PO01: Late-Onset Meningitis: Risk Factors in Low Birth Weight Neonates

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Introduction: Meningitis is a substantial cause of morbidity and mortality in neonates. Clinicians frequently use the presence of positive blood cultures to determine whether neonates should undergo lumbar puncture. Lumbar puncture can be associated with major risks in very low birth weight (VLBW) neonates.
Objectives: To identify the risk factors for late-onset meningitis development in VLBW neonates who already have sepsis.
Methods: Twenty-one VLBW neonate with late-onset sepsis and meningitis participated in case-control study. Control group consisted of 32 VLBW neonates with sepsis. The data collected included neonatal, obstetrical, birth factors and laboratory tests.
Results: Logistic regression model revealed that antibiotic prophylaxis (AP) in time of delivery OR 4.9 [95%CI 1.3-17.9], seizures OR 6.9 [95%CI 1.3-35.9] and higher CRP value OR 1.02 [95%CI 1.004-1.028] were associated with possibility of the neonate to have late-onset meningitis.
Conclusions: In case of late-onset sepsis lumbar puncture is indicated in WLBW neonates with seizures, maternal AP in time of delivery and higher CRP value.

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PO02: Successful Version of Persistent Fetal Supraventricular Tachycardia With Maternal Sotalol and Digoxin

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Introduction: A rare case of persistent fetal supraventricular tachycardia (SVT) necessitating the use of two maternal anti-arrythmic agents was presented.
Clinical Case: This is the first pregnancy for a 35-year-old healthy lady. Antenatal course was uneventful until 31 weeks when fetal heart rate > 200 beats per minute (bpm) was noted. Fetal echocardiography showed persistent fetal SVT with ventricular rate (VR) 220bpm, normal cardiac anatomy, and no evidence of heart failure. The fetus was well grown, biophysical profile normal. There were no fetal anomalies detected. On the subsequent days, VR increased to 250bpm, and on occasion, there was transformation to short runs of atrial flutter. Maternal ECG, electrolytes and thyroid function were all normal. The couple was explained potential development of fetal cardiac failure. Delivering at this juncture, the baby would have to face the complications of prematurity on top of arrhythmia. The couple was keen on in-utero medical therapy instead of delivery, understanding its controversy. Sotalol, for its near 100% placental transfer, was started at 80mg BD. The mother was assessed daily by adult cardiologist and her baby by obstetric ultrasound. As there was no improvement in fetal SVT with sotalol up to 160mg BD, digoxin 250mcg BD was started as well at 33 weeks. At 34 weeks, fetal cardiac version was achieved. Weekly assessments by obstetrician and cardiologist were normal. She delivered a healthy 3.5kg baby girl vaginally at 39 weeks with good Apgar scores. There was only transient tachycardia up to 205bpm limited to the first 5 minutes of life. Baby was put on digoxin prophylaxis with no more SVT recurrence. Echocardiography showed persistent foramen ovale only. Baby girl was well at 6-month follow up. The plan was to continue digoxin for 1 year.
Discussion: In-utero version of fetal arrhythmia by giving anti-arrythmic agents to healthy mother presents an ethical dilemma – to benefit the fetus it potentially harms the mother. Data are scare in this unique clinical situation. It's even more controversial to use double anti-arrythmic agents. Our experience shows that selected case of fetal arrhythmia could be managed successfully by maternal anti-arrythmic treatment with good outcome.

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PO03: Antenatal Detection of a Rare Case of Chromosome 2q Duplication Syndrome With Clinical, Pathological and Molecular Correlation

