal and postnatal managements and exposure to various drugs and treatments) affect the development of BPD, treatment strategies should be directed towards the elimination, ameloration or treatment of these factors. Lung damage resulting in decreased number of alveoli and decreased lung surface area resulting from arrested vascular growth, inflammation, infection, disruption of collagen and elastin are the main pathological findings in BPD.

Antenatal steroids have been used extensively for reducing the frequency and severity of respiratory distress syndrome (RDS), and have decreased the mortality associated with RDS. Although they have no direct effect on the prevention of BPD, they have improved survival without BPD. Antenatal administration of thyroid releasing hormone agonists and antibiotic usage for the treatment of preterm premature rupture of membranes have yielded disappointing results for the prevention of BPD.

In the immediate postnatal period, oxygen administration and ventilation strategies in the delivery room may have profound consequences on the later development of BPD. However, since preterm infants have many problems and the pathogenesis of BPD is complex, no management option alone have proven to be useful in the prevention and treatment of BPD, but all of them are likely to be important.

Surfactant treatment is the mainstay of management in RDS. In the Osiris trial, prophylactic surfactant treatment has been shown to decrease the incidence of BPD (-11%). Other studies have resulted in conflicting conclusions. Many studies and metaanalysis have evaluated the comparison of surfactant and early CPAP. Early CPAP seems to alleviate the need for intubation; hence it decreases lung damage and may probably decrease BPD. During the ventilation process, permissive hypercapnia may result in less volu/barotrauma and less BPD in the end. High frequency jet ventilation seems to decrease BPD through a similar mechanism. Keeping the tidal volume around 4 ml/kg and maintaining the optimal PEEP seems to decrease the volutrauma, and BPD. Starting on non-invasive ventilation in the delivery room, or even if the baby is intubated, early extubation as soon as possible and switching to non invasive ventilation leads presumably to less lung damage and less BPD. Existence of or treatment of patent ductus arteriosus seems to have no effect on the development of BPD. Oxygen is both life-saving and toxic in the neonate. STOP-ROP trial has shown that – although low oxygen saturations decreased the incidence of ROP, and high oxygen saturations were associated with increased ROP and BPD – death or BPD outcomes were worse. Oxygen targets that are adequate both for ROP and BPD are conflicting but keeping

oxygen targets around 90 seems to be reasonable. Sodium restriction in the first days of life seems to be associated with less lung damage and improved respiratory outcomes, whereas restricted fluid intake seems to have little benefit.

Since low energy and poor protein intake and BPD are associated, early adequate nutrition seems to be important in the prevention of BPD. However, early high lipid intake is associated with worse pulmonary outcomes. On the other hand, vitamin A has been shown to decrease BPD significantly. Vitamin E, superoxide dismutase and erythromycin for the treatment of *U. urealyticum*, diuretics and N-acetyl cystein have not proven benefical for BPD. Early postnatal steroids (dexamethasone) have been investigated and debated for long years in the treatment of BPD. Although they seem to decrease the rate and severity of BPD, late neurological impairment and cerebral palsy in these infants limit their use. Inhaled steroids have conflicting results similarly. Caffeine has been used extensively and although it does not decrease mortality, it improves the pulmonary outcomes significantly.

In twin studies, it has been shown that genetic factors may be responsible for as much as 60-80% of risks associated with BPD. Genome-wide association study (GWAS) may identify individuals with particular risk for BPD and individualized treatments may be implemented in future.

New ventilation techniques, inhaled nitric oxide, early treatment of PDA and optimal fluid management options are under investigation. In animals, it has been shown that intraparenchymal stem cell may prevent arrested alveolar growth. A current algorithm for the prevention and treatment of BPD is needed.

ABS 152

GENERALIZED INFANTILE MYOFIBROMATOSIS (IM) – A CASE REPORT

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BACKGROUND

Infantile myofibromatosis (IM) is a rare disorder of myofibroblastic proliferation, categorized in three types: solitary, multicentric without and with visceral involvement and generalized.

CASE REPORT

The authors report a clinical case of congenital myofibromatosis.

A female term newborn, with normal antenatal ultrasound imaging, presented at birth with intermittent stridor and multiple, subcutaneous nodules, along the back, upper and lower extremities. Imaging excluded visceral, airway, laryngeal nerve, bone or central nervous system lesions. Multicentric IM was diagnosed and after multidisciplinary discussion with Pediatric Oncologists, Radiologists and Neonatologists, close clinical follow-up, without treatment was decided. No cause for stridor was found.

During the first month of life worsening of stridor occurred, as well as feeding difficulties and intermittent cyanosis. Nasofibroscopy confirmed, at one and half month, bilateral vocal cord palsy, and tracheostomy was performed. Subcutaneous nodules partially regressed and she continued on clinical and imaging follow-up.

At 6 months, after a pathologic fracture of the left femur, multifocal bone and visceral (liver) involvement were confirmed. Chemotherapy was started with weekly IV methotrexate and vinblastine. Now, at 10 months of age, she is on week 12 of treatment, which is very well tolerated; most soft tissue lesions had resolved and bone lesions and liver nodule remains stable.

CONCLUSIONS

As described by some authors in 37% of cases, in our newborn there was progression to a generalized form. Although there are no definitive guidelines on therapeutic strategies for this form of IM, chemotherapy has been reported to be effective in some cases.

ABS 153

CIRCULATING PROGENITOR CELLS EARLY IN LIFE AS POTENTIAL PREDICTORS FOR COMPLICATIONS OF PREMATURITY

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BACKGROUND AND AIMS
Circulating Progenitor Cells (CPCs) have been shown to be associated with both physiological organ development and tissue repair following injury. Our aim was to assess the possible associations of CPCs early after birth with antenatal factors and complications of prematurity.
METHODS
Preterm (< 34 w) and full term (controls) newborns were studied prospectively. Percentages of early and late Endothelial Progenitor Cells (eEPCs, lEPCs), Hematopoietic Stem Cells (HSCs) and Very Small Embryonic-Like Stem Cells (VSELs) in peripheral blood were assessed on the 1st and the 3rd day of life using flow cytometry. Values were correlated with antenatal factors and common neonatal morbidities.
RESULTS
46 premature (GA: 29.2 ± 2.5 w, BW: 1,381 ± 405 g) and 12 fullterm neonates (GA: 38 ± 1.2 w, BW: 2,962 ± 333 g) were enrolled. Preterms had higher proportion of early and late EPCs compared with term neonates (**Tab. 1**). EPCs also had a significantly inverse correlation with GA among prematures. 28/46 premature infants developed one or more complications of prematurity (NEC [n = 11], BPD [n = 8], IVH [n = 14], PDA [= 7], sepsis [n = 3], ROP [n = 3]) during hospitalization. Negative associations were demonstrated between CPCs and perinatal risk factors or neonatal morbidities, as shown in **Tab. 1**.
CONCLUSION
The elevated EPCs in preterm compared to fullterm neonates may possible suggest a role in the process of maturation. The association of decreased circulated pluripotent cells with perinatal risk factors and neonatal morbidities implies a possible prognostic value of CPCs. Future studies could focus on the potential preventive role of exogenous administration of progenitor cells.

Table 1. Circulating Progenitor Cells in preterm and full term newborns.

CPCs	% of CPCs, median (range)			Negative correlations of CPCs vs perinatal factors and neonatal morbidities					
	Preterm n = 46	Fullterm n= 12	p	chorioamnionitis n = 8	antenatal steroids n = 36	multiple gestation n = 19	NEC n = 11	sepsis n = 3	PDA n = 7
eEPCs (d1)	0.022 (0.413)	0.007 (0.076)				p < 0.01			
eEPCs (d3)	0.014 (0.164)	0.005 (0.310)	0.059		p < 0.001	p < 0.05	p < 0.05		
lEPCs (d1)	0.010 (0.056)	0.004 (0.008)	0.01			p < 0.005			
lEPCs (d3)	0.009 (0.040)	0.002 (0.020)	0.05	p < 0.05	p < 0.01				
HSC (d1)	0.020 (0.374)	0.015 (0.094)		p < 0.05		p < 0.001			p < 0.05
HSC (d3)	0.023 (0.166)	0.008 (0.043)			p < 0.01	p < 0.01	p < 0.05	p = 0.079	
VSEL (d1)	0.024 (0.118)	0.018 (0.103)				p < 0.05		p < 0.05	
VSEL (d3)	0.022 (0.165)	0.015 (0.090)		p = 0.062					

CPCs: Circulating Progenitor Cells; eEPCs: early Endothelial Progenitor Cells; lEPCs: late Endothelial Progenitor Cells; HSCs: Hematopoietic Stem Cells; VSELs: Very Small Embryonic-Like Stem Cells.

ABS 154

COLOR DOPPLER SONOGRAPHY AND VASCULAR ANOMALIES IN THE NEWBORN

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Echo color Doppler in cerebral echography is an important tool for recognizing some kinds of vascular anomalies in the newborn.

We describe a newborn that came to our observation with a particular pattern of cerebral vein waveform in the vein of Galen. This pattern, as it can be seen in **Fig. 1**, is characterized by a venous arterialized pattern in the vein of Galen and in the internal cerebral vein. The angio NMR examination (**Fig. 2**) shows a normal course of the internal cerebral vein and vein of Galen, without presence of fistula, but in the posterior region, at the torcular herophili zone, it was present a big dilatation of the confluence of sinus. This venous dilatation caused the turbolence of flow at the vein of Galen level. The baby still has this malformation at four years old and has not been operated, without any neurological impairment at the moment.

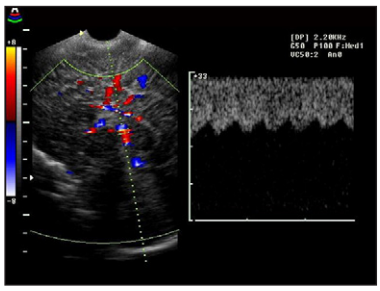

Figure 1. Echo color Doppler.

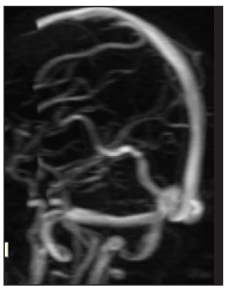

Figure 2. Angio NMR.

CONCLUSION

Cerebral color Doppler sonography is useful for the diagnosis and follow up of cerebral malformation. In our case the diagnosis of a venous dilatation not necessiting of neurosurgery and the exclusion of a fistula (later confirmed by angio NMR) were made by echo color Doppler.

ABS 155

BENEFICIAL EFFECT OF ETANERCEPT ON HYPEROXIC LUNG INJURY MODEL IN NEONATAL RATS

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AIM

To determine whether prophylaxis with etanercept, an anti-inflammatory drug, would decrease the severity of lung injury in a neonatal rat model of bronchopulmonary dysplasia (BPD).

METHODS

Rat pups were divided into three groups: pups exposed to room air (Group 1; n = 10), to hyperoxia + placebo (Group 2; n = 9), and to hyperoxia + etanercept (Group 3; n = 8). Lung morphology was assessed by alveolar surface area percentage, which is a measure of alveolar size. The severities of lung inflammation and antioxidant capacity were assessed by quantifying tumor necrosis factor-α (TNF-α), transforming growth factor-β (TGF-β), malondialdehyde (MDA), and superoxide dismutase (SOD) from lung homogenate.

RESULTS

The percentage of alveolar surface areas were significantly higher in group 3 compared to group 2 ($p = 0.004$) and similar in group 1 and group 3 ($p = 0.21$). The mean level of lung MDA was significantly higher in group 2 compared to group 1 and group 3 ($p < 0.05$ for both). Lung homogenate SOD activities in-group 3 was significantly higher than in group 2 ($p < 0.001$). Furthermore, group 3 pups had lower levels of TNF-α and TGF-β in lung homogenate than that in group 2 ($p < 0.05$ for both), but TNF-α and TGF-β levels were similar in group 1 and group 3.

CONCLUSION

Etanercept has favorable effects on alveolarization as well as inflammation and oxidative stress markers in a neonatal rat model of BPD.

ABS 156

LOAD IN PRESTORAGE AND POST-STORAGE WHITE BLOOD CELL-FILTERED RED BLOOD CELLS TRANSFUSIONS IN PREMATURE INFANTS

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BACKGROUND

Leukocyte contamination during blood transfusion can cause many adverse effects. The

filtration can be performed either at the bedside during transfusion or in the prestorage filtration. Prestorage filtration is superior to bedside because leukocytes are removed before storage, thus preventing further adverse effects associated with the storage of these cells.

MATERIALS AND METHODS

Enrolled infants (n = 106) were randomized into 2 groups, prestorage filtration (group 1, n = 53) and bedside filtration (group 2, n = 53). C-reactive protein (CRP) and interleukin-6 (IL-6) levels were analyzed within 24 hours prior to the transfusion and 24 hours after the completion of transfusion.

RESULTS

In group 1, pretransfusion median CRP and IL-6 levels were 2.95 (0.73-10.25) mg/L and 8.59 (3.45-20.55) pg/L, respectively; posttransfusion median CRP and IL-6 levels were 2.28 (0.44-12.87) mg/L, 6.62 (2.18-27.87) pg/L, respectively. In group 2, pretransfusion median CRP and IL-6 levels were 1.30 (0.40-7.84) mg/L and 4.40 (2-17.12) pg/L; post-transfusion median CRP and IL-6 levels were 3.50 (0.50-7.85) mg/L, 8.30 (3.48-23.75) pg/L, respectively.

There were no differences between pre and post-storage leukoreduction average IL-6 and CRP levels in both groups ($p > 0.05$, $p > 0.05$, respectively). Packed red blood cell (PRBC)-related NEC was detected in one infant in group 2.

CONCLUSIONS

We demonstrated that using prestorage and post-storage leukoreduction method in erythrocyte transfusions did not change the CRP and IL-6 levels, which are indicator of acute phase response.

ABS 157

ABNORMALITIES THAT CAN BE TREATED WITH EARLY DIAGNOSIS AND INTERVENTION: VEIN OF GALEN ANEURYSMAL MALFORMATIONS

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BACKGROUND

Vein of Galen aneurysmal malformations (VGAM) is a rare cerebral arteriovenous malformation. It is associated with high mortality and morbidity. Therefore, most favorable intervention should be taken at the appropriate time and condition to reduce this hazardous results. For this reason, it is necessary to ensure good relations between departments. Infants born at appropriate time (without heart failure and brain injury) who have early diagnosis at perinatal period and well follow up, and treated early with proper intervention have decreasing mortality and morbidity.

MATERIAL AND METHODS

This study includes patients with VGAM who have been treated at neonatal service of Hacettepe University Ihsan Dogramaci Children Hospital. Information is obtained retrospectively by scanning the files and reaching the caregivers on the phone.

RESULTS

Four out of the 9 patients were made embolization and 1 patient who got 12 points from the Bicêtre score was followed. Two patients who had been made embolization were discharged and 1 patient died after embolization due to complication.

DISCUSSION

Patients who diagnosed with perianal USG or fetal MRI are recommended MRI-angiography to confirm the diagnosis and manage the treatment. We had MRI-angiography of all patients (**Fig. 1**). Recently, transarterial embolization is effective treatment modality of patients with VGAM and timing is very important. For deciding the timing

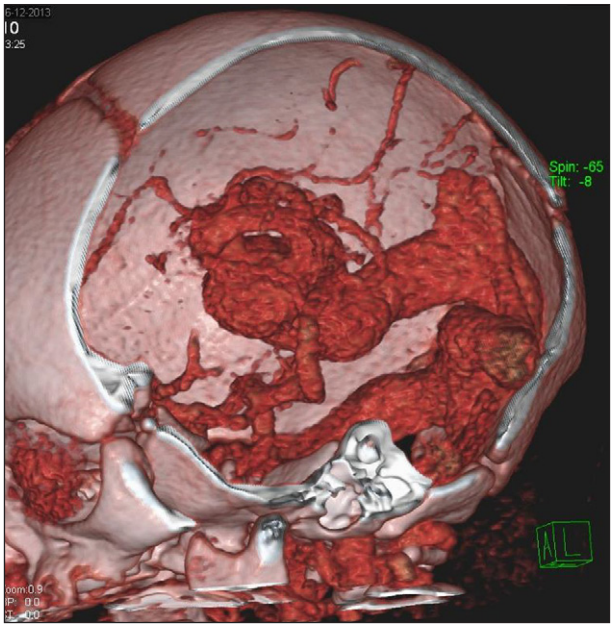

Figure 1. Vein of Galen aneurysmal malformations of pre-operatory MRI-angiography image.

of the procedure, Bicêtre scoring is often used. We also used Bicêtre scoring for the timing of embolization.

ABS 158

IMMUNE HYDROPS FETALIS DUE TO ANTI-KELL ANTIBODIES: CASE REPORTS

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BACKGROUND AND AIM

Hydrops fetalis, the underlying condition of 3% of perinatal mortality, has an incidence of 1/2,500-1/3,700. The most common cause of immune hydrops fetalis is Rhesus immunization. Due to closely monitored pregnancies and anti-D immune prophylaxis during pregnancy in developed countries, the frequency of hydrops fetalis secondary to Rh immunization has decreased and subgroup incompatibility has gained importance. Kell subgroup is the most common subgroup and anti-Kell antibodies are one of the common causes of fetal and neonatal immune hydrops and anemia. This abstract will present two cases of immune hydrops fetalis caused by Kell subgroup incompatibility.

CASE REPORTS

The cases were diagnosed hydrops fetalis in 25th and 27th weeks of pregnancy as fetal ultrasonograpy had evidences of ascites, increased abdominal perimeter, dilation in the left cardiac ventricle, and edema in the abdominal wall. 4 blood transfusions were made during the intrauterine period. The blood groups of the patients and the mothers were found to be both A Rh+ and direct coombs were 1+. Subgroup analysis revealed that the first patient was positive for Kell antigens while the mother was negative for Kell blood group antigens. Second patient's mother was tested positive for anti-Kell antibodies. Both cases had no perinatal serologic, chromosomal, radiologic and methabolic pathological finding. Both of the patients were diagnosed with Kell subgroup incompatibility and were discharged after being treated in the neonatal intensive care unit.

CONCLUSION

This abstract presented two cases of immune hydrops fetalis caused by Kell subgroup incompatibility underlining the etiologic reasons of hydrops fetalis and increased incidence of hydrops fetalis due to Rh subgroup incompatibility.

ABS 159

A GIANT VASCULAR LESION IN A NEWBORN, A CASE REPORT OF A BLUE RUBBER BLEB SYNDROME

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BACKGROUND

Blue Rubber Bleb Syndrome (BRBS) is a rare disorder characterized by multiple cutaneous and gastrointestinal vascular lesions. The etiology of the disease is unknown. It has been reported some autosomal dominant inheritance, but most cases are sporadic. Clinical manifestations include venous malformations of the skin and upper or lower gastrointestinal (GI) bleeding. Patients may have iron deficiency anemia because of GI bleeding. Skin lesions often present at birth or manifest in early childhood and adult life.

CASE REPORT

We here report the case of a newborn that has a giant vascular malformation of fourth and fifth finger of left hand. She is the first child of non-consanguineous parents and has no history of prenatal events. Although at the 24th week of pregnancy a prenatal ultrasound was performed and her obstetrician told that she had a twin pregnancy but one of them was dead, subsequent visit data are not available. She was born with a giant, finger shaped, blue-purple mass instead of the fourth and fifth finger and the fingers are not apparent. At physical examination, there is no other skin lesion. Hand magnetic resonance imaging revealed slightly enlarged phalangeal bones and joint space in the center of a giant vascular malformation. Initial abdominal ultrasound was normal but an intraventricular bleeding was found in cranial ultrasonography. On the 13th day of life, new round, blue lesions became apparent on the skin. The second abdominal ultrasound showed multiple hemangiomas on the liver. No blood has been detected in stool.

The treatment started with propranolol but no improvement was seen, thus we planned sirolimus

therapy that is known to be effective treatment of vascular malformations. Fresh frozen plasma infusions were given because bleeding parameters were consistent with disseminated intravascular coagulation. The patient consulted with an orthopedic and a plastic surgeon. To avoid amputation no surgical intervention was performed.

ABS 160

SURFACTANT PROTEIN A AND B GENE POLYMORPHISMS AND RISK OF RESPIRATORY DISTRESS SYNDROME IN LATE PRETERM NEONATES

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BACKGROUND AND AIMS

Late-preterm newborns, $34^{0/7}$-$36^{6/7}$ weeks of gestation, are at risk of respiratory distress syndrome (RDS). Variants within the surfactant protein (SP) A and B gene have been shown to predispose to RDS in preterm infants. We aimed to investigate whether specific SP-A and SP-B gene polymorphisms play a role in the susceptibility to RDS in late-preterm neonates.

METHODS

The study population consisted of 56 late-preterm infants with and 60 without RDS. Genotyping of the SP-A and SP-B gene was performed in blood specimens using Polymerase-Chain-Reaction and DNA sequencing.

RESULTS

No differences were found between the two groups in terms of demographic and perinatal characteristics, including exposure to antenatal corticosteroids. The $6A^4$ allele-haplotype of the *SPA-1* gene and the $1A^5$ allele-haplotype of the *SPA-2* gene were overrepresented in infants with RDS (OR 3.30 [1.25-8.73] and 5.18 [1.38-19.5], respectively), but the prevalence of the *Ile131Thr* variant of the SP-B gene was similar to controls (OR 0.58 [0.25-1.34]). Carriers of the $6A^4$ or $1A^5$ allele-haplotypes had significantly higher probability of RDS (OR 4.01 [1.39-11.6] and 5.06 [1.25-20.5] respectively), after adjustment for gender, gestational age, complications of pregnancy and antenatal corticosteroids.

CONCLUSION

Specific SP-A gene variants may predispose to RDS in late-preterm infants.

ACKNOWLEDGEMENTS

This research has been co-financed by the European Union (European Social Fund – ESF) and Greek national funds through the Operational Program "Education and Lifelong Learning" of the National Strategic Reference Framework (NSRF) – Research Funding Program: Heracleitus II. Investing in knowledge society through the European Social Fund.

ABS 161

PREVENTION OF PERINATAL TRANSMISSION OF HEPATITIS B VIRUS INFECTION IN A GREEK MATERNITY HOSPITAL

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BACKGROUND AND AIM

Perinatal transmission of hepatitis B virus (HBV) is responsible for more than 1/3 of chronic HBV infections worldwide. The aim of this study is to report the necessity of HBV vaccination of infants born to mothers without HBV prenatal screening and also the urgent need for HBV screening of these mothers soon after delivery to restrict the necessity of HBV immunoglobulin.

METHODS

We retrospectively evaluated the clinical and serological reports of 240 neonates born at our maternity hospital, from January to August 2014, who were vaccinated against HBV because of unknown maternal HBV status at birth. Demographic data and peripartum information were also collected.

RESULTS

Of the mothers of unknown HBV status, 24.5% were Greek, 29.1% Roma, and 46.4% immigrants. Mean gestational age was 38.4 weeks, mean birth weight 3,088 g and mean mother's age 27.2 years. 70% had vaginal delivery. Serological screening revealed 8 (3.3%) HBsAg positive mothers, 1 HCV positive and 1 HIV positive. Of these 240 vaccinated neonates, 35 (14.5%) received also HBV immunoglobulin. Among them, 22.8% had HBsAg positive mothers and the rest (87.2%) were of unknown maternal HBV status at hospital discharge.

CONCLUSIONS
Prenatal HBV screening of pregnant women is of great importance for the prevention of perinatal transmission of HBV infection. This study underlines the need of serological screening for HBV of all women even after delivery, in order to protect neonates from HBV infection by vaccination and also to reduce the economical burden of unnecessary use of HBV immunoglobulin.

ABS 162

NEONATAL ICHTHYOSIS: A CASE REPORT

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BACKGROUND
Ichthyosis represents a large group of cutaneous disorders marked by abnormal epidermal differentiation. It is characterized by cutaneous scaling, which can be localized or generalized and can be associated with a variety of additional cutaneous or systemic manifestations. The prevalence of ichthyosis varies from 4‰ to 13.3‰, according to the clinical form.
CASE REPORT
A male infant was born at 37 weeks of gestational age by spontaneous delivery to a 32 year old gravida 1, para 1 mother, after an uncomplicated pregnancy. At birth, he weighted 2,425 g (10th percentile) and was covered by a thick smear, especially in the face area. His skin was shiny, scaling, with plantar and palmar hyperlinearity and generalized xerosis. He developed rapidly epidermal fissures around the eyes and lips. The baby suffered from respiratory distress soon after birth and received assisted ventilation via nasal CPAP for 12 hours, with a rapid improvement. Due to these clinical findings, the diagnosis of ichthyosis was established and confirmed by a dermatologist. The infant received symptomatic treatment with emollient creams and was discharged on the 5th day of life in a good condition.
CONCLUSIONS
Although ichthyosis is fairly rare, it is important for the neonatologist to have some familiarity with it, as the perinatal period is crucial for these patients, because of the risk of significant morbidity and mortality, with the majority of complications arising as a result of impaired barrier function.

ABS 163

MONITORING OF IMPLEMENTATION OF "BREASTFEEDING WITHIN THE FIRST HOUR" AT THE UNIVERSITY HOSPITAL FOR OBSTETRICS AND GYNECOLOGY "KOÇO GLIOZHENI", TIRANA, ALBANIA

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BACKGROUND
Beginning breastfeeding within one hour, beginning life with "life". The benefits of breastfeeding for infant nutrition, development, reduced morbidity and mortality, and prevention of long-term chronic diseases are now widely recognized. Initiation of breastfeeding within the first hour can help prevent neonatal deaths caused by sepsis, pneumonia, and diarrhea and may also prevent hypothermia-related deaths, especially in preterm and low birth weight infants (WHO). Early initiation of exclusive breastfeeding serves as the starting point for a optimal breastfeeding and for continuum of care for mother and newborn that can have long-lasting effects on health and development.
AIM
Awareness and training maternity staff for performing, documenting and reporting indicators of breastfeeding within the first hour of life, in order to promote and support the early breastfeeding.
METHODS
- Type of study: prospective, randomized, all births of the first shift, Monday to Friday.
- Place of performance study: Department of Obstetrics, Maternity "Koço Gliozheni" Tirana, Albania.
- Timing of the study: July 15-October 1, 2014 (2.5 months).
- Acceptance criteria: babies born at term, unique birth, vaginal births.
- Exclusion criteria: infants born preterm, twin births, triplets, etc., births with low Apgar-score, congenital abnormalities.

RESULTS
In this study, a total of 80 infants were included (mean gestational age: 39.40 ± 0.90 weeks; mean birth weight: 3,224 ± 306 g). At evaluation based

on physical development, it was seen that infants grouped as follows: AGA, 59 (73%); LGA, 11 (13.7%); SGA/IUGR, 10 (12.5%). Distribution by sex: M, 44 (55%); F, 36 (45%). Based on the parity we have these results: primiparae, 21 (26.2%); secondiparae, 34 (42.5%); tertiparae, 34 (42.5%). About 49% of babies are placed in the breast within the first hour of life. However, the records documented that 100% of infants were placed in the breast within the first hour of life.

CONCLUSIONS

Nearly half of the babies are not put in the breast within the first hour of life. If these results are noticed in the morning when the attention of the medical staff is maximum then we expect lower results at night. There is awareness of medical staff to document the start of breastfeeding within the first hour of life, but it was noticed an abuse in reporting the exact time in which this happens.

ABS 164

PULSE OXIMETRY IN THE DELIVERY ROOM FOR THE DIAGNOSIS OF CONGENITAL HEART DEFECTS

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BACKGROUND AND AIM

Although screening for congenital heart defects (CHD) relies mainly on antenatal ultrasonography and clinical examination after birth, life-threatening cardiac malformations are often not diagnosed before discharge. The aim of this study is to evaluate the utility of routine pulse oximetry in the delivery room and to study its feasibility as a screening test for CHD.

MATERIAL AND METHODS

In this prospective study performed over 13 months, all infants born in Cuza-Voda Maternity Hospital in Iasi, Romania, were enrolled. Preductal oximetry was assessed during the first hour, using Nellcor™ (Covidien, Ireland) and Masimo SET™ (Masimo Corporation, USA) pulse oximeters. Data were then analyzed, in order to establish the sensibility and specificity of pulse oximetry in the delivery room as a screening test for CHD.

RESULTS

5,406 infants were included in the study, with a mean gestational age of 38.2 weeks and a mean birth weight of 3,175 grams. During the first minute, saturation varied between 40% and 90% and at one hour, it varied between 74% and 100%. Pulse oximetry has good sensitivity and specificity at 1 hour (Se = 87.5%, Sp = 97.7%) for the diagnosis of CHD. Whereas the negative predictive value was high at all moments (98.9-99.8%), the positive predictive value was low during the first 30 minutes (conveying a high probability of false positive results), but rose to 70% at 1 hour.

CONCLUSION

Preductal saturation values at 1 hour are strong discriminative parameters for the early diagnosis of CHD. It should, however, be followed by further measurements.

ABS 165

INSURE STRATEGY – CAN WE PREDICT FAILURE?

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BACKGROUND

INSURE strategy – intubation-surfactant administration-extubation on CPAP – may reduce the need and duration of the mechanical ventilation (MV).

AIM

Our aim was to identify the risk factors for INSURE failure – defined as need for reintubation and MV – in VLBW preterm infants.

MATERIAL AND METHODS

We studied all VLBW infants born between 01.01.2011-31.12.2013 based on data collected in the National Registry for RDS. We compared BW, GA, gender, inspired oxygen fraction (FiO_2), oxygen saturation (SpO_2) during birth resuscitation, Apgar score, duration, maximal FiO_2 and PEEP on CPAP support, FiO_2 and SpO_2 before and after surfactant administration, prophylactic use of antenatal corticosteroids, mean surfactant dose, associated pregnancy complications, prolonged preterm rupture of membranes between VLBW infants in which INSURE strategy was successful and those who failed. SPSS for Windows 19.0 was used for statistical analysis, and p was considered statistically significant when < 0.05, on a confidence interval (CI) of 95%.

RESULTS
The study group comprised 54 preterm infants (mean BW 1,153.4 ± 237.6 g, mean GA 29.1 ± 2.2 weeks). INSURE strategy was successful in 37 of these preterm infants (68.51%). INSURE failure was associated with a significantly lower GA and BW (p = 0.011), Apgar score at 5 and 10 minutes (p = 0.029 and p = 0.012, respectively).
CONCLUSIONS
The main risk factors for INSURE failure identified were low GA, BW, and Apgar score at 5 and 10 minutes. More clear criteria for selecting patients for INSURE strategy may allow us to choose the optimal strategy for RDS treatment, minimizing the risk for short and long term complications.

ABS 166

INSURE STRATEGY FAILURE IN VERY LOW BIRTH WEIGHT PRETERM INFANTS – IMPLICATIONS FOR THE OUTCOME

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BACKGROUND
Studies are suggesting that, in terms of outcome, INSURE strategy is superior to mechanical ventilation (MV) associated with surfactant administration in VLBW preterm infants.
AIM
Our aim was to identify the implications on the short term outcome in the case of INSURE failure.
MATERIAL AND METHODS
We analyzed all VLBW infants born or admitted between 01.01.2011-31.12.2013 based on short term outcome data collected in the National Registry for RDS – apnea of prematurity, chronic lung disease (CLD), intraventricular hemorrhage (IVH), periventricular leukomalacia (PVL), persistent ductus arteriosus (PDA), nosocomial infections, retinopathy of the prematurity, and death – comparing data between VLBW infants successfully treated using INSURE strategy and those who failed this approach. SPSS for Windows 19.0 was used for statistical analysis ($p < 0.05$ was considered statistically significant, and a confidence interval of 95% was used).
RESULTS
INSURE strategy was successful in 37 (68.51%) of 54 VLBW preterm infants in the study group (mean BW 1,153.4 ± 237.6 g, mean GA 29.1 ± 2.2 weeks). INSURE failure was associated with significantly longer duration on CPAP support (p = 0.018), an increased need and duration for postnatal corticosteroid administration (p = 0.001), higher incidence of apnea of prematurity (p = 0.041, RR = 0.29 [95% CI = 0.09-0.98]), CLD (p = 0.002, RR = 0.10 [95% CI = 0.02-0.45]), IVH (p = 0.137), PVL (p = 0.23), PDA (p = 0.057), nosocomial infections (p = 0.3), and risk of death (p = 0.002, RR = 0.10 [95% CI = 0.02-0.45]).
CONCLUSIONS
Our results confirm the previous data suggesting that MV is associated with significantly increased risk for perinatal complications and a worse outcome compared to less aggressive strategies.

ABS 167

INVOS MONITORING OF SEVERE DIGESTIVE DISORDERS OF THE NEWBORNS

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BACKGROUND
Hypothesis that alterations in splanchnic oxygenation is the final common pathway of baseline factors associated to the pathogenesis of NEC remains to be proven. INVOS monitor can detect changes in concentration of oxyhemoglobin (HBO_2) and deoxyhemoglobin and regional blood flow, with the role determining the appearance of a local ischemia brain, renal, mesenteric.
OBJECTIVE
The authors evaluated digestive severe ischemic pathology in newborns with different GA and BW, having common criteria for inclusion, using non-invasive monitoring in parallel with INVOS, biological parameters (total leukocytes, lactate, platelet count, Hb, HCT, CRP) and clinical criteria for monitoring (temperature $SatO_2$, TA, HR).
AIM
Determination of clinical significance of near-infrared spectroscopy (NIRS) in early detection of ischemic changes in the newborn with digestive signs. Application of early medical treatment.
METHOD
30 newborns – having clinical signs of severe digestive pathology (marked abdominal distension, bilious gastric residue persistent without digestive

tolerance, bloody stool digest) – were monitored during 01.01.2013-30.06.2014. GA was comprised between 25 and 38 weeks, and BW between 750 and 3,250 g. The cases involved congenital heart defects (CHD), NEC, IUGR, and severe sepsis.

RESULTS

Tissue oxygenation index is modified in vascular bed when blood flow is reduced. Report CSOR (cerebral oxygenation/splanchnic nerve) show individual worth splanchnic ischemia of newborn, average values obtained for the 6 cardiac malformations were r SO_2 somatic 30-40, CSOR = 0.42-0.53; 12 cases NEC mean r SO_2 somatic 40-50, CSOR = 0.57-0.62, 68-69, IUGR r SO_2 somatic, CSOR = 0.76-0.83; 6 cases of septicemia with r values SO_2 somatic 52-54, CSOR = 0.67-0.93. RSO_2 somatic was statistically correlated with GA ($p = 0.012$), MAP ($p = 0.01$) and lactate ($p = 0.014$) and CSOR was statistically correlated with BW ($p = 0.02$), GA ($p = 0.01$), MAP ($p = 0.01$), PH ($p = 0.01$), lactate ($p = 0018$), and hemoglobin levels of less than 10 grams ($p = 0.012$).

CONCLUSIONS

Opportunities to learn more about the physiology and therapeutic effects by monitoring INVOS are endless. Monitoring may reveal early stages with decreased intestinal perfusion like a debut of a form of NEC, differentiating it from other cases with the same symptoms (CHD, IUGR, septic shock).

ABS 168

HYPERGLYCEMIA DURING COOLING: IS IT A RARE COMPLICATION?

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AIM

Cooling for hypoxic ischemic encephalopathy has become a relatively common practice and health care providers should be familiar with the complications of this therapy. The aim of this report is to present a newborn with persistent hyperglycemia requiring insulin therapy as a possible complication of therapeutic hypothermia.

CASE REPORT

A term AGA male infant, was born by emergency cesarean section due to abruption of placenta and was resuscitated and intubated in the delivery room. Whole body cooling was initiated according to standard cooling criteria. Inotropes were started due to hypotension and were weaned and stopped after 48 hours. The patient's blood glucose increased up to 200 mg/dl on a glucose perfusion rate (GPR) of 6 mg/kg/min after the 2nd day of life. Hyperglycemia was persistent despite decreasing GPR to 4 m/kg/min, insulin therapy was started and continued for 14 days. All other causes of hyperglycemia were ruled out. The patient's insulin and C peptide levels were 4.27 μIU/ml and 1.59 ng/ml, respectively. After the 17th day of life the patient's glucose levels returned to normal limits. He was extubated on the 10th day and was discharged on day 25 fully orally fed.

CONCLUSION

Hyperglycemia attributed to hypothermia has been reported as a result of a decrease in insulin sensitivity and insulin secretion in adults after therapeutic cooling. In conclusion although rare, hyperglycemia can be observed during and after therapeutic hypothermia in neonates, which indicates that screening for hyperglycemia during therapy is crucial.

ABS 169

DOES REPEATED PAIN EXPOSURE HAVE AN EFFECT ON PAIN RESPONSE IN HEALTHY TERM NEWBORNS?

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AIM

To compare the effect of repeated painful procedures on short-term pain response in healthy term AGA and LGA infants.

METHODS

This prospective study was conducted between January and June 2014 at Marmara University Hospital. Healthy term AGA infants (n = 40) were compared to term LGA infants (n = 20) born to non-diabetic mothers who had received at least five heel-lancing procedures, in addition to painful procedures performed during routine care. The demographic characteristics of the babies and their mothers, the number of painful procedures

were recorded. The study period was recorded by video, from which heart rate, oxygen saturation and pain scores were collected at 1 minute before and 2 minutes after the puncture. Crying time, NIPS (neonatal infant pain scale) score, heart rate and peripheral oxygen saturation (SaO_2) were compared between the groups.

RESULTS

The demographic characteristics of the mothers and their babies were similar in the study and control groups, except for birth weight, length and head circumference. Oral glucose tolerance test results of all the mothers and HbA1c levels of the study group were within normal limits. Crying time ($p = 0.018$) and NIPS scores ($p = 0.032$) after the painful stimulus were significantly higher in the LGA group, while heart rate, SaO_2 did not differ among the groups.

CONCLUSION

Our study showed that babies exposed to repeated pain exhibited more intense pain responses during heel lancing. Protecting newborns from unnecessary painful procedures and the management of pain must be considered as an important component of routine care.

ABS 170

DOES PRETERM BIRTH INFLUENCE MATERNAL PSYCHOLOGICAL HEALTH IN A BABY-FRIENDLY NICU?

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BACKGROUND AND AIM

Preterm birth can disrupt the pregnancy preparatory period. At the same time, maternal depression has been shown to have negative effects for maternal responsiveness and sensitivity to infants with high levels of maternal anxiety being associated with emotional and behavioural problems during childhood and adolescence.

The aim of the study is to assess the psychological distress in mothers of preterm infants hospitalized in our NICU – where parental visitation is encouraged 24 hours/day, and compare the results to mothers who delivered at term.

SUBJECTS AND METHODS

Study group: 75 mothers of 88 preterm babies, 23-36 weeks of gestation.

Control group: 125 mothers of 126 healthy term neonates.

The mothers completed two questionnaires:

The Beck Depression Inventory (BDI), a 21-item self-report rating scale designed to assess the existence and severity of depression.

The STAI-Y, a 40-item self-report questionnaire designed to evaluate anxiety in adults, consisting of two subscales, one for state anxiety and one for trait anxiety.

RESULTS

Preterm infants' mothers had higher post partum depression, state anxiety and trait anxiety scores.

BDI Scores: preterm (n = 75) 10.26 (7.88), term (n = 107) 7.06 (7.98); p value = 0.001.

State anxiety scores: preterm (n = 52) 41.56 (13.41), term (n = 114) 33.62 (9.89); p value = 0.000.

Trait anxiety scores: preterm (n = 53) 39.0 (111.48), term (n = 107) 32.1 (10.03); p value = 0.000.

CONCLUSION

Preterm delivery has a significant influence on maternal psychological health. It is recommended that mothers of preterm babies be routinely screened for postpartum depression and anxiety. The findings suggest that avoiding mother-infant separation and allowing the mothers to freely visit their preterm babies in the NICU can help to prevent maternal psychopathological distress.

ABS 171

IS THERE A NEW BENIGN VARIANT OF MARFAN SYNDROME AT HERAKLION, CRETE?

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BACKGROUND

Marfan syndrome (MFS) is a dominant autosomal connective tissue disorder, resulting from mutations in the gene encoding fibrillin-1 (*FBN1*), widely distributed along the entire *FBN1* gene on chromosome 15q21.1. MFS symptoms involve the cardiovascular, skeletal, ocular, respiratory and central nervous system.

CASE REPORT

A female premature newborn (33^{+4} weeks of gestation) was delivered by urgent caesarian section after an *in utero* air transfer from Crete island, mainly because of the mother's acute dissection of descending thoracic aorta. The mother, 33 years

old, had previously undergone a surgical repair of an ascending aorta aneurism.
The mother, her two brothers, and her father (ages 33-50), presented Marfan phenotype and, the main symptom being distention of aorta.
The neonate presented transient tachypnea and jaundice. She had arachnodactyly and pectus carinatum but no myopia, megalocornea or ectopia lentis. Blood pressure was normal for the age. The cardiac ultrasound showed an ascending aorta in the upper normal limits for the age and weight.
Mother's and daughter's genotypes showed a familial, heterozygous variant of *FBN1*: c.7656C>G located in exon 62. To our knowledge, it is the first report of this mutation of unknown significance.
Recommended follow up included regular blood pressure measurement, ophthalmological tests and annual cardiac ultrasound. The girl is now 18 months old and she is still very well. Her prognosis mainly depends on the aortic root Z-score.

CONCLUSION

Our case represents a "Potential MFS", meaning a possible identification of a new benign familial *FBN1* mutation with few clinical findings at the moment and an aortic root Z-score lower than 3.

ABS 172

CHOLESTATIC JAUNDICE IN INFANCY: ETIOLOGY AND MANAGEMENT

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BACKGROUND

Cholestatic jaundice in infancy is a serious clinical condition, caused by heterogeneous diseases. Diagnosis and management are often very difficult.

METHODS

The study evaluated retrospectively data of infants with cholestatic jaundice hospitalized at the Department of Gastroenterohepatology at University Children's Hospital Skopje from 2009 to 2014. Patients were investigated according to a systematic protocol, which included history and physical examination, biochemical and serological investigations, imaging studies and percutaneous liver biopsy, where appropriate.

RESULTS

There were 27 infants with cholestatic jaundice (16 males and 11 females). The mean age at presentation was 56.5 days. 13 patients had neonatal hepatitis (NH), 9 of them were preterm babies with congenital infections and parenteral nutrition. Percutaneous liver biopsy performed in 5 patients showed gigantocellular hepatitis. All of them recovered and had normal liver function tests at 1-2 year of age. Three patients were diagnosed with biliary atresia (BA), the mean age of presentation was 86 days. One of the patients had choledochal cyst and one was diagnosed with Caroli disease. Five patients were diagnosed with metabolic liver disease (tyrosinemia type I, galactosemia, bile acid synthesis defect -5β reductase deficiency). Three patients were diagnosed with syndromic intrahepatic ductular hypoplasia (Alagille Syndrome), one confirmed with genetic analysis. Three patients (1 with BA, 1 with Alagille Syndrome, 1 with Caroli disease) underwent liver transplantation. One patient with tyrosinemia was successfully treated with nitisinone.

CONCLUSION

Cholestasis requires urgent investigation with a well-structured algorithm to establish timely and appropriate diagnosis and treatment.

ABS 173

MENINGOCELE: PRENATAL DIAGNOSIS, COMPLICATION AT BIRTH AND CLINICAL OUTCOME

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BACKGROUND

Neural tube defects (NTDs) are one of the most common birth defects and affect 1:1,000 pregnancies. Most fetuses with NTDs are diagnosed prenatally in developed countries and many are aborted therapeutically.

CASE REPORT

The authors report a clinical case of a newborn with meningocele complicated at birth.
He was born by a third pregnancy of healthy and no consanguineous parents (one spontaneous abortion/one 5-year-old girl with type 1 diabetes). At 22 weeks of gestation, malformation of the

central nervous system was detected in obstetric ultrasound: lumbar-sacral meningocele without other associated malformations confirmed in fetal magnetic resonance imaging (FMRI) (**Fig. 1**). The parents refused abortion after multidisciplinary discussion and counseling. Elective cesarean section at 39 weeks, Apgar score 9/10/10. At birth a ruptured giant meningocele with leaking cerebrospinal fluid was found. No other apparent malformations were detected. The male newborn was treated with intravenous antibiotics. Surgical closure of the defect was performed in the first hours of life. After birth, cranial ultrasound excluded malformations. Good clinical conditions were observed during hospitalization. He was discharged on the 10th day.