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Introduction: Chromosome 2q duplication syndrome is very rare. Prenatal diagnosis is seldom reported. Using array Comparative Genomic Hybridization (aCGH) technology, molecular correlation with perinatal pathology is feasible.
Clinical Case: This was a 39-year-old lady in her first pregnancy. First trimester fetal Down screening at 13 weeks was positive (nuchal translucency 1.3mm, corresponding to 0.76MoM; pregnancy associated plasma protein A 3028.5mU/L, equivalent to 0.92MoM; free beta subunit of human chorionic gonodotropin 99.8ng/ml, at 1.99MoM; overall fetal risk for Down syndrome 1:210). Subsequent chorionic villus sampling showed 46,XY,2q+. Both Parents had normal karyotypes. Array Comparative Genomic Hybridization (aCGH) study showed the gain in fetal chromosome 2q is actually duplication 2q26.3-qter of 12Mb in length. This overlapped a critical interval for congenital heart defects, brachymetaphalangism, epilepsy, autism/severe behaviourabl problems and eczema.[1] However, although monosomy of the involved region on chromosome 2q has been recorded in the literature with variable phenotypes, there is only one single case of 46,XX,inv dup(2)(q36.2,q37.3) reported. The patient was a 9 years old girl with fifth finger clinodactyly, glaucoma, recurrent infections and developmental delay.[1] Our patient decided for pregnancy termination despite absence of fetal anomaly on detailed second-trimester ultrasound examination. Autopsy on the 20-week abortus showed dysmorphic features including micrognathia, flexion deformity of the proximal interphalangeal joints involving third to fifth fingers of the right hand, and clinodactyly of fifth fingers on both hands. There was no internal anomaly.
Discussion: Here we presented, from a prenatal perspective, a rare case of chromosome 2q duplication syndrome with clinical, pathological and molecular correlation. Array CGH proves useful in pinpointing sub-microscopic lesions that's beyond the detection by conventional karyotyping. It has great potential to transform the way we provide prenatal diagnosis & counseling.

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PO04: How To Use C-Reactive Protein in Septic Screening of Term and Near Term Newborns?

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Introduction: Early onset sepsis is a serious condition, with challenging diagnosis. Cut-off CRP values for treatment vary according to different authors and protocols from 5 mg/L to 50 mg/L.
The objective of this study was to determine the CRP cut-off value in septic screening of term and near term NB.
Methods: All NB with gestational age (GA) ≥ 35 weeks admitted to the nursery of a tertiary hospital in the course of one year, with risk for early neonatal sepsis where included. We collected data from all analysis (CRP/CBC) until treatment decision, peripheral blood-culture and clinical findings. A positive septic screening (indicating treatment) resulted from a score involving CRP and leukocyte/neutrophil count. Newborns were thereafter included in the category 'presumption of infection' (POI) if they met at least one of the following criteria: CRP > 50 mg/L; maternal sepsis; NB with positive blood-culture; several positive markers and subtle clinical features; multiple risk factors and subtle clinical features.
Results: From 2478 NB admitted, 193 were included, mean GA was 38.7 weeks. CRP for untreated NB varied between 10 and 16mg/L. Those that underwent antibiotic therapy had CRP values between 10 and 151mg/L. CRP for NB with POI varied between 22 and 151mg/L, treated but with no late presumption of infection between 10 and 48mg/L. A cut-off level of 20mg/L would have selected 16 with POI and missed none.
Conclusion: The authors recommend for this population to use a cut-off level of 20mg/L to start antibiotics.

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PO05: Color Cerebral Function Monitor (CCFM) for the Simultaneously Assessment of Aeeg, Pulse Rate and Sao2

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The first digital device allowed four EEG curves to be recorded and visualization of trends from the left and right cerebral hemispheres was a cerebral function amplified monitor (CFAM-2). The current innovation is a color cerebral function monitor (CCFM), which allows the recording of long-term two or four channel EEG, two channel aEEG trends, pulse rate, and hemoglobin oxygen saturation (SaO_2) from the right arm before leaving the ductus arteriosus assuming that oxygenation levels in the hand show a linear correlation with the level of oxygen in brain tissue. The patient is also continuously monitored by video camera. CCFM allows long-term evaluation of EEG recordings to determine the dominant waves, their frequency, amplitude, and shape. At the same time, the trend of aEEG is built on a logarithmic scale and marked in color depending on its shape and amplitude. Depression patterns of less than 5 microvolts are colored black, discontinuous patterns or burst suppressions in the range from 10 to 85 microvolts take on the color green, and amplitudes in excess of 85 microvolts completely take on the color red and are interpreted as high voltage and possible epileptic like activity. When the amplitude of the values is above 15 and below 65 microvolts, the recording is blue and is interpreted as normal. Below the recording, the aEEG trend of SaO2 is visualized and the trend pulse rate is visible above. Evaluation of the sequence of events allows the etiology of seizures as well as the evaluation of medical interventions to be better understood.