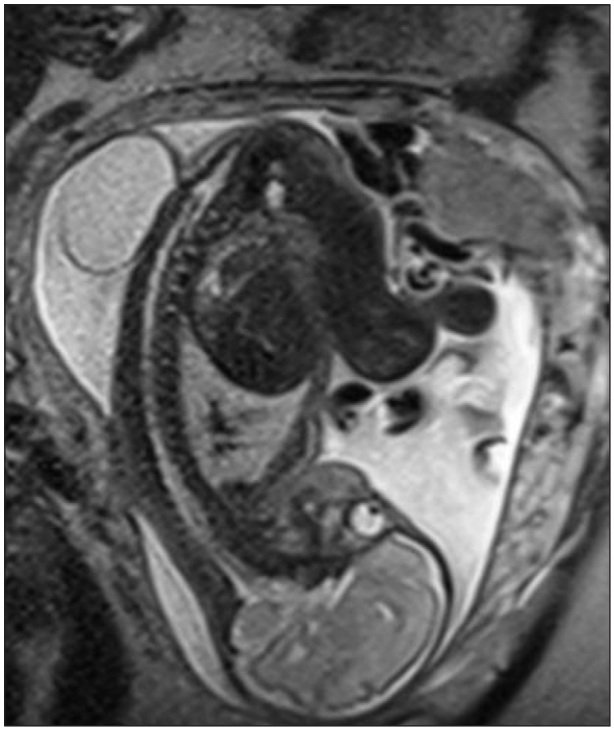

Figure 1. Fetal magnetic resonance imaging (FMRI) showing the presence of spinal sac-like structure in the lumbar-sacral transition without suggestive images of root structures-meningocele (fetus at 22 weeks of gestation).

Currently, he is 5 months old and he shows adequate psychomotor development and growth.

CONCLUSIONS

We describe a clinical case of meningocele with favorable evolution so far, despite complication with rupture at birth. Long-term outcome is unknown, but the low vertebral level of the defect without involvement of root structures and early surgical closure are of good prognosis.

ABS 174

GALLBLADDER AGENESIS (GA): FOLLOW UP OF 3 CASES

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BACKGROUND

Gallbladder agenesis (GA) without biliary tract atresia is a rare condition with an estimated incidence of 0.07-0.13% in general population. It may be associated with cystic fibrosis (CF), cardiovascular or gastrointestinal tract malformations, xanthomatosis or maternal use of talidomide. Female/male ratio is 2.5. GA may occur in familial clusters suggesting a genetic predisposition. Patients are usually asymptomatic and the diagnosis is commonly made as an incidental finding during abdominal surgery or at autopsy. According to the literature data, GA diagnosis is performed at median age of 46 years. Twenty-five to 50% of patients suffering from this condition will develop common bile duct gallstones, and 23% of them will show related symptoms during the 4th or 5th decade of life. Common symptoms include right upper quadrant recurrent pain and dyspeptic phenomena such as nausea, vomiting, jaundice, fatty food intolerance and calculosis that may mimic gallbladder pathology. For this reasons many of these patients undergo expensive and potentially dangerous instrumental investigations such as unnecessary laparotomy or laparoscopy. A correct and early diagnosis of GA may therefore guide therapy when symptoms manifest, thus avoiding surgery [1-3]. To date, few cases of neonatal AG are described in the literature, so we want to present herein our experience with three newborns affected by gallbladder agenesis without biliary atresia.

CASE REPORTS

We report on three female newborns infants with a prenatal diagnosis of suspected GA, born in our Department by spontaneous delivery at 34, 41 and 38 weeks' gestation, respectively. Amniocenteses were normal and no patient had a familiarity for hepatobiliary disease. Prenatal and neonatal CF screenings were negative in all of them. Physical examination was normal at birth and the subsequent clinical course was quite comparable, characterized

by good weight gain, well-tolerated feeds and regular bowel function. Infant's laboratory tests were normal except for a mild increase in GOT, γGT and bilirubin (total and direct). The abdominal ultrasound performed at birth showed normal liver, no dilatation of common bile duct and confirmed GA in all of them. In particular, in the anatomical site of the gallbladder for the first newborn it was possible to see a multiple cystic images (11 x 3.4 mm) (**Fig. 1**).

The second newborn's ultrasound showed a hyperechogenic image (5 mm) with anecogenic central area (**Fig. 2**).

Finally, the third newborn's abdominal ultrasound showed a transonic 3 mm round picture (**Fig. 3**).

Abdominal ultrasounds were also performed on parents, none of which showed gallbladder abnormalities. Our follow-up included an abdominal ultrasound check every 5 months for the first 15 months of life, then every year for the following 5 years. Sonographic changes were not observed during follow-up in all patients.

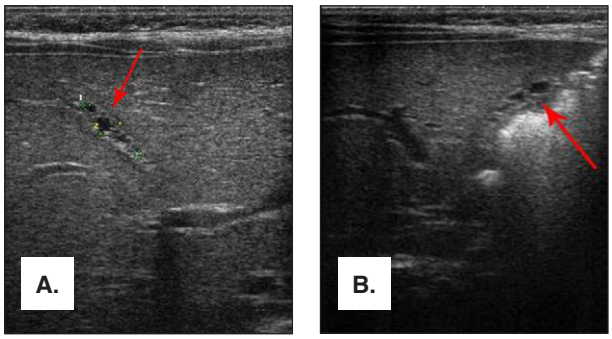

Figure 1. Case 1: multiple cystic images in the anatomical site of the gallbladder.

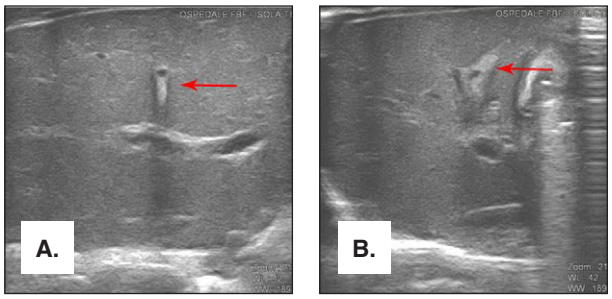

Figure 2. Case 2: hyperechogenic image with anecogenic central area.

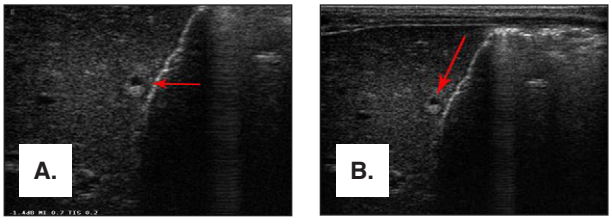

Figure 3. Case 3: transonic 3 mm round picture.

DISCUSSION

GA seems to be related to an embryological disturbance occurring during the 3rd week of gestation and concerning the caudal portion of the anterior diverticulum of the primitive gut [4]. Usually gallbladder becomes contractile, and then visible by ultrasound, at about 33 weeks of gestation, so it is difficult to diagnose its agenesis earlier. GA diagnosis can be placed only upon exclusion of ectopic sites. The natural history of patients suffering from GA highlights the importance of an early and accurate ultrasound diagnosis of this condition during late pregnancy and of an adequate follow-up, to avoid unnecessary and potentially dangerous investigations in adulthood.

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ABS 175

UNEXPECTED COLLAPSE IN TERM NEWBORNS ON THEIR FIRST HOURS OF LIFE. WHICH ATTITUDE AND PROGNOSIS?

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BACKGROUND

Sudden and unexpected collapse in term newborns is rare but well recognized, with an incidence of 0.03-0.05/1,000 live newborns. Despite initial resuscitation, there is a high risk of death or long-term neurological disability. Use of hypothermia in HIE after postnatal asphyxia may be beneficial in reducing death and neurological disability.

CASE REPORT

Authors report a case of a female newborn, first child of a 35-year-old healthy mother. The

pregnancy was monitored and uneventful. Vaginal delivery with vacuum extraction occurred at 40 weeks. Apgar score was 9/10 and cord blood gas at birth was normal. She started breastfeeding 30 minutes after birth. At one hour of life she was found lifeless by her mother, resuscitation procedures where initiated, mechanical ventilation was needed, anticonvulsant and antibiotic treatment were started, and the neonate was transferred to the NICU. Blood gases revealed pH 7.17, lactates 99. Induced hypothermia protocol was initiated one hour after collapse. The amplitude-integrated EEG showed a pattern of burst suppression, and was mildly discontinuous at 12 hours of hypothermia. MRI on the 11th day of life showed lesions compatible with HIE. All postnatal investigations, including a septic workup, metabolic and cardiologic screenings, were negative. At 2 months she presents spastic tetraparesis.

CONCLUSION

Although in almost all cases a cause can't be found, etiological investigation is mandatory. Close postnatal surveillance is critical for the prevention and early recognition of these events. In newborns with HIE in the context of sudden and unexpected collapse, hypothermia should be suggested given its possible beneficial effects.

ABS 176

ORAL *VERSUS* INTRAVENOUS PARACETAMOL: WHICH IS BETTER IN CLOSURE OF PATENT DUCTUS ARTERIOUS IN VERY LOW BIRTH WEIGHT INFANTS?

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AIMS

To compare the efficacy of oral and intravenous paracetamol for closure of hemodynamically significant patent ductus arteriosus (HSPDA) in very low birth weight (VLBW) preterm infants.

METHODS

Eighteen VLBW infants with HSPDA treated with either intravenous (n = 10) or oral (n = 8) paracetamol at 60 mg/kg/day for 3 consecutive days were analysed retrospectively. Ductal closure rate and evaluation of liver function tests were the major outcomes.

RESULTS

After two courses of treatment, HSPDA closure rate was higher in oral paracetamol group than in the intravenous paracetamol group (88% vs. 70%), but it was not statistically significant (p = 0.588). Liver function tests were normal after the treatment.

CONCLUSION

Although it was not statistically significant, the cumulative closure rates were higher in oral paracetamol group than in the intravenous group. Larger trials are needed to confirm these data.

ABS 177

CHOROID PLEXUS PAPILLOMA IN A NEWBORN INFANT

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BACKGROUND

Central nervous system tumors are very rare in newborn infants. We report a choroid plexus papilloma (CPP) in a newborn infant, which progressed rapidly.

CASE REPORT

A 25-year-old primigravida had an uneventful non-consanginuous singleton pregnancy until the third trimester. A detailed ultrasound performed at the 18th gestational week was normal. At the 38th week of gestation a routine ultrasound examination unexpectedly revealed an echogenic intracranial mass within the posterior horn of left lateral ventricle, measuring 40 x 36 x 44 mm. Fetal magnetic resonance imaging (MRI) confirmed the presence of a solid intraventricular mass. A male infant was delivered at the 39th week of gestation. Postnatal cranial ultrasonography and MRI confirmed a mass in the left occipital lobe. There was a massive edema which caused a shift in the mid-line structures to right. Head circumference of the infant increased progressively. On the 6th day, hypertension, hypotonicity and oxygen desaturation during feeding and apnea were observed and head circumference was 41 cm. Surgery was performed on the 7th day. Unfortunately, operation was complicated by extensive hemorrhage and despite massive transfusions and supportive measures the infant died intraoperatively. Histopathologic examination revealed a grade I CPP.

DISCUSSION
Choroid plexus tumors account for 42% of cerebral tumors in neonates. CPP originates from neuroepithelial cells of the choroid plexus of lateral ventricles. The prognosis is favorable for patients treated with total resection of the tumor. Intraoperative hemorrhage is a common and often lethal complication of complete surgical excision.

ABS 178

ASSOCIATION BETWEEN NUMBER OF BLOOD TRANSFUSIONS AND NEURODEVELOPMENTAL OUTCOME IN PRETERM INFANTS USING BAYLEY SCALES OF INFANT DEVELOPMENT® – THIRD EDITION

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BACKGROUND AND AIMS
Premature infants are at high risk for neurodevelopmental impairment (NDI) even in the absence of known intracranial complications of prematurity. Evaluation of the effectiveness of therapeutic interventions in association to neurodevelopmental outcome is required to improve or prevent the neurodevelopmental sequences of prematurity. The Bayley-III® (Bayley Scales of Infant Development® – Third Edition) is currently the most commonly applied measurement tool for assessing early development both in clinical practice and research settings.
AIM
To evaluate the relationship between known risk factors and early performance on the Bayley-III® at 12 months adjusted age in premature infants.
METHODS
Part of a prospective cohort study of children born at < 32 GA that were evaluated at 12 months corrected age. Bayley-III® scales were assessed in relation to therapeutic interventions or practices and complications of prematurity.
RESULTS
Composite scores and subscale scores for the cognitive, language and motor scales were lower than the reported 50th percentile, with no significant differences among them. Multiple regression analyses showed that blood transfusions (apart from severely abnormal cerebral ultrasound, gender, duration of IPPV and oxygen administration and being SGA) were consistently related to neurodevelopmental outcome. A negative correlation was documented between the number of transfusions and composite scores in cognitive and motor scales.
CONCLUSIONS
Bayley-III® assessments are valuable for getting early information about development following premature birth. Increased number of blood transfusions, apart from the known risk factors, is related to neurodevelopmental outcome. We assume that the adoption of strict transfusion policies could positively affect neurodevelopmental outcome.

ABS 179

RISK FACTORS FOR RETINOPATHY OF PREMATURITY IN PREMATURE INFANTS WITH GESTATIONAL AGE ≤ 32 WEEKS

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BACKGROUND
Retinopathy of prematurity is one of the prematurity complications with a major impact on the subsequent development of the newborn if not diagnosed and treated in time.
AIM
Our aim was to identify risk factors for ROP in preterm infants with GA ≤ 32 weeks.
MATERIAL AND METHODS
All preterm infants with GA ≤ 32 weeks born in 2011 and 2012 were included in the study. Epidemiological data, birth asphyxia, data related to oxygen treatment, anemia and blood transfusion were extracted from the National Registry for RDS and from the individual charts of the patients and compared between the preterm infants who developed ROP and those without ROP.
Statistical analysis was done using SPSS for Windows 19.0 and $p < 0.05$ was considered statistically significant.
RESULTS
28 out of the 122 preterm infants (22.95%) included in the study developed ROP. The preterm infants with ROP had significantly lower birth weight ($p = 0.006$) and Apgar score at 1 minute ($p = 0.031$);

they needed longer CPAP support (p = 0.028) and oxygen therapy (p = 0.002) and hospitalization length (p = 0.000). Also, they needed significantly more blood transfusions (p = 0.011). The preterm infants with ROP had also a lower GA, haemoglobin and haematocrit, had lower SpO_2 and needed a higher FiO_2 during birth resuscitation (p > 0.05).

CONCLUSIONS

Our results are concordant with data in the literature – birth weight, birth asphyxia, duration of oxygen therapy, complicated perinatal course, and blood transfusions – suggesting that a better monitoring and improved treatment strategies starting at birth may improve the outcome of this high risk category of infants.

ABS 180

RISK FACTORS FOR RETINOPATHY OF PREMATURITY RELATED TO ITS SEVERITY

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BACKGROUND AND AIMS

Retinopathy of prematurity (ROP) is a leading cause of visual impairment in preterm neonates. The aim of this single-center study was to evaluate risk factors related to the development and severity of ROP.

METHODS

We retrospectively evaluated 448 preterm neonates (≤ 32 weeks gestational age, among whom 99 had a gestational age of 24-28 weeks) surviving intensive care during a 5-year period (2009-2013). Demographic-perinatal and neonatal characteristics were recorded. Neonates were categorized in those without ROP and in those with ROP requiring or not surgical intervention (SI). Binary logistic regression analysis was employed to assess the effect of studied variables on ROP occurrence.

RESULTS

Any stage ROP was diagnosed in 46 (10.3%) neonates and severe ROP – as indicated by SI – in 11 (2.4%) ones. In logistic regression analysis, gestational age, male sex, Apgar 5', number of red blood cell transfusions and bronchopulmonary dysplasia (BPD: O_2 at 36 weeks postconceptional age) were found to be significantly associated with ROP development. However, further analysis within ROP cases showed that only gestational age (OR = 0.28; 95% CI = 0.11-0.72) and surfactant treatment (OR = 0.11; 95% CI = 0.01-0.89) were significantly related to the need for SI.

CONCLUSIONS

Results of this study show that immaturity, male sex, blood transfusions and BPD are significant risk factors for development of ROP. However, more immature infants and those requiring exogenous surfactant are at increased risk for surgical treatment. Preventable measures aiming at decreasing lung injury and oxygen toxicity along with conservative blood transfusions policies may have a favorable impact on the incidence of ROP.

ABS 181

NEONATAL-ONSET MULTISYSTEM INFLAMMATORY DISEASE (NOMID) PRESENTED AS URTICARIAL RASH IN A NEWBORN: A CASE REPORT

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BACKGROUND

NOMID is a rare and severe autoinflammatory syndrome, presenting at birth or within the first postnatal days. Urticarial rash is often the presenting clinical feature, accompanied by elevated serum inflammatory markers (erythrocyte sedimentation rate – ESR, C-reactive protein – CRP). Diagnosis is confirmed by genetic analysis. Interleukin-1 targeted agents are the treatment of choice.

CASE REPORT

A female term neonate was admitted to the NICU on the 1st day of life due to generalized urticarial rash (**Fig. 1**). Blood tests showed elevated serum CRP and ESR with negative blood cultures, and cerebrospinal fluid analysis revealed aseptic meningitis. Despite multiple courses of empirical antibiotic treatment, the skin rash was migratory and persistent and the markers of inflammation remained elevated.

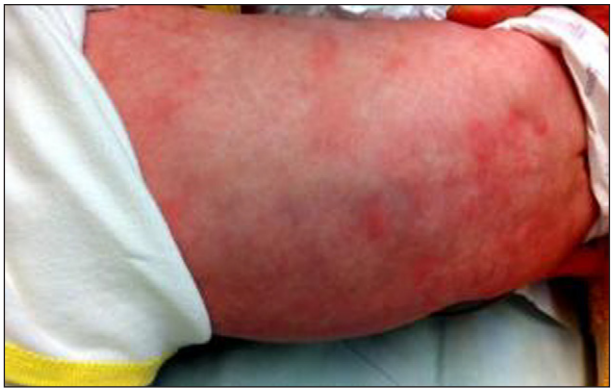

Figure 1. Generalized urticarial rash at birth suggestive of NOMID.

The skin biopsy showed perivascular neutrophilic dermal infiltrate, a striking feature of NOMID. Genetic analysis revealed an heterozygous mutation in the *NLRP3* gene, encoding cryopyrin. The patient was transferred to a referral center and treatment with canakinumab was initiated with a remarkable clinic and serological response to therapy.

CONCLUSION

Clinical suspicion for NOMID should be raised in the presence of persistent urticarial rash with elevated inflammatory markers, as indicated in our case. Skin biopsy plays a key role towards the diagnosis, since the histologic features differ from the typical eosinophilic infiltration seen in idiopathic urticaria. Pharmacological inhibition of the interleukin-1 pathway offers an important treatment option for patients with NOMID.

ABS 182

NOSOSCOMIAL SEPSIS IN NEONATAL INTENSIVE CARE UNITS (NICU) IN BOSNIA AND HERZEGOVINA

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BACKGROUND

Neonatal nosocomial sepsis in developing countries represents a major public health problem.

AIMS

To establish the incidence of nosocomial sepsis (NS) and identify the bacteria responsible for NS; to explore the association between clinical characteristics of infants on admission to the NICU, therapeutic invasive procedures and NS.

METHODS

This observational, prospective study involved 200 neonates admitted to the NICU of Tuzla University, over a period of 12 months. Variables related to maternal health history, demographic data and the clinical condition of the infants during the first 12 h of life, and therapeutic invasive procedures used in the NICU were collected on a specific automatic file. The Relative Risk (RR) for the variables was calculated.

RESULTS

At least one episode of NS had 48.5% (97/200) of the observed infants. The mortality rate was 19.6% (19/97). Confirmed sepsis was found in 46/97 (47.5%). Gram-negative bacteria were the most frequently isolated (31/46, 67.4%). Hospitalisation ≥ 24 h before delivery was the maternal variable most strongly associated with NS (RR = 12.21). Very Low Birth Weight < 1,501 g (RR = 4.42), gestational age < 32 weeks (RR = 4.59), age on admission > 24 h (RR = 14.33) and rectal temperature > 37°C (RR = 4.24) were significantly associated with NS (p = 0.05). Mechanical ventilation (RR = 2.49), nasal continuous positive pressure (RR = 5.52), intravenous catheter (RR = 5.50), urinary catheter (RR = 5.04) and surgical intervention (RR = 8.66) significantly increased the risk of NS (p = 0.05).

CONCLUSION

The knowledge of the incidence, etiology and risk factors of neonatal NS in developing countries allows us to identify neonates with an increased risk of infection for implementation of targeted prevention strategies.

ABS 183

EFFECT OF TWO DIFFERENT STARTING DOSES OF PARENTERAL AMINO ACID SUPPLEMENTATION ON GROWTH OF PRETERM INFANTS WITH GA ≤ 29 WKS

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AIM
Premature infants, especially those born ≤ 29 wks, often exhibit slow overall growth after birth. The aim of this study was to evaluate the effect of 2 different strategies for parenteral amino acid (AA) supplementation on growth of preterm neonates with gestational age (GA) ≤ 29 wks.
METHODS
Preterm infants (GA< 30 weeks) admitted in two periods with different policies for parenteral AA (starting dose 1-1.5 g/kg/d in year 2009 and 3.0 g/kg/d in 2013) were studied. Primary outcome variable was the proportion of SGA infants and weight gain on days of life (DOL) 7, 14, 21, post-conceptual age (PCA) 34 wks, and discharge.
RESULTS
46 neonates were studied; 29 in 2009 (low protein group, LP) and 17 in 2013 (high protein group, HP). Both groups had comparable baseline characteristics. The HP group regained birth weight earlier ($p = 0.0093$), lost lower weight up to the 7th DOL ($p = 0.027$), and had higher weight gain on DOL 14 and 21 ($p = 0.07$, $p = 0.004$, respectively) than LP group.
The SGA rate and the weight-z score changes from birth to discharge did not differ significantly between the 2 groups, although there was a trend for better growth in the HP group. Repeated ANOVA measures revealed the AA regime as a significant between-subject factor affecting the weight gain overtime after controlling for possible confounders.
CONCLUSION
Changes in AA administration practice by increasing the starting dose of AAs from 1.5 to 3.0 g/kg/d is associated with improved early weight gain and a trend towards decreased rate of post-natal growth restriction.

ABS 184

PREPREGNANCY BODY MASS INDEX AND GESTATIONAL WEIGHT GAIN EFFECT ON NEONATAL NUTRITION STATUS AT BIRTH. DATA FROM A GREEK PERINATAL CENTER

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AIM
To evaluate the effects of prepregnancy body mass index (BMI), gestational weight gain (GWG) on the risk for SGA and LGA neonates in Greek tertiary perinatal center.
METHODS
This is a population-based prospective cohort of 2,883 live term, singleton births (years 2010-2913). We assessed the nutritional status of newborns in relation to GWG in underweight, normal-weight, overweight and obese women taking into account potential confounders. SGA and LGA were defined as < 10th and > 90th percentiles of INTERGROWTH-21st Project, respectively.
RESULTS
Prior to pregnancy 4.86% of women were underweight, 19.6% overweight and 10.5% obese. Only 35.93% of women met GWG targets recommended by the Institute of Medicine (IOM 2009), whereas 41.94% gained more than recommended. Neonates were 4.13% SGA and 17.80% LGA. Compared to women with normal BMI, overweight and obese women had a higher LGA rate (OR = 1.38; $p = 0.006$ and 1.78; $p < 0.001$, respectively) and underweight women higher SGA rate (OR = 3.4; $p < 0.0001$). Increased GWG was associated with higher LGA rates (OR = 1.86; $p < 0.0001$) whereas inadequate GWG was associated with higher SGA rates (OR = 1.98; $p = 0.002$). The combined effect of BMI and GWG on intrauterine nutrition status was more impressive. Logistic regression analysis confirmed that both prepregnancy BMI and GWG were significant predictors of LGA/SGA neonates after controlling for cofactors.
CONCLUSIONS
Prepregnancy underweight or overweight/obesity and pregnancy weight gain out of IOM 2009 GWG guidelines highly affect the rate of intrauterine growth disturbances. Efforts to optimize prepregnancy BMI and GWG are essential for reducing the rate of SGA and LGA neonates.

ABS 185

EVALUATION OF TECHNICAL AND NON-TECHNICAL SKILLS OF HEALTH CAREGIVERS INVOLVED IN A HIGH FIDELITY SCENARIO

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AIM
To assess technical and non-technical skills of health caregivers involved in a complex scenario after participation to a neonatal course.
METHODS
At the end of a course on neonatal resuscitation, participants (10 pediatricians and 13 pediatric nurses) faced a complex scenario (severe asphyxia) with high a fidelity manikin.
A list of 22 and 9 items was used for assessment of technical and non technical skills, respectively. The evaluation was carried out by a team consisting of an experienced neonatologist with over 10 years of activity in real time and from a trainer who evaluated the performance on DVD.
The minimum score to pass the assessment of technical skills was found to be 13.64.
PRIMARY OUTCOME
Ratings on technical and non-technical skills.
We also measured the time of the procedure, scores obtained by direct and remote (DVD) mode, the effect of some variables on performance, and the correlation between technical and non-technical skills.
RESULTS
Results are presented in **Tab. 1**. Twenty out of 23 (87%) participants exceeded the required score. A pediatrician and two nurses failed the test. Pediatricians obtained higher scores in non-technical skills than nurses. There was a significant correlation between technical and non-technical scores. The lowest scores were recorded in the following items: positioning of the head, seal of the facial mask, and inflation pressure of the bag. Physicians and nurses working in high complexity centres obtained the highest scores. Evaluations "in the field" and those obtained by a remote video were comparable.
CONCLUSIONS
The course was effective for most of participants. Non-technical skills were higher for physicians than nurses. Evaluation of performance "in the field" and by a remote video were similar.

Table 1. Skills scores and execution times of health caregivers.

	Total	Nurses	Pediatricians	p-value (nurses vs pediatricians)
n	23	13	10	-
Non technical skills score[a]	38 (34-42)	34 (28-40)	41 (35-45)	**0.04**
Technical skills score[a]	18 (16-19)	18 (15-19)	18 (16-18)	0.95
Execution time (item 1-6)[a]	40 (30-45)	38 (30-40)	43 (35-45)	0.16
Execution time (item 7-14)[a]	40 (36-50)	50 (40-60)	37 (30-40)	**0.01**
DVD score[a]	18 (16-19)	18 (15-19)	18 (16-18)	0.95

Data are expressed as n (%) or [a]median (IQR).

ABS 186

DIFFERENCES IN GASES, ELECTROLYTES, HEMATOCRIT, CALCIUM AND GLUCOSE LEVELS BETWEEN UMBILICAL VENOUS AND ARTERIAL BLOOD

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BACKGROUND
The arterial blood gases analysis (EGA) from umbilical cord has fundamental importance for the evaluation of the newborn perinatal health. The meaning of the data differs between umbilical venous and arterial blood.
AIM
To obtain reference values for the main parameters of the EGA: pH, pCO_2, HCO_3^-, BE, hematocrit (Htc), potassium, sodium, chloride, calcium and glucose in the umbilical artery and vein.
MATERIAL AND METHODS
Blood samples were taken from both an artery and a vein of the same umbilical cord in 36 healthy term infants (Apgar score ≥ 8) born by elective caesarean section and analyzed using IRMA TruPoint Blood Analysis System with CC type cartridges. Statistical analysis was done using the package Stata 8.2 SE.
RESULTS
As populations were not normally distributed, Wilcoxon test and t-test for paired data have been utilized. A significant difference was observed

between the artery and vein in the values of pH ($p < 0.0001$), pCO_2 ($p < 0.0001$), Na^+ ($p < 0.0001$), glucose ($p < 0.0001$), Htc ($p = 0.0005$) and K^+ (0.0342). No significant difference was detected in the values of calcium and HCO_3^-.

CONCLUSIONS

As expected, significant differences exist between umbilical venous and arterial blood in regard to the values of EGA and Htc. The higher concentrations of glucose, Na, K^+ and Htc in the umbilical vein than the ones found in the arterial blood are the expressions of maternal contribute mediated by placenta. Arterial cord blood detection of pH and pCO_2 is crucial to ascertain intrauterine well-being and fetal oxygenation status at birth.

ABS 187

MINIMALLY INVASIVE SURFACTANT ADMINISTRATION VIA THIN CATHETER DURING SPONTANEOUS BREATHING: OUR EXPERIENCE

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BACKGROUND AND AIM

Noninvasive ventilation strategies for neonatal respiratory distress syndrome (RDS) are considered as major factors in minimizing lung injury. Aiming at avoiding intubation and managing RDS with continuous positive airway pressure (CPAP), new techniques of minimally invasive surfactant therapy (MIST) have been developed. Aim of the study is to examine the effects of MIST on respiratory outcome and comorbidities of RDS.

METHODS

We studied the outcome of 35 neonates with RDS, who were born in our hospital from 01/2014 to 08/2014. All were treated with nCPAP after birth and were assessed for MIST, based on clinical and radiographic criteria, arterial blood gas and oxygen requirement. Tracheal instillation of surfactant via a thin vascular catheter, under direct laryngoscopy during spontaneous breathing, was performed.

RESULTS

Demographic and perinatal characteristics were studied, such as delivery type (cesarean 85.7%), gender (male 60%), mean gestational age (33^{+2} w), mean birth weight (2,093 g), antenatal steroids (74.28%), prolonged rupture of membranes (17.1%), mean Apgar score at 5 min (8). Mean oxygen fraction required prior to MIST was 0.40.

The primary outcomes include failure of MIST, expressed as need for intubation and mechanical ventilation (MV) within 72 h of life (22.8%), mean duration of MV (47 h) and repeated surfactant therapy (11.4%). Secondary outcomes include duration of respiratory support (5.27 d on CPAP, 9.32 d oxygen therapy), hospitalization (23.5 d), BPD (14.28%), pneumothorax (2.85%) and mortality (0%).

CONCLUSIONS

We conclude that MIST may change the neonatal practice of RDS management. Analysis of further data of our long time practice is our next goal.

ABS 188

THYROID FUNCTION OF INFANTS BORN TO MOTHERS WITH HYPERTHYROIDISM DURING PREGNANCY

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BACKGROUND AND AIM

Autoimmune gestational hyperthyroidism is a common entity, implying a risk of abnormal neonatal thyroid function. Graves' disease complicates 0.2% of pregnancies, while 1% of the offspring may present thyrotoxicosis. Neonatal thyroid malfunction is due to transplacental transfer of maternal antibodies.

METHODS

We retrospectively studied the cases of 31 neonates born to hyperthyroid mothers, in our hospital from 03/2012 to 08/2014. The newborns were subdivided into 5 groups based on clinical presentation and laboratory tests (T3, T4, FT4, TSH) on postnatal days 2, 7 and 15.

RESULTS

Group A

Transient hyperthyroidism (n = 15): born to treated hyperthyroid mothers. All were asymptomatic, had elevated FT4, needed no treatment and remitted completely.

Group B

Transient hypothyroidism (n = 8): born to treated hyperthyroid mothers. All had low T4, remained asymptomatic, and needed no treatment. T4 values normalized within 4 weeks.

Group C

Neonatal thyrotoxicosis (n = 2): siblings born to a mother with poorly controlled Graves' disease, through different pregnancies. The one presented on postnatal day 8 with irritability, tachycardia, feeding disorders and exophthalmos, the second with milder symptoms. Their thyroid tests suggested hyperthyroidism with elevated TSH immunoglobulin (TSI).

Group D

Asymptomatic with normal thyroid tests (n = 3).

Group E

Asymptomatic with thyroid tests not falling into any of the above groups (n = 3): Results of their thyroid determinants were contradictory and not consistent with a particular thyroid status.

CONCLUSIONS

Our findings suggest the complex impact of maternal hyperthyroidism on the neonatal thyroid function. We consider that management of these neonates should include clinical and laboratory monitoring.

ABS 189

QUALITY OF LIFE IN PREMATURE BABIES FROM THEIR FAMILY PERSPECTIVE

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BACKGROUND AND AIM

Although various tools have been created to attempt to measure quality of life (QoL), a standard instrument was not found. The aim of this study is to quantify some elements in assessing QoL of preterms, from mother's perspective.

MATERIAL AND METHODS

A questionnaire was developed by the authors and applied on 59 subjects. For validation a group of 30 subjects was tested.

RESULTS

Ability to understand medical information was high (84% vs 83%; p = 0.963). The groups were homogenous regarding maternal age, gestational age, birth weight (p > 0.05). Mothers were mainly employed (70% vs 63%; p = 0.875), of rural provenance (66% vs 63%; p = 0.162), and married 88.1% vs 93.3% (p = 0.452). Low income was found mainly in the control group (p = 0.005). 33% of prematures benefits of involvements of whole family in routine care (p = 0.660) and integration in family as a "normal baby" was in 90% of cases (p = 0.470) The psychological impact of preterm birth was significant lower in the studied group (53% vs 73.3%; p = 0.035). 40% of patients benefit from human milk, in the first 6 months of life (p = 0.905), 92% had a specific prophylaxis vs 82% in the control group (p = 0.047). 50% of prematures from both groups had more than one hospitalization during first two years of life (p = 0.307). Favourable evolution of patiens, quantified through normal neurodevelopement was appreciated by 56% and 47% of mothers, respectively (p = 0.018), and benefits of follow-up program was appreciated by 90% of mothers (p = 0.307). Regular evaluations were performed in 83% of patients (p = 0.601).

CONCLUSION

Implementing a specific questionnaire to mothers could lead to correct conclusions regarding QoL of prematures.

ABS 190

DOES CIRCADIAN RHYTHM OF MOTHERS AFFECT MACRONUTRIENTS OF BREAST MILK?

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AIM

The aim of the study was to determine the within-day variation of fat, protein and carbohydrate content of breast milk.

METHODS

The study was conducted in a tertiary center. We obtained milk samples from lactating mothers of hospitalized infants after hand-pump expression or breastfeeding. Human milk samples were collected 3 times a day; in the morning, at midday and at night. Four milliliters of fresh human milk were collected for each sample. We used a mid-infrared human milk analyzer that was developed by MIRIS AB (Upsala, Sweden) to measure protein, fat, carbohydrate and energy levels of milk samples.

RESULTS

A total of 52 lactating mothers were recruited to the study. Median maternal age was 28 (18-42) years. Median gestational age and birth weight of the infants were 36.5 (27-41) weeks and 2,490 (750-4,290) grams, respectively. Of the 52 lactating mothers, 27 had transitional milk and 25 had mature milk. There was no significant difference in protein, fat, carbohydrate and energy levels of milk samples throughout the daytime.

We also compared within-day variation of macrocontents of transitional-mature milk, milk samples of premature-term infants and samples collected by either hand expressions or after breastfeedings. No significant difference was found between the groups.

CONCLUSION

In our study we did not observe significant effect of circadian variation on macronutrients of breast milk. Since micronutrients of breast milk might be influenced by circadian alterations, further studies should be designed to analyze both micro and macronutrients of breast milk.

ABS 191

EARLY AND LONG TERM RESPIRATORY OUTCOME OF PREMATURE INFANTS WITH CONTINUOUS POSITIVE AIRWAY PRESSURE VIA NASAL PRONGS *VERSUS* NASAL MASK: A RANDOMIZED CONTROLLED TRIAL

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AIM

To determine the effect on the rate of bronchopulmonary dysplasia (BPD) and on the rate of death of nCPAP therapy with nasal prongs or nasal mask as the initial treatment for respiratory distress syndrome (RDS).

METHODS

Inborn preterm infants (< 32 weeks' gestation) who suffered from RDS were enrolled in this single-centered, unblended randomized prospective controlled trial. They were stabilized with nCPAP in delivery room. Immediately after admission to neonatal intensive care unit (NICU), infants were randomly assigned to receive nCPAP with either nasal prongs or mask; nCPAP was continued by setting PEEP at 5 to 8 cm H_2O.

RESULTS

160 infants were assessed for eligibility, 149 infants were randomized. Finally 75 infants in Group I (nasal prong) and 74 in Group II (nasal mask) were analyzed. Mean gestational ages were 29.3 ± 1.6 vs. 29.1 ± 2.0 weeks (p = 0.55) and birth weights were 1,225 ± 257 vs. 1,282 ± 312 grams (p = 0.22) respectively in Group I and Group II. The frequency of nCPAP failure within 24 hours of life was higher in Group I compared to Group II (8%, 0%, respectively; p = 0.09) but difference was not significant. The outcomes of BPD and death rates did not differ among the groups (9.3% in Group I vs. 9.4% in Group II; p = 0.96).

CONCLUSIONS

Applied nasal mask is a feasible method to deliver nCPAP and as effective as nasal prongs for the initial treatment of RDS in preterm infants.

ABS 192

EPIDEMIOLOGY AND SUSCEPTIBILITY PATTERNS OF HOSPITAL-ACQUIRED CONJUNCTIVITIS IN PRETERM INFANTS

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AIM

To determine the prevalence of the bacterial pathogens causing bacterial Hospital-Acquired Conjunctivitis (HAC) and to provide information about antibiotic resistance patterns of especially Gram-negative pathogens among inpatient preterm infants.

METHODS

Only infants with Gram-negative (Group 1) or Gram-positive conjunctivitis (Group 2) were included in our study. Data were collected retrospectively and consisted of demographic characteristics, long and

short term clinical outcomes. From the computerized microbiologic results, isolated pathogens and antibiotic susceptibility patterns were also collected.

RESULTS

Over the 3-year study period, 365 conjunctival swab culture were performed, of which 114 (31.2%) had positive bacterial cultures, growing a total of 132 organisms. The most common microorganisms detected on conjunctival cultures were Gram-negative conjunctivitis (Group 1, n = 80, 82%). Group 2 included 18 (18%) infants who did have Gram-positive conjunctivitis. There were no significant differences between demographics and clinical features between groups. Ten neonates of Group 1 (12.5%) and 2 neonates of Group 2 (11.1%) had sepsis concomitantly (p = 0.60). Of the Gram-positive organisms, *S. aureus* (50%) was the predominant pathogen. Of the Gram-negative organisms, the most common pathogen was *Pseudomonas spp.* (46.2%) followed by *Klebsiella spp.* (27.5%), *E. coli* (12.5%). The percentage of organisms resistant to gentamicin, netilmicin and 2nd/3rd-generation fluoroquinolones was 48.1%, 14.3%, and 8.6% to 13%, respectively. We didn't observe any unresponsive or complicated conjunctivitis.

CONCLUSIONS

There is a variation in the frequency of infections, predominant pathogens, and antimicrobial susceptibility between neonatal intensive care units. Local empiric antibiotic selection for HAC should be based on susceptibility patterns of microorganisms at each clinic.

ABS 193

MATERNAL PROBIOTICS FOR PRETERM PREMATURE RUPTURE OF MEMBRANES AND PERINATAL OUTCOME

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BACKGROUND

Preterm premature rupture of membranes (PPROM) is an obstetrical complication correlated with high neonatal morbidity and mortality. Probiotics and their certain strain of commensal lactobacilli can safely colonize vagina after vaginal administration.

AIMS

Evaluate the effectiveness, safety and perinatal outcomes in singletons with contemporaneous early exposure to vaginal probiotics suppositories.

METHODS

A double blind study in pregnant patients with confirmed PPROM between the 24th and the 34th week of gestation (all singleton pregnancies).

RESULTS

A total of 93 cases of singleton pregnant women was analyzed (control group n = 51, probiotics group n = 42). The median week of PPROM for both groups was 30 weeks (p = 0.38), the mean delivery week for both groups was 35 for study group instead 33 weeks (p = 0.03), mean latency period in the study group was significantly longer than in the control group (5.05 vs. 3.03 weeks p = 0.015). The birth time weight was higher for the study group (2,186 vs 2,081 g, p = 0.53). The percentage of newborns that was recovered in intensive care units was higher for the control group: it occurred in 63% (31 out 49) neonates confronting 35.9% (14 out of 39) of the study group, which is statistically different according z-test (p = 0.01). The average duration of recovery was 21 days for the probiotics group and 17 for the study group (p = 0.56). The mean of treatment days in which the infants received oxygen with mechanical ventilators (SIMV and nCPAP) was 8.1 days for probiotics group and 6.9 for the control (p = 0.7).

CONCLUSIONS

Probiotics vaginally administrated early in PPROM singleton pregnancies is associated with delay in delivery and reduction of neonatal rate of hospitalization; this means reducing complications of long term neonatal recovery and oxygen related pulmonary dysplasia. The use of probiotics in pregnancies complicated with PPROM seems rationale and safe under many aspects.

ABS 194

LEVELS OF VITAMIN D IN WOMEN AND THEIR NEWBORNS BORN BEFORE 32 WEEKS WITH LOW AND EXTREMELY LOW BIRTH WEIGHT

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BACKGROUND
Adequate vitamin D status during pregnancy is crucial for normal fetal growth and fixed stock of vitamin D in newborns.
AIMS
To determine plasma levels of vitamin D (25-OHD) in women and their newborns with low birth weight, born before 32 weeks of gestation. To seek a correlation between maternal levels of 25-OHD and the levels in neonatal umbilical cord. To analyze socio-demographic characteristics of mothers, as well as the connection between levels of the 25-OHD and complications of pregnancy. To trace dynamics of vitamin D and biochemical indicators of bone metabolism in children of 8 weeks of postnatal age.
MATERIAL AND METHODS
35 mothers and their 41 newborns weighing less than 1,500 g born between August 2013-January 2014 are included. At birth serum levels of 25-OHD in the maternal venous blood and umbilical cord blood of newborns were examined through analysis "ECLIA". Data such as maternal feeding practises, intake of vitamins, morbidity during pregnancy and sunscreen use were analysed. Vitamin D supplementation of children starts from 20 day of age in dose D3 – 1,334 IU/day. For newborns at eight weeks of postnatal age levels of 25-OHD, biochemical indicators of bone metabolism (serum calcium, phosphorus, alkaline phosphatase, parathormon levels) and the development of chronic diseases, such as bronchopulmonary dysplasia, were estimated.
RESULTS
We have discovered that 63% of the mothers present a deficit of 25 OHD (12.61 ± 4.8 ng/ml), 28.5% a shortage (26.66 ± 2.59) and only 8.5% (40.4 ± 8.48) normal levels of vitamin D. For newborns data are respectively 32% (20.08 ± 3.69) – deficit, 49% (27.39 ± 2.70) – shortage, and in 19% (41.6 ± 10) – in rate. There is a positive correlation between mother's and children's levels of vitamin D. Statistical significant differences are observed in the levels of vitamin D and the presence of infection and preeclampsia in mothers. It was not reported seasonality in the levels of vitamin D in the mother-baby dyad during the period of the study. At eight weeks of age sufficient levels of vitamin D have 70% of the children, but 30% of the newborns remains deficient (27.09 ng/ml). Statistical significant negative linear relationship was observed in the dynamics of the parathormon levels and vitamin D ($p < 0.0001$). Other biochemical markers of bone metabolism were left in reference limits.
CONCLUSION
Deficit of vitamin D is established in 63% of the surveyed women and 32% of their children. Mother's deficiency increases the risk of neonatal deficiency. We recommend a study of serum levels of vitamin D in women with high-risk pregnancy and prenatal supplementation when necessary. In VLBW and ELBW babies we recommend an early oral administration of vitamin D between 7-10 day of life in dose 1,334 IU/day.

ABS 195

SEVERE LACTIC ACIDOSIS IN AN EXTREMELY LOW BIRTH WEIGHT INFANT WITH THIAMINE DEFICIENCY

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AIM
In this report, we present a preterm newborn with persistent lactic acidosis who was on total parenteral nutrition (TPN) that lacked thiamine.
CASE REPORT
A 28-week-old, 750 g female infant was admitted to NICU. She was intubated and put on ventilator for respiratory distress syndrome. Achieving full enteral feeding was not possible due to gastric residues and abdominal distention, rendering the patient dependent on TPN during the first two weeks of life. Although our unit's protocol includes water- and lipid-soluble vitamins and trace elements from the 1st day of TPN, due to a shortage of infant-suitable vitamin preparations in the hospital during this period, the patient received unsupplemented TPN for three weeks. An insidious increase in lactic acid (LA) levels and uncompensated metabolic acidosis was apparent from the 23rd day of life. Metabolic acidosis was persistent despite massive doses of bicarbonate. Thrombocytopenia and neutropenia also developed in addition to lactic acidosis. Infection markers, viral serology and metabolic screening tests were all negative. The acidosis

resolved dramatically within four hours when the patient was treated with thiamin.

CONCLUSION

Although TPN is life saving in the NICU, meticulous attention must be paid to provide all essential macro- and micronutrients.

ABS 196

ABERNETHY MALFORMATION AND FANCONI ANEMIA IN A NEONATE: A RARE CASE REPORT

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BACKGROUND

Abernethy malformation (congenital extrahepatic portosystemic shunt) is a rare condition in which porto mesenteric blood drains into inferior vena cava through either complete shunts with absence of intrahepatic portal vein (type I) or partial shunts with a remaining degree of portal perfusion (type II). It is associated with multiple congenital anomalies.

CASE REPORT

A neonate postnatally diagnosed with Abernethy malformation.

A male neonate of 2,660 g offspring of consanguineous parents was vaginally born at 37 weeks of gestation with an optimal Apgar score, but later intubated due to respiratory failure. He had dysmorphic facial features and multiple congenital anomalies including right radial and thumb absence, patent ductus arteriosus (PDA) with atrial septal defect, right multicystic kidney, left ectopic kidney, small penis. On day 18 an abdominal Doppler ultrasound was performed due to abdominal distention revealed congenital absence of portal vein. A dilated hepatic artery originated from abdominal aorta instead of celiac trunk. Haller tripod was absent. Small ascites and minimal dilatation of the intrahepatic bile ducts were also present. An abdominal MRI, performed 16 days later (due to direct hyperbilirubinemia development), confirmed the initial ultrasound findings. Imaging findings were all consistent with Abernethy malformation. Evaluation of thrombocytopenia and dysmorphic features revealed the presence of pancytopenia Fanconi. Metabolic and hormonal tests were performed.

CONCLUSIONS

Presence of Abernethy malformation and pancytopenia Fanconi in the same patient is extremely rare if ever reported. It is interesting that the literature revealed common associated anomalies for both situations.

ABS 197

STAPHYLOCOCCUS EPIDERMIDIS VANCOMYCIN RESISTANT LATE ONSET NEONATAL SEPSIS TREATED WITH LINEZOLID

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BACKGROUND

The need of new antimicrobial agents both effective and well tolerated, is becoming imperative for the treatment of sepsis in the NICU, due to the increasing incidence of infections due to multi-drug resistant microbes. Linezolid is an oxazolidinone antibacterial agent and exhibits a broad spectrum of activity against Gram-positive bacteria.

CASE REPORT

Female premature (27^{+2} weeks GA), BW 1,085 g, was delivered vaginally after an *in utero* air transfer, because of PPROM. Apgar score 5 (1 min) and 8 (5 min). After resuscitation and initial stabilization she was transferred in our NICU. She was intubated because of RDS and received one dose of surfactant 200 mg/kg. She remained in mechanical ventilation for 39 hours and in nCPAP for 17 days because of apnea of prematurity. The baby received ampicillin and gentamicin from the 1st until the 7th day of life (DOL).

On the 11th DOL she presented a lot of episodes of apnea, abdominal distension and lethargy. CRP raised (67.9 mg/l), while WBC and CSF were within normal range. She received vancomycin and cefotaxime for two days and then cefotaxime was changed into meropenem because of a new raise of CRP (108 mg/l). Three days after the onset of sepsis, a *S. epidermidis* resistant to vancomycin was isolated in peripheral blood culture. The treatment changed to linezolid for ten days. Regimen was well tolerated, whereas none of the common side effects of linezolid (such as lactic acidosis, anemia, thrombocytopenia and deterioration in liver and kidney function tests) were observed.

CONCLUSION

Linezolid appears to be a good choice for treatment of Gram-positive neonatal infections. Further studies providing evidence for clinical and microbiological efficacy of linezolid will support its use.

ABS 198

CONGENITAL ICHTHYOSIS: A RARE CASE PRESENTION

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Our case is about a female newborn BW 3,200 g, first birth performed with a SC. In the 8th month it was suspected she had Down S. After the baby was delivered, she was brought at NICU with apparent changes on her skin looking like "Harlequin" leading to congenital ichthyosis (**Fig. 1**). We consulted with a dermatologist and we began with the medicine 5% acid lactic, Diprobase® cream, cream with 5% urea and 20% propylen glycol. We also gave her vitamins AD *per os*, eye drops, and analgesics. Antibiotics were also prescribed and we saw an improvement on her skin on the first days. The baby continued to be fed with SOG. On the 5th day we observed CRP 76 and positive blood culture (*S. aureus*). The conditions worsened and the baby died on the 7th day with severe signs of septic shock.

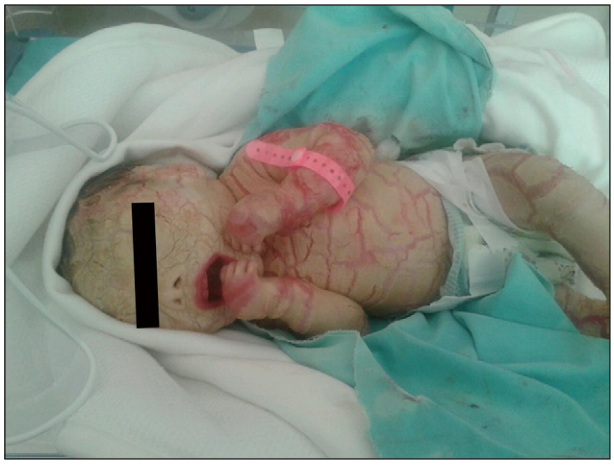

Figure 1. "Harlequin" aspect of congenital ichthyosis.

ABS 199

THE EVOLUTION OF aEEG AFTER BIRTH IS ASSOCIATED WITH NEURODEVELOPMENTAL OUTCOME IN PRETERM INFANTS

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BACKGROUND

Neurodevelopmental impairment (NDI) is a complication of prematurity even in infants without apparent lesions on brain imaging or neurological dysfunction during the neonatal period. Serial EEGs were proved better predictors of long-term outcome than imaging studies and neurological examination. Advanced or delayed EEG evolution compared to the expected patterns for a given post-conceptional age (PCA) has been correlated with poor neurodevelopmental performance later in life. Although the amplitude-integrated electroencephalogram (aEEG) is considered very sensitive early predictor of outcome in term asphyxiated newborns, its value for long-term prognosis of preterm infants hasn't been adequately studied.

AIM

To evaluate the association between the evolution of aEEG maturation and neurodevelopmental outcome of preterm infants.

METHODS

Preterm infants ≤ 32 weeks gestational age (GA), clinically stable and without brain ultrasonographic lesions, were enrolled in a prospective observational cohortstudy. The aEEGs recorded was within the first 72 hours of life and then weekly until discharge and was visually analysed according to four predefined features: Continuity (Co), Cyclicity (Cy), Bandwidth (B) and Amplitude of lower border (LB). Neurodevelopmental outcome was assessed using the Bayley-III® scales at 3 years of age. The evolution of aEEG maturation and Bayley-III® scales were correlated.

RESULTS

The participants were divided into 2 groups according to outcome. Group 1 included 61 toddlers without NDI (GA: 30.38 ± 1.8 weeks, birth weight [BW]: 1,349 ± 289 g) and group 2 of 23 patients with mild NDI (GA: 28.88 ± 2.74 weeks, BW: 1,096 ± 289 g). The aEEG maturation was more advanced in group 2 compared to group 1 for all aEEG features. The acceleration was significant for Co at 31 weeks ($p = 0.0001$), Cy and B at 32 weeks ($p = 0.043$ and $p = 0.039$, respectively) and LB at 30 and 31 weeks ($p = 0.017$ and $p = 0.001$, respectively) PCA. Based on composite score, acceleration was significantly higher from the 28th through the 32nd week PCA in

group 2. Logistic regression analysis revealed the aEEG evolution as significant predictive factor for NDI after controlling for GA and BW.

CONCLUSIONS

Ex preterm toddlers suffering mild NDI display an advanced aEEG evolution after birth compared to those without NDI. Acceleration of aEEG maturation in premature infants may be prognostic for mild NDI even in the absence of abnormal ultrasonographic findings.

ABS 200

RESPIRATORY MORBIDITY OF LATE-PRETERM VS INTRAUTERINE GROWTH RETARDED INFANTS AT SCHOOL AGE

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BACKGROUND

It is increasingly recognised that late preterm infants as well as in-utero growth retardation (IUGR) have increased respiratory morbidity in the neonatal period as well as decreased lung function in later life. However, very few studies have assessed long term respiratory consequences of late preterm birth in comparison with IUGR.

AIM

To determine respiratory morbidity of late-preterm vs IUGR infants at school age (5-7 years of age).

METHODS

Participants included late-preterm (34-36^{+6} weeks) AGA infants (Group 1), IUGR (term/preterm; < 10^{th} centile for gestation and gender-specific birth weight) infants (Group 2) and term AGA infants (39-42 weeks-control group) born between 2004 and 2008 and assessed for respiratory morbidity at school age by using validated questionnaires such as ISAAC and ATS-DLD-78-C.

RESULTS

Initially, study population included 1,171 infants (307 of which were late-preterm and 125 IUGR infants). However, at school age, only 50 infants in each group could be evaluated for respiratory morbidity. Compared with term gestation, both late-preterm gestation and being IUGR were associated with significant increases in most of the respiratory morbidities at school age such as physician-diagnosed asthma, allergic rhinitis, wheezing and whistling episodes, exercise-induced wheezing, episodes of shortness of breath etc. Furthermore being born IUGR was significantly associated with increases in > 2 episodes of shortness of breath ($p = 0.02$), hospital admission for severe chest disease before age 2 ($p = 0.01$), and severe chest disease after age 2 ($p = 0.02$).

CONCLUSION

Birth at late-preterm and with IUGR are important risk factors for the development of respiratory morbidity at school age. Furthermore, IUGR infants present a significantly higher risk of respiratory morbidity when compared to late-preterm AGA infants.

ABS 201

CYSTATIN C IN URINE: EARLY MARKER OF ACUTE KIDNEY INJURY IN CRITICALLY ILL NEONATES

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BACKGROUND

Serum Creatinine (Crs) is a classic parameter used for diagnosis of acute kidney injury (AKI), with limitations. New biomarkers, such as urine cystatin C (CCur), could improve diagnosis of neonatal AKI.

AIM

To determine the validity of CCur as an early predictor of AKI in neonates undergoing cardiac surgery or serious illness, mostly perinatal asphyxia, in NICU (2012-2013).

MATERIAL AND METHODS

Prospective, observational study. Excluded: preterm infants, uropathies and anuria. Crs and CCur in isolated urination before injury (in cardiac surgery) and 1, 3 and 24 hours after damage exposure were measured. AKI was defined by pRIFLE criteria in patients > 72 hours, and Crs > 1.3 mg/dL in first 48 hours of admission. The highest in the determination of CCur or in CCur/Crs was used for data analysis. Tests of Mann-Whitney U and Chi-square were used.

RESULTS

42 infants (29 males), median age of 6 days. 30 underwent cardiac surgery and 12 had severe clinical condition (8 perinatal asphyxia). 20

children (47%) showed AKI, 57% of cardiac surgery and 25% of other neonates. CCur were higher in children with asphyxia than in cardiac surgery patients (0.36 vs 0.16 mg/L, p = 0.021), no difference in CCur/Crs (1.57 vs 1.03, p = 0.381). CCur and CCur/Crs in cardiac surgery were higher in those who developed AKI (0.23 vs 0.015, p = 0.004 and 2.80 vs 0.29, p = 0.026), no relation to the AKI in asphyxia.

CONCLUSIONS

Determination of CCur is useful in early diagnosis of AKI in neonates undergoing cardiac surgery. In first 72 hours more studies are required to clarify relationship with the AKI.

ABS 202

MORBIDITY OF LATE PRETERM INFANTS COMPARED TO EARLY TERM

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BACKGROUND AND AIMS

Infants born late preterm (34-36^{+6} w) are known to have higher neonatal morbidity than term infants. There is emerging evidence that the morbidities of prematurity continue into early term (37-38^{+6}) born babies. The aim of this study is to compare the morbidity rates between late preterm and early term infants.

METHODS

We have studied two groups of neonates, one of late preterm (n = 34) and one of early term (n = 34) retrospectively. Neonatal morbidity was assessed towards the rates of neonatal infection, metabolic disorders (hypoglycemia), neonatal jaundice and admission in Level I and II nursery.

RESULTS

Regarding to neonatal infection, preterm neonates had an increased rate of possible infection, needing antibiotics (32.3 vs 5.8%), although the percentage of culture proven sepsis was the same (5.8%) in both groups. Compared with early term neonates, late preterms had increased rates of hypoglycemia (29.4% vs 11.7%), feeding disorders (17.6% vs 8.8%) and need of parenteral nutrition (41.1 vs 14.7%, p). Both groups had similar duration of hospitalisation (5.1 vs 5.2 days) and rates of hyperbilirubinemia needing phototherapy (47%).

CONCLUSIONS

Although our study consists of a small sample, there is increasing evidence that late preterm and early term infants are at higher risk of developing clinical problems immediate after birth than their term counterparts. The results of this study emphasize the importance of judicious obstetrical decision-making when considering late preterm and early term delivery.

ABS 203

DECREASE OF CHOLESTASIS USING CYCLED PARENTERAL NUTRITION IN NEWBORNS REQUIRING PROLONGED PARENTERAL NUTRITION. A PROSPECTIVE RANDOMIZED CONTROLLED NOT BLINDED STUDY

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BACKGROUND AND AIMS

Cycling parenteral nutrition has been proposed as a beneficial treatment for preventing and treating parenteral nutrition-associated cholestasis (PNAC), although it has not been a method studied in newborn. The main aims of this study were to compare the effect of cycling parenteral nutrition (PN) on PNAC *versus* continuous parenteral nutrition.

METHODS

A prospective randomized controlled not blinded study including newborn infants with PN over 10 days. Hemodynamically unstable infants and those with hepatobiliary malformations were excluded. Liver function test and abdominal ultrasound scan were obtained at baseline, and sequentially thereafter.

RESULTS

Up the date included 47 patients, 23 assigned to the cycled group. 55.3% were males. The mean gestational age and the weigth at baseline was 38 weeks and 2,500 grams in the cycled group and 35 weeks and 1,900 grams in the continuous group (p = 0.06 and p < 0.05, respectively). PNAC incidence decreased from 62% to 52% in infants receiving cycled PN and it increased from 75% to 83% in those whom continuous PN was administered (p < 0.05). Both groups were similar in terms of diagnosis, incidence of proven sepsis and treatments

for cholestasis. There were no differences in duration of PN and days supply with NE and NP. Hospitalization and mortality were not affected.

CONCLUSIONS

Cycling parenteral nutrition decrease parenteral nutrition-associated cholestasis compared to continuous PN.

ABS 204

BACTERIAL INFECTIONS IN THE NEONATAL INTENSIVE CARE UNIT – A SINGLE-CENTER EXPERIENCE

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BACKGROUND AND AIMS

Bacterial infections requiring care in the Neonatal Intensive Care Unit (NICU) constitute an important source of morbidity in this vulnerable population. Our aim was to describe the epidemiology of bacterial infections and rates of antibiotic resistance in a NICU.

METHODS

We retrospectively evaluated all sterile biological samples (urine, blood, catheter, cerebrospinal fluid, ophthalmic coating, bronchoalveolar lavage [BAL] and pus) sent to our laboratory for confirmation of infection from the NICU during the year 2013. Identification of bacterial isolates and susceptibility to antibiotics were assessed either by manual procedures (API® strips [bioMérieux], disk diffusion test, E-tests), or automated means (Siemens). Resistance data was interpreted according to the National Committee for Clinical Laboratory Standards.

RESULTS

106 (15%) biological samples were positive for bacterial growth. Isolated bacteria included coagulase-negative *Staphylococci* (CoNS) (n = 81), *S. aureus* (n = 5), *E. coli* (n = 4), *Klebsiella spp.* (n = 8), *E. cloacae* (n = 5), *C. freundii* (n = 1), *P. mirabilis* (n = 3), *P. aeruginosa* (n = 3), *Enterococcus spp.* (n = 10), *Streptococci spp. viridans* group (n = 2), *S. pneumoniae* (n = 3), *C. albicans* (n = 2), *L. monocytogenes* (n = 1). Only 1 ESBL-producing *Enterobacteriae* isolate was identified and none was resistant to quinolones or aminoglycosides. Resistance to antibiotics of most frequent Gram-positive cocci is shown in **Tab. 1**.

CONCLUSIONS

Despite low rates of positive cultures and antibiotic resistance, diligent surveillance for neonatal infections is warranted.

ABS 205

A RARE CASE OF PRIMARY LYMPHEDEMA IN PREGNANCY WITH SUBACUTE VENOUS THROMBOSIS

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BACKGROUND

Primary Lymphedema occurs in 1/6,000 live births. This is secondary to lymphatic agenesis, hypoplasia, or obstruction. Pregnancy has a relative risk of 4.3% for venous thromboembolism (VTE) and is characterized by increased thrombin-generating potential, decreased endogenous anticoagulant effects and impaired fibrinolysis.

Table 1. Resistance to antibiotics of most frequent Gram-positive cocci.

	PENICILLIN	OXACILLIN	LEVOFLOXACIN	GENTAMICIN	ERYTHROMYCIN	CLINDAMYCIN	LINEZOLID	DAPTOMYCIN	GLYCOPEPTIDES
CoNS (n = 56)	51 (91%)	50 (89%)	11 (20%)	26 (46%)	35 (27%)	15 (27%)	0	1 (2%)	0
***S. aureus* (n = 5)**	2 (40%)	2 (40%)	1 (20%)	1 (20%)	1 (20%)	1 (20%)	0	0	0
***Enterococcus spp.* (n = 16)**	8 (50%)	2 (13%)	1 (6%)	1 (6%)	1 (6%)	1 (6%)	0	0	0

Data are expressed as n (%).

CASE REPORT
A 26 year old primigravida, a diagnosed case of primary lymphedema, presented with bilateral leg swelling on her 22 weeks AOG. AV Duplex scan of the lower extremity showed subacute venous thrombosis. Antenatally, she was diagnosed with gestational diabetes mellitus (GDM) controlled by medical nutrition therapy. At 30 weeks AOG, she was admitted for IV tocolysis with magnesium sulfate. Anti-coagulation with heparin and unfractionated heparin was maintained until 37 weeks AOG. Antenatal corticosteroids were administered with weekly surveillance of Biophysical Profile, Non Stress Test (BPS w/ NST), and glucose monitoring. At 38 weeks AOG, patient delivered vaginally.
Contraception with medroxyprogesterone acetate IM was initiated at 6 weeks postpartum.
CONCLUSION
Rigorous antenatal and postnatal surveillance is key in the management of pregnancy complicated by primary lymphedema and venous thrombosis.

ABS 206

EVALUATING CONTRIBUTION OF INFANT CRY ANALYSIS TO THE NEW BALLARD SCORING SYSTEM IN DETERMINATION OF GESTATIONAL AGE

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AIMS
To investigate the usability of audio analysis parameters in the estimation of gestational age in the neonatal period, and to benefit from objective data obtained from usage of audio analysis separately or together with Ballard score.
METHODS
Medically stable newborns, hospitalized in the neonatal unit newborns who did not have any major congenital anomalies, intubation history and grade ≥3 intraventricular hemorrhage were included in the study. By recording the sound of crying of subjects during the routine blood collection process within first 72 hours after birth, cry analysis (fundamental frequency, jitter, shimmer, intensity, noise to harmonic ratio) were performed and the results were evaluated together with Ballard scores.
RESULTS
Mean gestational age of 48 newborns included in the study (18 females, 30 males) was 35.2 weeks with a mean birth weight of 2,399 g. Intensity parameter of cry analysis had a significant and moderate positive correlation with Ballard score and gestational age ($p = 0.02$, $r = 0.543$). A description rating of 93% has been reached with the addition to the model of intensity, the audio analyse parameter showing significant correlation with gestational age. Gestational age found by the resulting model can be formulated as follows: Estimated gestational age = 0.820 x gestational age based on Ballard + 0.165 x intensity ($p = 0.000$).
CONCLUSION
As one of the parameters obtained by the analysis of the sound, crying intensity may contribute as an objective parameter to the subjective estimation of gestational age with new Ballard score.

ABS 207

CONGENITAL POSTHAEMORRHAGIC HYDROCEPHALUS – PORENCEPHALY IN THE GROUND OF FETAL ISOIMMUNE THROMBOCYTOPENIA (ITP)

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The isoimmune thrombocytopenia of the neonatal is caused by maternal antibodies against fetal platelets bearing specific antigens, which circulate through the placenta. It's a rare disorder (1:1,000-1,500 gestations), although it could be fatal for the neonatal, because it might even cause cerebral bleeding, both before and after birth.
We present the case of a 28 years old woman at second birth with normal gestation progress (as it confirmed by the ultrasound and other workup), until the 32nd week of gestation, when at a scheduled ultrasound was found hydrocephalus – hydroanencephaly of the fetus. Owing to this finding, the obstetrician performed induced labor. The female that was born weighted 2,230 g and

didn't need resuscitation at birth. Objectively the neonate had hydrocephaly (HC = 38 cm), seams dimension, "sunset" sign, paleness, petechias and ecchymosis of the trunk and extremities. The brain ultrasound showed hydrocephalus (posthaemorrhagic?) with left porencephalic cysts (**Fig. 1**). At blood workup observed: severe thrombocytopenia (platelets 3,000 mm^3), negative infection indicators, negative TORCH and VDRL tests, normal karyotype. Given the history of the mother (two miscarriages without any referred thrombocytopenia or use of medication) the diagnosis of isoimmune thrombocytopenia (ITP) was speculated, and antiplatelet antibodies test performed to the mother, which proved positive. The neonatal deceased on the 3rd day of life.

When in a neonate there is a history of ITP, systematic follow-up of the pregnant and fetus in a future pregnancy and early intervention administering gamma globulin and corticosteroids to the pregnant, is crucial for the progress of pregnancy and therefore the fetus, since the possibility of a thrombocytopenic neonate to be born is increased to 75% for every next pregnancy. It's also important for the clinical doctor to suspect ITP, in any newborn with unexplained severe thrombocytopenia at birth.

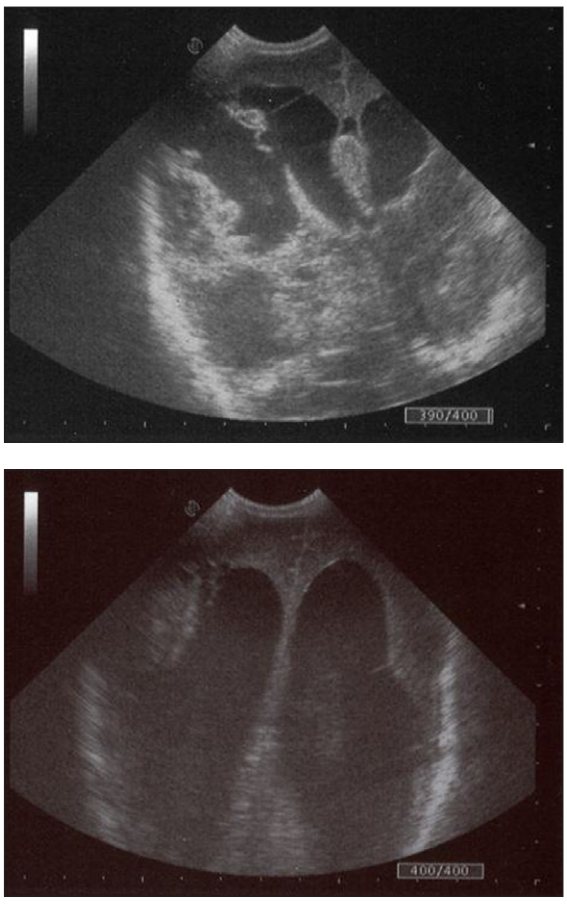

Figure 1. High grade dilation of the lateral ventricles with sound-reflecting compounds and septula like in posthaemorrhagic hydrocephalus.

ABS 208

PRETERM NEONATES' FATTY ACID PROFILE IN RELATION TO MATERNAL NUTRITION STATUS AND MEDITERRANEAN DIET PATTERNS

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BACKGROUND

Maternal nutrition status before and during pregnancy and dietary patterns are important factors affecting breast milk's fatty acid profile (FAP).

AIM

To investigate whether mother's nutrition status and diet quality are related to FAP of preterm neonate's fed maternal milk.

METHODS

Fully breastfed preterm neonates (birth weight [BW] ≤ 1,500 g, gestational age [GA] ≤ 34 weeks) where followed from birth until 40th week postconceptional age (PCA). Neonates' plasma FAP was assessed at 2,000 g (T1) by GC-MS. Mothers' BMI was estimated and MedDietScore was calculated based on validated Food Frequency Questionnaire. Neonates were reexamined at 40th week PCA (T2).

RESULTS

We studied 20 mother-neonate pairs. Pre-pregnancy and current maternal BMI were 27.55 ± 5.33 and 29.24 ± 5.15 kg/m^2, respectively, and MedDietScore: 25 ± 3.78. Good adherence to Mediterranean diet (75th percentile ≥ 27) was found in 8/20 mothers. MedDietScore was negatively correlated with BMI (r = -0.497, p = 0.025). Neonate's GA: 29 ± 2.36 and BW: 1,128 ± 207. FAP did not differ significantly between neonates born to mothers with normal BMI compared to those born to overweight/obese mothers neither at T1 (PCA 35 ± 1.6 weeks) nor at T2. Similarly, FAP did not differ significantly

among the three maternal MedDietScore-related groups of neonates (maternal MedDietScore: ≤ 21, 22-26, ≥ 27).

CONCLUSION

Adherence to Mediterranean diet is poor among mothers, especially the obese ones. Our results suggest that FAP of preterm neonates fed maternal milk during the first month of life is not significantly affected by maternal nutrition status nor by her adherence to Mediterranean diet pattern. The possible effect of maternal nutrition on FAP of preterm infants on longer breastfeeding will be clarified with long-term follow up through childhood.

ABS 209

CYP2B6 AND *GSTP1* GENETIC POLYMORPHISMS OF DETOXIFICATION GENES AFFECT THE RISK OF BRONCHOPULMONARY DYSPLASIA (BPD) IN PRETERM NEONATES

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BACKGROUND AND AIMS

The development of BPD involves genetic and environmental factors. The glutathione-S-transferases (GSTs) and cytochrome P450 (CYPs) isoenzymes consist of the most important detoxification enzymes protect cells from oxidative stress. The $A^{313}G$ *GSTP1* and $G^{516}T$ *CYP2B6* polymorphisms lead to amino-acid changes resulting in enzymatic inactivation. The aim was to investigate the potential role of *GSTP1* and *CYP2B6* germline polymorphism in BPD susceptibility.

METHODS

This case-control study enrolled 82 Greek premature neonates with gestational age ≤ 32 weeks; 33 developed BPD (case group) and 49 did not develop BPD (control group). Genomic DNA was extracted from peripheral blood samples. Genotypic analysis was performed by PCR-RFLPs.

RESULTS

The *GSTP1* genotypic distribution did not differ significantly between BPD neonates and controls. Concerning the *CYP2B6* genotypes, an increased frequency of the mutant genotypes (GT and TT) was found in BPD neonates comparing to controls (48.7% vs 28.6%, respectively, p = 0.066). Interestingly, all babies carrying the homozygous *CYP2B6* mutant genotype developed BPD, while none of the control group carried the mutation in homozygous status. Furthermore, the combination of double *GSTP1* and *CYP2B6* mutant genotypes was found to be higher among BPD neonates as compared to the controls (18.2% vs 8.2%, respectively).

CONCLUSIONS

Our study comprises the first investigation of the combined *GSTP1* and *CYP2B6* mutant genotypes in BPD development. The major finding is the higher frequency of the double mutant *GSTP1* and *CYP2B6* genotypes observed among BPD neonates, suggesting a possible implication of the eliminated detoxification capacity in BPD development.

ABS 210

CANDIDEMIA IN A NEONATAL UNIT: A SIXTEEN-YEAR RETROSPECTIVE STUDY

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AIM

To evaluate the incidence and outcome of candidemia in a Neonatal Unit.

MATERIAL AND METHOD

The study included all neonates admitted to the neonatal unit from 1999 to 2014, identified with candidemia. Their medical records were reviewed and demographic data, clinical characteristics, microbiological results and outcome were recorded.

RESULTS

During the study period, a total of 8,400 neonates were admitted to our unit, and 238 cases of sepsis were identified. Thirty-one neonates were diagnosed with candidemia, resulting in an incidence of 3.6 per 1,000 admissions. *Candida spp.* was the third most common pathogen in our unit for LOS, after coagulase-negative *Staphylococci* (CoNS) and *Klebsiella spp*. Twenty-eight (90.3%) of the patients were premature (mean gestational age: 29 weeks, median birth weight: 950 g). Two of the three term infants had serious underlying conditions. One patient had fungal meningitis. One or more risk factors (central catheters, parenteral nutrition,

use of antibiotics) were present in all cases. The majority of infections were caused by *C. albicans* (56.5%) and *C. parapsilosis* (33.3%). All isolates were sensitive to amphotericin B. All patients were treated with liposomal amphotericin B alone or in combination with fluconazole. In three cases of persistent candidemia, caspofungin was used. No serious side effects of antifungal agents were recorded. The candidemia-related mortality was 6.7% (2/30).

CONCLUSIONS

Candida spp. is a relatively common pathogen in our unit, mainly for premature neonates. Risk factors are usually present and a restrictive policy of antibiotic use should be implemented.

ABS 211

MENINGITIS AND BRAIN ABSCESSES CAUSED BY *CITROBACTER KOSERI* IN MONOZYGOTIC TWINS

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BACKGROUND AND AIMS

C. koseri is a rare cause of neonatal meningitis, associated with brain abscesses and serious neurologic sequelae. We describe twin neonates who simultaneously developed brain abscesses due to *C. koseri*. To the best of our knowledge this is the second pair of twins in which *C. koseri* meningitis has been reported.

METHODS

Clinical presentation, diagnosis, management and outcome of *C. koseri*-related abscesses in twins are retrospectively reviewed.

RESULTS

Male twins, born by C-section at 37-wks-gestation, weighing 2.07 kg (twin A) and 2.18 kg (twin B), were discharged on day four of life. They presented on day 10 (twin B) and day 15 (twin A) with fever. Laboratory exams revealed leukocytosis and elevated CRP. Cerebrospinal fluid (CSF) analysis showed pleocytosis and culture yielded *C. koseri*. Antibiotic treatment included meropenem and gentamicin. Ultrasonography and subsequent brain MRI revealed the presence of multiple hemorrhagic periventricular brain abscesses in both neonates. Gentamicin was subsequently replaced by ciprofloxacin. CSF culture on day-3 of treatment was sterile. On the 10th day of hospitalization, ultrasound-guided aspiration and drainage of abscesses were performed in both cases. Neonates received a 6-week course of intravenous antibiotics followed by a 4-week course of oral ciprofloxacin. Follow-up neuro-imaging returned gradually to baseline, with residual small cystic lesions. At 6 months of age twin A was diagnosed with West syndrome.

CONCLUSIONS

C. koseri meningitis may be complicated with brain abscess formation and can affect twins. Intensive medical and surgical treatments are required for effective management of *C. koseri* brain abscesses.

ABS 212

NEONATAL BACTERAEMIA IN A NEONATAL UNIT: A TEN-YEAR STUDY

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BACKGROUND AND AIMS

The aim of the study was to investigate the incidence, causative agents and outcome of neonatal sepsis in our unit.

MATERIALS AND METHODS

The study included all neonates admitted to the Neonatal Unit from October 1, 2004 to September 30, 2014, with positive blood culture. The patients were divided into early-onset (< 72 h) and late-onset sepsis group. Their medical records were reviewed.

RESULTS

During the study period, 5,438 neonates were admitted to our unit. In this group, 152 episodes of sepsis were diagnosed in 137 patients. The incidence of sepsis was 2.8% among admissions. A single episode of infection was diagnosed in 125 patients (91.2%) and two or more in 12 patients (8.8%). Thirty-four episodes (22.4%) of early-onset sepsis (EOS, < 72 h) and 118 episodes (77.6%) of late-

onset sepsis (LOS) were identified. In early-onset sepsis, the most common pathogens were GBS, *E. coli* and coagulase-negative *Staphylococci* (CoNS) (20.6%, 20.6% and 17.6% respectively). CoNS, *Klebsiella spp.* and *Candida spp.* were the most common pathogens in late-onset sepsis (26.3%, 22% and 16.1% respectively). The sepsis-related mortality rate was 4.6%, higher for early-, than for late-onset sepsis (5.9% for EOS, 4.2% for LOS).

CONCLUSIONS

Neonatal sepsis remains a serious problem for our neonatal unit. GBS and *E. coli* are mostly responsible for EOS. CoNS are not only the most common pathogen in LOS, but are also a growing concern for EOS.

ABS 213

PERSISTENT FUNGEMIA IN PRETERM INFANTS: THE ROLE OF CASPOFUNGIN

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AIM

The purpose of this study is to report the experience of our department on the use of caspofungin as an additive to standard antifungal therapy for the treatment of persistent fungemia of preterms.

METHODS

A thorough retrospective review of the charts of neonates with persistent fungemia in whom conventional therapy failed, was conducted in the last 6 months.

RESULTS

3 preterms infants (all males) with gestational ages of 26, 26 and 31 weeks and birth weight of 960, 670 and 820 grams respectively presented fungemia (*C. parapsilosis*) refractory to conventional antifungal therapy (with amphotericin B liposome as a first and the addition of fluconazol as a second drug, and a medial duration of two weeks). One of those preterm infants underwent surgical intervention with colostomy for necrotizing enterocolitis. The addition of caspofungin in their treatment resulted in the sterilization of blood cultures that was achieved in approximately two weeks. Regarding the adverse effects, all three neonates had hypokalemia while one had a mild elevation of liver enzymes. All three neonates finally were discharged from NICU.

CONCLUSIONS

Despite the limited number of patients in this retrospective study, in some cases of refractory fungemia in neonates, the addition of caspofungin to conventional treatment might be efficacious.

ABS 214

URINARY TRACT INFECTIONS IN NEONATES: RETROSPECTIVE ANALYSIS IN SEARCH OF GUIDELINES FOR FURTHER IMAGING

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BACKGROUND

Urinary tract infections (UTI) in neonates have an incidence of 0.1-2%, but specific guidelines for this population are lacking.

AIM

To identify characteristics that can serve as a basic guideline for the management of UTIs in neonates.

METHODS

We examined the medical records of 37 neonates with UTI in the University Hospital of Crete NICU from 2009-2014.

RESULTS

Initial presentation differed according to gestational age. Fever was present in 54% of the term neonates, but 90% of the preterm neonates presented with poor feeding, vomiting, jaundice, and general malaise, while only 18% with fever. Prenatal hydronephrosis existed in one case. *E. coli* and *K. pneumoniae* accounted for 54% and 30% of the cases respectively, septicemia presented in 3 cases and meningitis in none, even though 20% had CSF pleiocytosis. Non-*E. coli* UTI was not a predisposing factor for abnormal imaging. White blood cell count and CRP were normal in 65% and 62% respectively. 35% of neonates had abnormal ultrasound findings, and 46% of these also had abnormal voiding cystourethrography (VCUG).

Neonates with elevated CRP had abnormal ultrasound, VCUG and renal scan in 43%, 50% and 50% respectively, while with normal CRP only 26% had abnormal ultrasound and 10% VUR. Of the 24 neonates with normal ultrasound, 12.5% had 2nd degree VUR, while with an abnormal ultrasound, the probability of VUR rose to 46%. UTI recurred in 20% of the cases, 12% with 5th grade VUR and 8% with no underlying pathology.

CONCLUSION

The combination of normal CRP and ultrasound scan almost obviates the need for further testing.

ABS 215

PREVALENCE OF CONGENITAL HEART DEFECTS IN LIVE BIRTHS: A SINGLE CENTER STUDY

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AIM

To investigate the prevalence of congenital heart defects (CHD) in live births in a single perinatal center in northern Greece.

DESIGN

In all neonates born from 1996 to 2013 with heart murmur or clinical signs of CHD, echocardiography was performed by one neonatologist and diagnosis was confirmed by pediatric cardiologist. Newborns with the following defects were excluded: patent ductus arteriosus, atrial septal defect, branch stenosis of pulmonary arteries; mild pulmonary or aortic valve stenosis and patent foramen ovale. In combined cardiac defects, the defect requiring the earliest intervention was assessed as predominant diagnosis.

RESULTS

Among 30,259 live births, CHD was diagnosed in 195 (47.7% boys, 52.3% girls), giving a prevalence of 6.44 per 1,000 live births (6.44‰). Ventricular septal defect (4.2‰) was the most common defect, followed by Fallot's tetralogy (0.69‰), coarctation of aorta (0.40‰), hypoplastic left heart syndrome (0.30‰), great arteries' transposition (0.23‰), endocardial cushion defect (0.20‰), valvular pulmonary atresia/stenosis (0.17‰), single ventricle (0.10‰), double outlet right ventricle (0.03‰), total anomalous pulmonary venous return (0.03‰), aortic stenosis (0.03‰), tricuspid atresia (0.03‰), and truncus arteriosus (0.03‰). 23.6% were preterms (< 37 weeks), 15 neonates had chromosomal abnormalities (10 with Down's syndrome). 9 neonates died from CHD and 25 were transferred to cardiothoracic center. Prematurity (23.6%), birth weight below 2,500 g (24.1%) and multiples (10.8%) were significantly more frequent in infants with CHD than in all live births. Prenatal diagnosis was made in 17%, although increased to 40% in the last 3 years.

CONCLUSIONS

The prevalence of CHD is concordant with rates reported in EU countries. CHD is associated with prematurity, low birth weight and multiple births.

ABS 216

AMNIOTIC BAND SYNDROME: PREVENTING MISDIAGNOSIS

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BACKGROUND

Amniotic band syndrome (ABS) is an uncommon and heterogeneous set of congenital malformations that may be associated with fibrous amniotic bands, causing distinctive structural abnormalities involving limbs, trunk, spinal anomalies, craniofacial regions and visceral malformation.

CASE REPORTS

We report two cases of neonates with malformations secondary to disruption of development caused by ABS. The first case is a 34-week male infant with limb malformations, who presented with left fossa poplitea constriction band with peroneal nerve palsy

as well as right clubfoot deformity. Ultrasound examination revealed no visceral involvement. In the second case a full-term male infant presented with left drop hand due to an amniotic band constricting his arm, as well as a caudal appendage. X-ray examination of the spine was normal, however ultrasonography and MRI revealed spina bifida with tethered spinal cord protruding into the caudal appendage. Further investigation revealed dilated left ureter. In both cases the routine antenatal ultrasound examination did not show any fetal malformation. Family history was unremarkable and the maternal clinical course was uncomplicated. Chromosomal analysis was normal.

CONCLUSION

ABS is an uncommon condition associated with high morbidity. Although amniotic bands can't explain the persistence of caudal appendage, recurrence of this pair of birth defects in the literature suggests a common etiology that is not known yet. Recognition of the malformations secondary to ABS by antenatal ultrasonography and close monitoring of the neonate are important for the prevention of misdiagnosis and appropriate counseling and treatment.

ABS 217

HYDROTHORAX DUE TO EXTRAVASATION OF PARENTERAL NUTRITION (TPN) IN NEONATES IN NICU. CENTRAL VENOUS CATHETER COMPLICATION

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BACKGROUND

Central venus catheter (CVC) placement is a common practice in NICU and in many cases could be life saving for the neonates, particularly those with extremely low birth weight. But there are complications: inflammation, septicaemia, local edema, extravasation of TPN etc. We present two cases of neonates with CVC, who presented hydrothorax due to probable escape of TPN.

CASE 1

Male neonate, 36 wks, with birth weight (BW) 2,500 g, was intubated due to respiratory distress syndrome. On day 2, CVC was placed in good position. On day 3, his respiratory function suddenly deteriorated, the chest X-ray showed intense opacity of lung fields (**Fig. 1**) and in the ultrasound large pleural effusion was found. Performed paracentesis removed 15 ml of fluid, analysis of which showed: 95 cells, 0.2 g/dl protein and 628 mg/dl glucose. CVC was removed immediately and after 24 hours the neonate was improved significantly and extubated.

CASE 2

Female neonate, 31 wks, with BW 1,060 g, during day 42 and while was in BCPAP with 21% FiO_2, presented acute respiratory distress with intense retractions and increased O_2 needs. CVC was inserted to the neonate 8 days before and edema was noticed over its endpoint area. Chest X-ray showed intense opacity of lung fields (**Fig. 2**) that didn't exist before. The clinical and radiological presentation – there was no capability performing ultrasound – raised the suspicion of hydrothorax

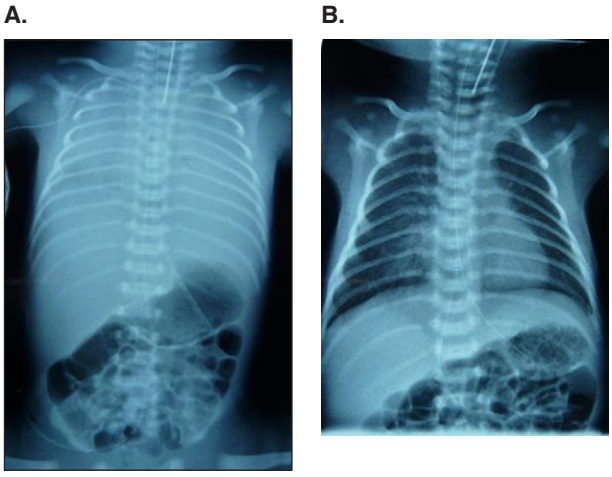

Figure 1. X-rays of case 1.

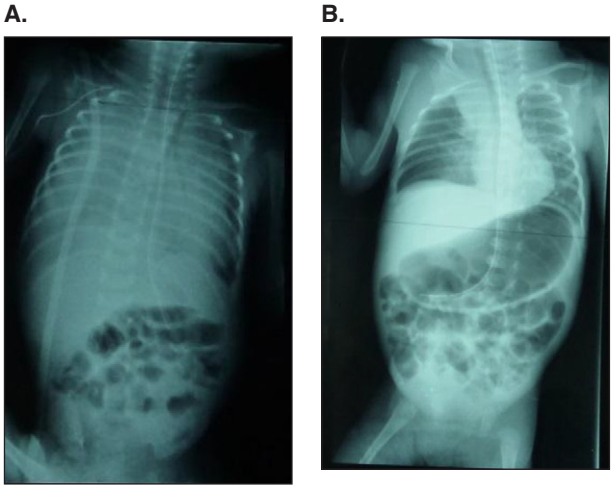

Figure 2. X-rays of case 2.

due to extravasation of TPN through the CVC. Fluid administration via the CVC discontinued and neonate's condition was gradually improved. After 3 days, the infant had no need for O_2 administration, confirming our suspicion.

CONCLUSIONS

There is a need of increased vigilance by the NICU staff and continuous monitoring of the neonates bearing CVC (also radiological) in order to make early diagnosis and treatment of possible complications.

Please note that, in case of hydrothorax, due to extravasation of TPN through the CVC, glucose concentration in the pleural effusion fluid is very increased.

ABS 218

FEATURES OF ERYTHROBLASTS IN THE UMBILICAL CORD

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BACKGROUND

A variety of maternal, obstetric, neonatal conditions predispose the fetus and newborn to asphyxia. Fetal hypoxia, risk factor for adverse perinatal outcome, has been claimed to induce a rise in the number of nucleated red blood cells (NRBCs). Distinct NRBC patterns seem to be related to timing of fetal injury, determining neurological impairment. High numbers of NRBC reflect the severity and duration of hypoxia.

AIM

The study aims to determine the features of NRBC count in term and preterm infants extracted by cesarean section or vaginally delivered.

MATERIALS AND METHODS

In a prospective study in 2014, we analyzed the count of NRBC in term and preterms newborns extracted by cesarean section or vaginally delivered in a level III maternity from Bucharest. We evaluated the immediate evolution and outcome of the newborns.

RESULTS

In the period study, were analyzed term and preterm infants from pregnancies obtained naturally or after *in vitro* fertilization, born from mothers aged 15-40 years. There is correlation between maternal pathology, type of delivery (cesarean section or spontaneous), appearance of umbilical cord, blood gas analysis (pH, lactate), the number of erythroblasts, and immediate or late outcome.

CONCLUSIONS

NRBC count is a marker of perinatal asphyxia, associated with specific maternal pathology (eg. thrombophilia), umbilical cord appearance, assisted labor and birth.

ABS 219

IMPROVED CORTICOSTEROID PROPHYLAXIS IN PRETERM DELIVERIES DUE TO GUIDELINE IMPLEMENTATION

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BACKGROUND

Corticosteroid prophylaxis increases surfactant synthesis, decreases the risk of respiratory distress syndrome (RDS), perinatal complications of the prematurity and the cost and duration of perinatal therapy.

AIM

The authors aimed to evaluate the correct implementation of revised guidelines regarding prenatal corticosteroid prophylaxis in preterm deliveries.

MATERIAL AND METHODS

The authors reviewed epidemiological data of mother-child pairs during two periods: 1.01.2010-31.12.2010 and 1.07.2013-30.06.2014 in order to asses the prenatal corticosteroid prophylaxis before and after sustained intervention to implement the national guidelines regarding preterm delivery management. Preterm deliveries ≤ 32 weeks of gestation were included, postnatal submissions were excluded. IBM SPSS 19.0 was used for statistical analysis, p being considered significant at values < 0.05.

RESULTS

Whereas during the first period of the study of the 50 preterm infants (mean BW 1,377.1 ± 390.3 g,

mean GA 30.2 ± 2.1 weeks) only 31 received prenatal corticosteroid prophylaxis (62%), 21 received dexamethasone and 10 hydrocortisone, only 1 complete course (2%), in the second study period, in 35 of the 51 cases (mean BW 1,320.6 ± 334.4 g, mean GA 29.5 ± 2.2 weeks) prophylaxis was applied (68.62%), dexamethasone was given in 33 cases, and the course was completed in 21 cases (60%). The analysis revealed that late presentation was by far the reason for lack or incomplete corticosteroid course. Authors are presenting also the main perinatal outcomes of the preterm infants on short time.

CONCLUSION

Prenatal corticosteroid prophylaxis, an important objective in the management of preterm deliveries can be improved by sustained implementation of guidelines and collaboration during obstetric and neonatal teams.

ABS 220

CARDIOVASCULAR FUNCTION IN TERM NEONATES IN RELATION TO CLAMPING TIME

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BACKGROUND

Immediate cord clamping was introduced in the 1960s, as part of active management of the third stage of the labour to reduce postpartum haemorrhage (≥ 500 ml) and retention of the placenta. Delayed cord clamping has been reported to improve hemodynamic stability during the early neonatal period in animal model.

AIM

To investigate the effects of cord clamping time on cardiovascular function in term infants.

METHODS

Blinded Doppler Echocardiography was performed in stable term neonates between the first 4-6 hours of life. Exclusion criteria were: twin pregnancies, obstetric complications, intrapartum fetal distress, Apgar score ≤ 7/5', congenital infections and structural heart disease. Left Ventricle End-Diastolic Diameter (LVEDD), Left Ventricle End-Systolic Diameter (LVESD), Ejection Fraction (EF) and Shortening Fraction (SF) were assessed by M-Mode Echocardiography. Left Ventricular Output (LVO), Right Ventricular Output (RVO), mitralic and tricuspidalic E/A ratios and Vena Cava Superior (VCS) flow were measured using colour-Doppler. Determination of ductal patency (DA) and shunt direction, presence and degree of atrial shunting were obtained on each examination.

RESULTS

We reported the preliminary results obtained from 23 neonates from April to June 2014. The neonates were divided into three groups: 1. Neonates born by Caesarean Section (CS, n = 11), 2. Vaginally-delivered infants with Early Cord Clamping (ECC, n = 6), 3. Vaginally-delivered infants with Delayed Cord Clamping (DCC, n = 6). Cord clamping time was significantly different among these groups (10.9 ± 3.6, 28.8 ± 10 and 140 ± 6.5 s; respectively). No differences in DA and foramen ovale diameter, shunt and patency were found. LVEDD, LVESD, EF and SF were similar among the groups. RVO was higher vs LVO in all groups. Although the aortic valve's diameter was similar, the Aortic Vmax resulted significantly higher in DCC vs CS (12.1 vs 10.7 cm/sec, p = 0.03), as well as the LVO (245 vs 177 ml/kg/min, p = 0.04). No difference was observed in the VCS diameter among the three groups: however, a tendency towards a higher VCS flow in DCC vs ECC and CS was observed (177, 97 and 98 ml/kg/min, respectively).

CONCLUSIONS

Neonates with DCC have an improved cardiac performance, probably due to the placental transfusion. Further validation of this result with a larger sample size is necessary.

ABS 221

NEONATAL APPENDICITIS

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BACKGROUND

Acute appendicitis is a common disease in older children but rare in neonates.

Strong suspicion and quick surgical intervention are needed.

CASE REPORT

An 8-day-old full-term male neonate who suffered from appendicitis mimicking necrotizing

enterocolitis. He presented with intermittent irritability, sloth and denied food intake 24 hours before admission. Accompanying signs were the presence of referred bloody stools (hours before admission) and negative viral gastroenteritis. On the 1st day it was started IV antibiotic therapy with ampicillin, gentamicin and the next 24 hours metronidazole was added. On the 4th day of hospitalization, due to increase of inflammatory markers and worsening of the clinical presentation with localized tenderness in the right iliac fossa, the treatment was changed to teicoplanin, gentamicin and metronidazole. Surgical assessment was carried out and ultrasound of the upper-lower abdomen (which entrenched bowel rupture) was performed. The neonate underwent laparotomy. The postoperative period was uneventful. The child is thriving at follow-up.

RESULTS

Symptoms are not characteristic, so the incidence of perforation is high in neonatal appendicitis. On abdominal ultrasonography intra-abdominal abscess, absence of gas in appendiceal lumen or collection in the right iliac fossa suggests acute appendicitis. Perforation of appendix in this age group may be due to necrotizing enterocolitis, gastroenteritis, Hirschsprung's disease, meconium plug syndrome, and cystic fibrosis. Symptoms such as irritability, somnolence, vomiting, distension, and abdominal tenderness are not specific to appendicitis and can be found in other abdominal situations including septicemia.

CONCLUSION

In conclusion, neonatal appendicitis should also be considered in the differential diagnosis so that early surgical intervention can reduce mortality.

ABS 222

THE RELATION BETWEEN DEVELOPMENTAL OUTCOMES OF ESTONIAN EXTREMELY PRETERM CHILDREN AT THE AGE OF TWO AND FIVE YEARS

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BACKGROUND AND AIMS

Advances in perinatal care have improved survival of preterm infants, but the risk of developmental problems remains high. The National Neonatal Research Registry including prospectively all very preterm infants born in 2007-08 and since 2009 the national follow-up programme to 24 months of corrected age were established in Estonia. The Bayley Scales of Infant Development® (BSID-III) was selected as tool, which has later been criticized because of underestimation of developmental problems. The aim of the current study was to determine the predictive value of the BSID-III for later developmental outcomes.

METHODS

The study group consisted of 47 preterm infants (GA < 29 weeks, BW < 1,000 g) and 40 gender and age matched full-term controls. BSID-III was used to assess the children's cognitive, language and motor skills at two years of age, corrected for prematurity. General and nonverbal intelligence were measured with Kaufman Assessment Battery for Children, 2nd edition (K-ABC-II) at the age of five years.

RESULTS

Regression analysis showed that two-year outcome scores on motor tasks predicted the intelligence scores in the preterm group, whereas cognitive and language measures did not ($R^2 = 0.40$, $p < 0.001$ for general and $R^2 = 0.47$, $p < 0.001$ for nonverbal IQ). However, in the control group both motor and cognitive tasks have a predictive value for scores of general ($R^2 = 0.32$, $p = 0.003$) and nonverbal intelligence ($R^2 = 0.30$, $p = 0.005$).

CONCLUSION

BSID-III scores assessed at 2 years only partly predict developmental skills and intelligence scores of preterm infants at preschool age.

ACKNOWLEDGMENT

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ABS 223

SEASONALITY IN TWIN BIRTH RATES IN GREECE IN THE LAST DECADE (2004-2013)

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BACKGROUND
A variety of environmental factors are known to influence pregnancy and birth. It is believed that seasonal variation of polyzygotic maternities is due to seasonal variation in the rates of multiple ovulations rather than to seasonal variation in any of the other reproductive parameters which could, in principle, be responsible (coital rate, spontaneous abortion, probability of fertilization). It is possible that such a hypothesized variation is due to seasonal variation in food consumption. The present study has been made of seasonality in twin birth rate in Greece between 2004 and 2013.
PATIENTS AND METHODS
To test the possible seasonality of ovulation of Greek mothers, we studied all multiple births in all deliveries that took place in General District Hospital Athens "Alexandra" during a recent 10-year period (from 1st January 2004 through 31st December 2013). For each delivery, based on the date of birth as well as the duration of pregnancy we calculated the date of apprehension. Statistical analysis for twins' seasonality was done using a harmonic sinusoidal model.
RESULTS
During the study period in "Alexandra" Hospital were noted 1,235 multiple births in all 46,747 deliveries. From the above multiple births, 45 (3.6%) were triple pregnancies and 1,190 (95.4%) were double pregnancies. The 10-year frequency of twinning rate was 2.6%, with the highest rate to be shown in 2010 (3.4%) and the lower in 2007 (1.6%). The *in vitro* fertilization (IVF) pregnancies were 330 out of 1,235 multiple pregnancies (26.7%), while the rest 905 pregnancies (73.3%) represent natural conception. The majority of successful IVF embryo transfers and implantations took place in the fourth trimester and especially in November followed by the first trimester, March. Statistical analysis provided no evidence for seasonality. However, concerning the natural conceptions, sequential polynomial analysis disclosed a significant fit to a fifth order polynomial curve with peaks in twins' conception in the fourth trimester as well as in the third trimester. In more detail, the peaks match in October-November and September.
CONCLUSION
Our results reveal a preference of twinning natural conception in particular months, e.g. September, October and November, and a high successful rate of IVF embryo transfers in November and March. This probably shows a possible environmental influence on twinning. Longer study period may be providing more evidence for twinning seasonality.

ABS 224

PREDICTION OF RETINOPATHY OF PREMATURITY BY WINROP IN A PORTUGUESE POPULATION OF PRETERM INFANTS

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BACKGROUND AND AIMS
Retinopathy of prematurity (ROP) is a potentially sight-threatening disease affecting premature infants. Poor postnatal weight gain during the first weeks of life has been identified as a strong predictor of ROP. We evaluated WINROP algorithm to detect infants at risk of severe ROP in a Portuguese preterm population.
METHODS
Retrospective study. Weekly weights were used in WINROP to calculate the risk of developing severe ROP. The results were compared with the actual ROP screening outcomes (ophthalmologic examination).
RESULTS
65 preterms participated in this study. Median gestational age was 28 weeks (23-31 weeks) and median birth weight was 1,040 g (550-1,460 g). For 77% of infants (50/65), an alarm was registered: 2% (1/50) had severe ROP, 42% (21/50) had mild ROP and 56% (28/50) had no ROP, with a positive predictive value of 42% for all cases of ROP and 2% if only severe ROP. In 23% infants (15/65) no alarm was triggered: 87% (13/15) had no ROP, none had severe ROP and only 2 cases of mild ROP was identified. The alarm was registered at a median age of 1.5 weeks of age (0-5 weeks).
CONCLUSIONS
WINROP identified the unique case of severe ROP (sensibility 100%) at 3 weeks of age. However, the prevalence of severe ROP was very low (1.5%). Larger studies are needed to validate this negative predictive value of 100%. Despite a low specificity (23%) for severe ROP, WINROP is a non-invasive method and can be used to complement conventional ROP screening.

ABS 225

NEONATE WITH FETOMATERNAL TRANSFUSION SYNDROME

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BACKGROUND

Fetomaternal transfusion syndrome is a rare disorder, where fetal blood enters the maternal circulation through the placenta. Fetomaternal transfusion occurs in 50% of gestations, but only in 1% the fetal blood transferred exceeds 40 ml and causes problems to the fetus (anemia, intrauterine fetal death).

CASE REPORT

Case report of a neonate suffering from severe anemia due to fetomaternal transfusion syndrome.

Full-term female neonate weighting 2,150 g, delivered via natural pregnancy to a 28 year old, gravida 2, 0 Rh+ mother, with Apgar score 9/1' and 10/5' was marked pale and subdued with vivid crying, the rest of the examination was normal. Gradually the neonate started presenting signs of pulmonary distress with 50 breaths/min and Sat 85%. Immediately she was placed in Hood maintaining Sat O_2 100%. Laboratory tests showed Hgb = 3.6 gr/dl, Hct = 14.5% and RCRP (-).

RESULTS

The neonate was medically transferred to a neonatal intensive care unit (NICU), where she was submitted to blood transfusions and got discharged after 26 days of hospitalization. Due to the negative test results concerning other causes of neonatal anemia, the anemia was attributed to fetomaternal transfusion syndrome, which took place just before the delivery. This was confirmed by the laboratory tests of the mother just before the delivery: Hgb = 13.5 g/dl, Hct = 38.3% and HbF = 0% and right after the delivery: Hgb = 14.7 g/dl, Hct = 43.1% and HbF = 10-11%.

CONCLUSION

This case is being presented because of its rare incidence, since fetal transfusion may be common between twins (TTTS), but severe fetomaternal transfusion is extremely rare (0.3% of uncomplicated pregnancies).

ABS 226

NEONATE WITH CONGENITAL DIAPHRAGMATIC HERNIA

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BACKGROUND

Diaphragmatic hernia is called the entrance of abdominal contents into the chest cavity through an acquired or a congenital defect or hole in the diaphragm. Its incidence is 1/2,500-5,000 births. There are many types of diaphragmatic hernia, but the commonest (congenital diaphragmatic hernia) is the one appeared through the hole in the lumbolateral triangle (Bochdalek's hernia), due to the weakness of the lateroperitoneal membrane, in order to fully separate the chest from the abdominal cavity during the 10th week of pregnancy. Through this hole intestines enter the chest cavity causing hypoplasia of the ipsilateral lung. This disorder appears in 90% of cases on the left side. Rarer types, such as diaphragmatic hernia on the right side, may be undiagnosed before birth.

CASE REPORT

Case report of a neonate with diaphragmatic hernia on the right side.

A 27 year old primigravida with a 37^{+3} w pregnancy was admitted to hospital due to labor. The pregnancy was a result of IVF, while history of 1st trimester spontaneous abortions during the two previous pregnancies coexists. The antenatal control reports polyhydramnios without any apparent anatomical abnormalities. Because of fetal discomfort, the neonate was born via cesarean section, weighting 2,100 g. At birth the newborn was cyanotic, hypoactive (Apgar score 3/1') and was intubated immediately. Chest x-ray revealed a diaphragmatic hernia on the right side, with presence of intestines into the right hemithorax, and was radiopaque on the left side (lung agenesis). A nasogastric catheter and IV fluids were administered and the neonate was evacuated to a Newborn Intensive Care Unit. The neonate died 12 hours after birth.

CONCLUSION

This case is being presented because of its rare incidence. Beyond supportive measures, surgical treatment is necessary (restoration of intestines

into the abdominal cavity and closing of the hole). Post surgical survival is difficult and neonatal mortality reaches 60%, even in cases with prenatal diagnosis. Therefore we should emphasize the evolution of prenatal diagnosing methods, so as to recognize on time any congenital abnormalities, and all measures for immediate treatment of the neonate to be taken.

ABS 227

A NEONATE WITH OSTEOGENESIS IMPERFECTA

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BACKGROUND

Osteogenesis imperfecta (OI) is a group of genetic diseases, usually inherited as an autosomal dominant condition, in which the bones are formed improperly, making them fragile and prone to breaking and resulting in multiple and recurrent fractures and skeletal deformities. Four types of OI can be distinguished, where mutations usually occur in the *COL1A1* and *COL1A2* gens. Regarding neonates, they tend to die during the perinatal period.

CASE REPORT

Case report of a neonate with OI.

A full-term male neonate weighting 2,250 g, delivered to a minor primigravida with deficient prenatal screening and care and questionable family history and born with a scheduled caesarian section due to placenta previa and breech presentation, underwent severe perinatal asphyxia (Apgar score 1/10) and was intubated.

RESULTS

The objective structured physical examination revealed Macrocephaly with a cranium soft to palpation, short and bent limbs, hips in flexion and externally rotated (frog leg position) and thoracic hypoplasia. The neonate was transported to a neonatal intensive care unit (NICU), where fractures in both femurs and the left humerus were found. Genetic testing showed mutations of *COL1A1* and *COL1A2* gens, while histopathological findings indicated a significant lack of collagen in trabeculae and the cortical bone. The neonate died after a few days in the NICU.

CONCLUSION

This case was presented because of its rare incidence. Type 2 of OI is found in 1/62,500 births, while the skeletal abnormalities are apparent at birth. Most cases are caused by a dominant genetic imperfection, although babies with OI can be delivered without the presence of family history of OI, as a result of a spontaneous mutation.

ABS 228

CURRENT KNOWLEDGE, PERCEPTIONS AND OPINION ABOUT HUMAN MILK BANKING IN TURKEY: PERSPECTIVE OF HEALTH CARE PROVIDERS IN NICU

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BACKGROUND

Donor human milk (DHM) has been considered an effective tool in the delivery of health care to infants. In many countries human milk banking has a long tradition and already has become a part of the standard care for Neonatal Intensive Care Units (NICUs). In Turkey, where human milk banking is in the phase of establishment, awareness of the public knowledge and opinion on the matter is of interest and would be helpful in determining the steps to follow.

AIM

To find out the knowledge, perceptions and opinion about human milk, wet-nursing and human milk banking among health care providers (HCPs) in NICU.

METHODS

Cross-sectional structured questionnaire through NICU HCPs including questions regarding the knowledge and experience on breastfeeding, knowledge and opinion on wet-nursing, use of donor milk, milk banking and establishment of milk banking in Turkey.

RESULTS

A total of 200 participants included nurses and midwives (75%), neonatologists and neonatal trainees, pediatricians (20%), technicians and biologists (5%). All of the participants agreed that breast milk is the first choice in infant feeding and 98% agreed with the idea of using DHM in NICU. The participants were also asked to answer to the question: who would have the priority

to have DHM? The most given answers were: "preterm and/or sick infants in NICU, sick infants in the hospital, all preterm infants, and infants in orphanage". 94% agreed that establishment of a bank would decrease necrotising enterocolitis and infections in NICU. There was a considerable lack of knowledge concerning some banking processes such as screening (30%), pooling (50%) and heat treatment (48%). Although 20% of the participants had already an experience of wet-nursing in their family, 65% raised concerns regarding hygiene and infection transmission trough unpasteurized milk. 98% agreed with the idea of establishing milk banks in the country. Yet, 60% underlined that the model in Turkey should be an alternative one based on international standards, but adapted to religious beliefs and culture; i.e. should consider milk kinship. 100% of the female participants would donate their milk to a bank if they had in excess.

CONCLUSION

All NICU HCPs support breastfeeding and the use of human milk in NICU. Almost all are in favor of DHM use as the second choice when own mother's milk (OMM) is not available. Human milk banking has a wide acceptance with the condition that milk kinship needs to be taken into consideration.

ABS 229

CASE SERIES: MECONIUM ASPIRATION SYNDROME AND *CANDIDA SPP.* SEPTICAEMIA

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BACKGROUND AND AIM

Meconium aspiration affects predominantly term infants and is associated with some degree of perinatal hypoxia. Meconium affects complement and decreases hosts' defence. We report three cases of meconium aspiration syndrome (MAS) in term neonates, complicated with candidaemia.

CASE 1

Newborn with MAS, persistent pulmonary hypertension of newborn (PPHN) under ventilation with HFO and iNO presented septicaemia and meningitis from *C. albicans* on the 13th day of life, while was receiving the second schema of antibiotics. Therapy with two antimycotics (amphotericin B, flucytosine). Seizures medically treated. Brain imaging unremarkable. Follow up at one year, normal.

CASE 2

Newborn with MAS and sepsis from *E. cloacae* complex on the 8th day of life. Due to resistant strain, has received 5 treatments of broad spectrum antibiotics. On the 34th day of life, persistent septicaemia from *C. parapsilosis* that required three antimycotics. Follow up until the age of 2 years without pathology.

CASE 3

Newborn with MAS and perinatal asphyxia – seizures on the 1st day of life – with PPHN under HFO, iNO, Sildenafil presented septicaemia from *C. parapsilosis* on the 17th day of life, while receiving the second schema of antibiotics. Therapy with 3 antimycotics was needed (amphotericin, micafungin, anidulafungin). At 6 months of life, neurosensory deafness and upper limbs hypertonia.

CONCLUSION

Candida spp. septicaemia although rare in term newborns, could be associated with MAS, either due to general immunodeficiency in a critically ill infant, or because of invasive techniques and extensive use of broad spectrum antibiotics in the environment of an NICU.

ABS 230

FETAL OMPHALOCELE AT 28 WEEKS OF GESTATION: A CASE REPORT

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BACKGROUND

Omphalocele is a rare congenital abnormality of abdominal wall. Intra-abdominal organs are extracted from the fetal abdominal cavity through a midline wall defect between the rectus abdominis muscles. The sac of hernia contains mainly liver, small bowel loops and stomach while the herniated viscera are covered from inside to outside by peritoneum, Warthon's gel and amnion. The umbilical cord inserts in the membranes but not in the abdominal cavity. The frequency is about 1 to 5,000 births while the mortality of affected newborns is high; the 60% die in the first year of life. The appearance seems to be sporadic, with no correlation with a specific chromosomal abnormality or mendelian type of mendelian inheritance. Omphalocele usually

coexists with gastrointestinal, renal, limb and head abnormalities.

CASE REPORT

The presentation of a 28 weeks fetus with omphalocele.

A 38 years old, multiparous pregnant was presented at our department with an acute pain at the lower abdomen, the cervix was dilated and there was no fetal heart activity. After a few minutes she gave birth to a dead fetus with a big omphalocele, which contained liver and part of small bowel. The patient smoked during pregnancy and had no medical observation. She had eight vaginal deliveries and all of her children are healthy. There was no other similar incidence to her family. The parents refused autopsy, so there are no further information about other congenital defects.

DISCUSSION

The omphalocele is an abdominal wall defect that can be diagnosed from the womb using ultrasound. This gives the opportunity to the personnel of the delivery room to be prepared for a newborn that will need special treatment by a pediatric surgeon.

ABS 231

CURRENT KNOWLEDGE, PERCEPTIONS AND OPINION ABOUT HUMAN MILK BANKING IN TURKEY: PERSPECTIVE OF THE PARENTS

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BACKGROUND

The benefits of breastfeeding are widely recognized. When own mother's milk is not available or insufficient, donor human milk (DHM) is the recommended alternative. While human milk banking is in the phase of establishment in Turkey, little is known regarding parents' perceptions and knowledge about the use of DHM and human milk banking in this country.

AIM

To find out the parents' knowledge, perceptions and opinion about breastfeeding, wet-nursing and human milk banking.

METHODS

A standardized interview has been applied to the participants by the investigators. Parents of the infants in the Departments of Neonatology and Infancy Diseases have been interviewed regarding their knowledge and experience on breastfeeding, opinions on wet-nursing, use of donor milk, and establishment of milk banking in Turkey. The acceptance of DHM by the participants has been asked twice before and after a written explanation read by the researchers.

RESULTS

A total of 200 participants included 160 (80%) mothers and 40 fathers. Out of the whole group 75% had training for breastfeeding before or after the delivery and were well aware of the benefits of breastfeeding for the infant and the mother. While 90% defined correctly wet-nursing and 40% had already someone in the family who experienced wet-nursing, 55% didn't hear about milk banks. Despite this, 70% of the participants revealed an opinion in favor of the establishment of human milk banks. 26% had some concerns awaiting to be assured, and only 4% refused the idea of milk banks. Out of whole group 85% underlined the need to have a different model: a model while ensuring the international safety standards, takes into consideration milk kinship. 60% of the parents answered that they would accept DHM if they had sick preterm infants. 95% of the mothers would donate their milk. After reading a written explanation about the characteristics and functions of the model established in İzmir, the parents' acceptance rates for milk banks and DHM increased to 95% and 70% respectively.

CONCLUSION

Although breastfeeding culture is widely spread and even wet-nursing does still have considerable place in some regions, there is lack of knowledge and concerns regarding human milk banking. Yet, majority of the parents are in favor of DHM as the second choice when own mother's milk (OMM) is not available. Human milk banking will have a wide acceptance by the parents if they will be assured that that milk kinship issue is being taken into consideration.

ABS 232

CORRELATION BETWEEN UMBILICAL CORD PH AND MODE OF DELIVERY

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AIM

Umbilical cord Ph has been used as an indicator of neonatal well being after birth. We aim to examine

possible variations of pH in relation to the mode of delivery.

METHODS

Retrospective analysis of data from all births in a tertiary center during a twelve month period. Comparison made between vaginal deliveries (VD) *versus* elective cesarean section (ELCS), *versus* emergency caesarean section (EMSC). Other parameters such as Apgar score and adverse outcome were also evaluated.

RESULTS

Data were collected for the period Jan-Dec 2010 from 1,513 consecutive deliveries.

pH analysis

Statistical differences were observed for pH values < 7.2 and 7.2-7.3 between VD compared to all other types of delivery ($p < 0.001$). The difference persists in VD *versus* ELSC ($p < 0.001$), although in EMSC it reaches the borders of statistical difference ($p = 0.048$). Instrumental VD has significantly lower pH compared to all types of CS. Interestingly enough all the above differences in pH remain unchanged only in the group of women less than 35 years of age.

Adverse outcome and type of delivery

VD is related to increased adverse outcome compared to all types of CS (24% vs. 14.6%, $p < 0.001$). VD has significantly increased adverse outcome compared to ELSC, ELSC compared to EMSC, and instrumental VD (68.6%) compared to non-instrumental VD (20.2%, $p < 0.001$). In general, instrumental VD has the worst outcome compared to all types of birth ($p < 0.001$).

CONCLUSIONS

If umbilical cord pH is an indicator of newborn well being it is lower in instrumental VD and in VD compared to ELSC. Adverse outcome is related to instrumental VD and it is lower in ELSC.

ABS 233

SPEECH AND LANGUAGE DIFFICULTIES IN PRESCHOOL AGE: CORRELATION TO GESTATIONAL AGE AND PARENTAL CHARACTERISTICS

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AIM

Speech and language problems are amongst the first to be noticed by family when a young child is being referred to a developmental clinic. We aim to analyze the profile of preschoolers with language difficulties.

METHODS

Retrospective collection of data from all preschool children with language difficulties and no other neurological abnormality that attended our tertiary outpatient developmental clinic over the last six month period.

MATERIAL AND RESULTS

Data collected from January-June 2014 of 78 consecutive preschool children. Boys 70.5%. History of (a) prematurity (GA < 37 weeks) 18% with 2.5% being extremely preterm (GA < 30 weeks), (b) multiple birth 9.4%, (c) IVF 6.4% from which single birth were 2 cases (2.5%). Mean age at first evaluation: 4.6 years. Mean paternal age at evaluation: 37.9 years; mean maternal age: 34.7 years. Younger than 30 years of age were 14% of mothers and another 14% were older than 40 years.

Maternal and paternal education was (a) academic degree in 20% and 22%, (b) technical school 8.9% and 6.4% and (c) secondary education 71% and 71.6% respectively.

Autistic spectrum disorder (ASD) was diagnosed in 14.1% (n = 11). Attention Deficit Hyperactivity Disorder (ADHD) coexisted in 30.7%. In 19.4% apart from articulation difficulties and speech delay there was also immaturity in descriptive language. Writing immaturity observed in 45% of cases.

CONCLUSIONS

Male gender is a risk factor for language difficulties. In about half of cases there is immaturity in descriptive language. Writing difficulties may coexist. Language problems in preschoolers are related to ASD in 14% of cases and to ADHD in about one third.

ABS 234

HOW OFTEN IS LIFE THREATENING COMPLICATIONS OF BLOOD TRANSFUSION IN NEONATES?

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BACKGROUND

Like most effective therapies, there are untoward side effects associated with blood transfusion.

Therefore, potentially fatal complications must always be born in mind when dealing with neonates, among the most heavily transfused patients.

AIM

To evaluate the incidence of blood transfusion and life threatening complications of transfusion in neonates hospitalized in our NICU.

MATERIALS AND METHODS

We analyzed the electronic data of neonates hospitalized in our perinatal center during last year. The number of transfusions and the associated complications were evaluated.

RESULTS

During the study period, among the 445 hospitalized neonates, 97 (21.3%) underwent 577 transfusions (278 packed Red Blood Cells, 224 PLT, 62 Fresh Frozen Plasma, 8 Cryoprecipitate, 3 partial exchange transfusion and 2 exchange transfusion). The adverse consequences included 2 cases of transfusion related acute lung injury (TRALI), both of which despite the supportive intervention, were fatal. Furthermore, a case of Transfusion Associated Necrotising Enterocolitis (TANEC) was recognized and treated successfully. Another neonate exhibited severe allergic reaction, hypotension, bradycardia, rash, distorted ECG and electrolyte imbalance. Consequently, data analysis has demonstrated that 4.1% (4/97) of the transfused neonates developed severe complications, expressed as an incidence of 7‰ (97/577) transfusions.

CONCLUSIONS

Blood component transfusion remains as a significant and an integral part of modern neonatal care. This study reaffirms the high incidence of transfusion and the proportionate occurring complications. Neonatologists should consider these situations in neonates who experience clinical status deterioration after blood transfusions.

ABS 235

PHARMACOKINETICS OF ORAL ^{14}C PARACETAMOL AS MICROTRACER AND MICROVOLUMES IN INFANTS

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BACKGROUND AND AIMS

Drug development in neonates and infants is complicated because of safety concerns and blood volumes. In adults, microdose and microtracer accelerator mass spectrometry (AMS) enabling methods have been developed (incl. ^{14}C paracetamol). The microdose approach could provide a means to gather preliminary pharmacokinetic data in young children when other methods do not provide the information needed to define dosing regimens. The aim was to assess feasibility of microtracer and AMS bioanalysis on blood microvolumes in infants, and to compare a well-studied drug, paracetamol and ^{14}C paracetamol microdose pharmacokinetics.

METHODS

Parents of 24 children aged 0-2 years, requiring paracetamol as clinical indication, were invited to participate with 66% of acceptance rate. Single ^{14}C paracetamol dose (111 Bq/6 ng paracetamol/kg) mixed with standard dose (10 mg/kg) of cold paracetamol (Efferalgan®) was administered to the child orally and 2-4 blood samples (total amount up to 1 ml) collected at pre-selected time points. Accelerator mass spectrometry analyses were performed in TNO, Zeist.

RESULTS

The levels of ^{14}C paracetamol in 16 infants increased from 0 at pre-dose to 66 (median; range 13-365) mBq/ml by 30-50 minutes and decreased by 8 hrs to 13 (4-101) mBq/ml. The pharmacokinetic parameters of ^{14}C paracetamol were approximately dose proportional with the therapeutic doses of cold paracetamol, although the dose difference was million-fold.

CONCLUSION

The study results demonstrated pharmacokinetic comparability between ^{14}C paracetamol microtracer and therapeutic dosing in infants. The methods reported here need to be extended to other drugs to establish the general utility of the microdose approach.

ABS 236

PREMATURITY-ASSOCIATED NEPHROCALCINOSIS AND KIDNEY LENGTH

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BACKGROUND AND AIMS
Nephrogenesis is incomplete in preterm infants born at a gestational age (GA) less than 34-36 weeks. Any adverse environment factor inhibits postnatal nephron formation and so prematurity-associated nephrocalcinosis (NC) may affect this process. Kidney length (KL), as estimated by ultrasonography, may be used as an index of renal growth and nephron number.
METHODS
107 preterm infants with a GA < 36 weeks in a 2.5 year period enrolled the study. Of them, 63 were diagnosed with NC and matched for gender, birth weight and gestational age with 44 control infants. KL was measured by an ultrasonography at 40 weeks postmenstrual age and at 3, 6, 12 and 24 months of age.
RESULTS
Neonates with NC had a shorter mean KL than the control group up to 12 months of age (left kidney) and up to 24 months (right kidney). There were no significant differences between the two groups in crown-to-heel length (CHL) and body weight. We also calculated the relative KL/CHL z score. The results are presented in **Fig. 1**.
CONCLUSIONS
The development of nephrocalcinosis during a period of active nephrogenesis, as in preterms with a GA less than 36 weeks, may affect the nephron formation process, as reflected by a smaller kidney size despite similar body growth.

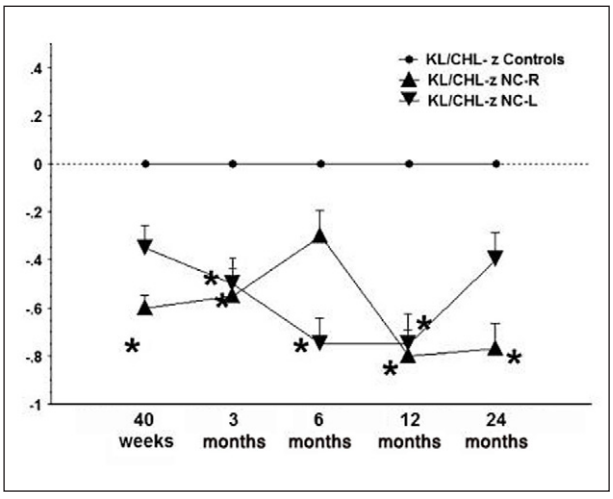

Figure 1. KL/CHL z score (± standard error of the mean) of the right (NC-R) and left kidney (NC-L) at each time point in the NC group compared to the control group. *p < 0.05 NC group vs. controls; KL: kidney length; CHL: crown-to-heel length; NC: nephrocalcinosis.

ABS 237

POST VACCINATION RESPONSES IN EXTREMELY LOW BIRTH WEIGHT INFANTS

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AIM
The aim of this study is to observe the C-reactive protein elevation and, or other adverse reactions in relation to the first regular vaccination of premature neonates.
METHODOLOGY
The prematures enrolled were all hospitalized in our department from birth until the age of vaccination and onwards due to prematurity and comorbidities. Among 10 subjects, 6 were males, median gestational age of vaccination 78 days, median birth weight 1,080 g, chronic lung disease 8/10. The combined *Diphtheria-Tetanus*-acellular *Pertussis* (DTPa), *Hepatitis* B, inactivated *Poliovirus* and *H. influenzae* type b vaccine and the 13-valent adsorbed *Pneumococcal* polysaccharide conjugate vaccine were used, according to the proposed National Schedule of immunization. CRP was measured repeatedly, before, 24 hours and 48 hours after vaccination.
RESULTS
CRP elevation on 24 hours > 15 μg/ml was observed in all cases with a mean value of 26 μg/ml (max 56 μg/ml). A proportion of subjects 4/10 were initiated in antibiotic regiment, with clinical criteria based on usually moderate vital sings' alterations ranging from cyanotic episodes resolving spontaneously to feeding difficulties, at the discretion of attending physicians. In each case sepsis was excluded after clinical surveillance, negative blood cultures and total white blood cell count and differential type. CRP was reevaluated until its normalization for 3-5 days.
CONCLUSIONS
CRP elevation after immunization is a commonly observed adverse reaction. Thus, in previously stable, well-being prematures receiving vaccination neither full septicemic work-up nor

antibiotic treatment is indicated. Nevertheless, occasionally occurring of abnormal clinical responses imposes the monitoring for ~48 hours after the vaccination of premature neonates.

ABS 238

ACQUIRED HEPATIC CYST IN A PRETERM INFANT: REPORT OF A CASE

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BACKGROUND

Non-parasitic cysts of the liver are rare in infancy.

CASE REPORT

A case of a preterm female baby product of a twin pregnancy that developed a hepatic subcapsular cyst on the 6th day of life is presented. Umbilical catheters were introduced on the 1st day of life. The tip of the umbilical vein catheter was initially towards the right hepatic vein and it was withdrawn at the level of the portal vein. The patient developed mild abdominal distention on the 2nd day of life and marked increase in the hepatic transaminases and CRP. The umbilical vein catheter was removed on the 5th day. Due to persistence and worsening of the abdominal distention a CT scan was performed on the 20th day, which showed a subcapsular cyst with dimensions 6 x 5 x 6 cm involving the right lobe.

Under general anesthesia, percutaneous ultrasound guided aspiration was performed. A catheter was introduced by the Seldinger technique. Approximately 100 cc of a chocolate-colored fluid were aspirated. Cultures were negative and biochemical analysis showed absence of bilirubin and characteristics of exudate.

RESULTS

The drainage was removed on the 7th postoperative day. Follow up examinations by ultrasound 2 weeks after the drainage has not demonstrated recurrence of the cyst. Blood transaminases are in the normal range.

CONCLUSION

It is considered that the development of the hepatic cyst is due to massive liver necrosis. The injection of hyperosmolar fluids in the portal vessels can cause liver necrosis. This complication of the umbilical vein catheter has not been reported in the literature.

ABS 239

IS VITAMIN D DEFICIENCY A RISK FACTOR FOR EARLY NEONATAL SEPSIS IN PREMATURE INFANTS?

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BACKGROUND

Neonatal sepsis remains a common and serious problem especially due to immunologic immaturity of preterm infants. There is a lot of epidemiological evidence indicating circulating 25-hydroxyvitamin D – $25(OH)_2D_3$ – levels from cord blood correlate with infection in newborns.

AIMS

In this study we aimed to evaluate the effect on neonatal sepsis of lower $25(OH)_2D_3$ levels in cord blood in preterm infants.

METHODS

117 preterm infants were enrolled in the study. This prospective-cohort study was performed in Zekai Tahir Burak Maternity Teaching Hospital. Infants were classified as "insufficiency" for vitamin D values of ≤ 5 ng/ml (group 1), "deficiency" for values of 5-15 ng/ml (group 2) and "normal" > 15 ng/ml (group 3) according to umbilical cord $25(OH)_2D_3$ levels. All three groups were compared to each other for neonatal sepsis. The demographic and clinical characteristics of groups were similar and showed no significant differences.

Mean gestational ages were 32 ± 3.4 vs 32.6 ± 4.5 vs 33.8 ± 3.2 weeks ($p = 0.19$) and birth weights were 1,771 ± 635.5 vs. 2,110 ± 846.4 vs. 2,102 ± 971.1 grams ($p = 0.1$) respectively in group 1, group 2 and group 3.

Neonatal sepsis was diagnosed in 53 (75%) infants out of 70 in group 1, 7 (22%) infants out of 31 in group 2, 8 (50%) infants out of 16 in group 3 ($p < 0.05$).

CONCLUSIONS

With the results of our study, we concluded that vitamin D deficiency in the umbilical cord seen may be related with neonatal sepsis in preterm infants.

ABS 240

A CASE OF IFAP SYNDROME WITH A NEW MUTATION IN *MBTPS2* GENE

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BACKGROUND AND AIMS

IFAP (ichthyosis follicularis, alopecia, and photophobia) syndrome is a rare genetic disorder, with recessive X-linked inheritance, resulting from mutations in membrane bound transcription factor protease site 2 (*MBTPS2*) gene. Other phenotypic anomalies and intellectual disability are reported.

METHODS

The authors report a case of IFAP syndrome with a new mutation in *MBTPS2* gene.

RESULTS

We report the case of a male newborn, born by caesarean section at the 35th week of gestational age, with birth weight 1,570 g (below the 3rd percentile), length 39 cm (below the 3rd percentile), head circumference 31 cm (between the 10th and the 50th percentile). Parents were non consanguineous, healthy, except for dry skin in mother. Since birth, he has extremely dry skin with hyperkeratosis, generalized atrichia with sparse eyelashes, cheilitis, dystrophic nails, frontal bossing and bilateral giant inguinal hernia. Ophthalmologic evaluation showed blepharitis with mild photophobia. Cardiac, renal, skeletal and central nervous system malformations were excluded. A skin biopsy was performed, showing an epidermis with irregular acanthosis and hyperkeratosis with hair follicles filled with keratin. At 1 and a half year the molecular study showed a hemizygous mutation in *MBTPS2* gene (p.Ala454Pro), supporting the clinical diagnosis of IFAP syndrome. Today, at 2 years old, he manifests short stature with the phenotypic characteristics described, especially severe skin hyperkeratosis with unbearable pruritus and development delay.

CONCLUSIONS

Generalized ichthyosis and alopecia have been reported in very few syndromes, including IFAP. We report a new case, associated with a severe phenotype, with a mutation that, to the best of our knowledge, was not described before.

ABS 241

IMPACT OF MILK BANKING AND THE PROMOTION OF BREASTFEEDING IN INFANTS WITH GESTATIONAL AGE < 32 WEEKS AND BIRTH WEIGHT < 1,500 G

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AIMS

The aim of this study was to compare the effect of implementation of the "Baby Friendly Hospital" policy and the use of pasteurized human milk as breast milk supplementation in infants with gestational age < 32 weeks and birth weight < 1,500 g.

METHODS

Retrospective, observational and analytical study. The authors describe the population of newborns with gestational age < 32 weeks and birth weight < 1,500 g, admitted in a type III Neonatal Intensive Care Unit during the year 2011, that was feed with pasteurized human milk in supplementation of breast milk and compare with the population admitted in 2008 that was feed with formula. The authors compare demographic variables (antenatal corticosteroids, gestational age, sex and birth weight), type of feeding at discharge, co-morbidities (late sepsis, necrotising enterocolitis, retinopathy of prematurity and periventricular-intraventricular haemorrhage) and mortality.

RESULTS

The authors observed in the population of 2011 a statistically significance increase in the percentage of children exclusively breastfeed at discharge ($p < 0.001$). There was no statistically significant difference in co-morbidities, however there was a tendency to a decrease of the number of cases of necrotising enterocolitis and retinopathy of prematurity. Finally, there was no difference in mortality.

CONCLUSIONS

Taking into account the beneficial effects (in the short, medium and long term) of breastfeeding and human milk and implementing these policies have positive effects.

ABS 242

DIAGNOSIS OF CARDIAC MALFORMATION IN NEWBORNS – HOW FAST SHOULD IT BE?

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BACKGROUND AND AIM

Cardiac malformation in newborns still remains a challenge in pediatric practice and a social-emotional problem for family.

Every year in Romania about 1,500-1,600 children receive a postnatal diagnosis of cardiac malformations, but only a small amount of them have prenatal diagnosis and only one third undergoes a surgical treatment.

The aim of study was to determine the incidence of cardiac malformations in Brasov region during 2008-2010, which are the most frequent one and the medical treatment and social and emotional impact on the family and medical staff.

MATERIAL AND METHODS

We analyzed the medical records of the children admitted during this period of time in Children Hospital Brasov, regarding clinical features, echocardiography, ECG records, radiographies, treatment and outcome.

RESULTS

From 29,808 children admitted during this period, 1.64% had been diagnosed with cardiac malformation during the 1st month of life because of the clinical features or a murmur. The most frequent were left to right shunt malformation, 96.73% (septal ventricular defect and septal atrial defect); cyanotic malformations were less likely with the predominance of tetralogy of Fallot (8 cases) and transposition of great vessels (3 cases). Fortunately, the most cases required only close follow-up and only a small amount needed surgical treatment, which was provided in Romania. None of the cases had prenatal diagnosis of the malformation.

CONCLUSION

This issue requires more attention from pediatricians and neonatologists for an early diagnosis, proper follow-up and prevention of the complications.