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PO06: Post-Partum Depression (Ppd). Past and Present

Giampiero MELI, Luigi CATALDI

A bit of history: In ancient times the childbirth was a dangerous time in women's lives. The childbirth frequently caused death by preeclampsia, *antepartum* and *postpartum* hemorrhage, cephalopelvic disproportion, sepsis. The *postpartum* depression was added risk. In Hippolytus Crowned, the Athenian playwright Euripides clearly alludes to perinatal depression. Medically the first description of a *postpartum* psychiatric syndrome was made by Hippocrates in the fourth century B.C. In 1858, Marcé published an important study, Traits de la Folie des Femmes Enceintes, linking negative emotional reactions with childbirth. Today the Diagnostic and Statistical Manual on Mental Disorders (DSM-IV) does not recognize *postpartum* depression as a separate diagnosis. The term *postpartum* is used in order to describe symptoms of major depressive disorder, bipolar disorder, or brief psychotic disorder beginning within 4 weeks of delivery.
State of the art: *Postpartum* depression (PPD) is a common complication of childbearing which occurs in 1-2% of births. Significant risk factors for PPD include a history of depression or anxiety during pregnancy, low levels of social support or partner support, low socioeconomic status, obstetric complications. Untreated maternal depression is associated with serious morbidity for the mother and the infant. Women with PPD are at higher risk for smoking and substance abuse. Depression has significant negative effects on a mother's ability to interact appropriately with her child. These disruptions in maternal-infant interactions have been associated with lower cognitive functioning and adverse emotional development in children. The chronic depression in mothers places children at higher risk for behavioral problems and later psychopathology, including anxiety, disruptive, and affective disorders; conversely, remission of depression in mothers is associated with reduction or remission in the children's psychiatric diagnoses. The antidepressant drugs, especially SSRIs, have been found to be effective in treating the condition and are safe to use at low doses while breastfeeding. Some women might also be responsive to hormonal therapy and psychotherapy.

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PO07: Newborns' Visits to the Emergency

Department: How Urgent Are They?

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Introduction: Newborns are physiologically immature and at risk for disease. Emergency department (ED) serves to perform procedures to an immediate relieve of well-circumscribed situations. This doesn't include on-going care and routine exams. A global perspective of the ED, easy access, speed of assistance and low cost for the patient, increases costs and competes with true emergency cases, reducing ED's efficiency. Objective: determine factors contributing to the risk of emergency department visit and describe the most frequent symptoms of newborns ED visits between June-December 2011.
Methods: We analyzed the clinical process and stratified patients' characteristics (age, sex, gestational age, first son, previous health history), symptoms, need of complementary exams, prior ED consultation, referred by another health care professional and management.
Results: In 6 months, 263 newborns visited our ED (31 were excluded because of lack of information). Males had higher visit rates (53.9%). The average age of visits was 14 days of life (more visits during the first 15 days). The main symptoms were: gastrointestinal (62), jaundice (49), irritability (25), respiratory (20), dermatological (17), umbilical scar problems (14), ophthalmologic (5), fever (4), apparent life-threatening event (4), miscellaneous (32). 82 % were well-child that went home with no special treatment. 39 cases were hospitalized, with an average time of staying of 4 days. 9 cases needed antibiotics.14.7% of newborns had previous visits to the ED. Visits rates were higher among the first son (65%). Newborns with previous disease/ co-morbidities (20%) or managed to the ED by other health care professional (11%) were statistically more often hospitalized. 43.1% needed a complementary diagnostic exam. Newborns with less than a week were statistically more frequently submitted to exams.
Conclusion: Educational interventions about preventive measures are needed to decrease the costs of ED admissions without a valid reason. We conclude that the misuse of the ED is high. It is necessary to educate the population on situations in which they should go to the ED and the disadvantages of consulting it when the case is not urgent. We must not forget the potential effect of the increasing risk of disease when newborns visit the ED.

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PO08: Comparison of Intensive Light-Emitting Diode and Intensive Compact Fluorescent Phototherapy in Nonhemolytic Jaundice

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Aim: In severe and rapidly increasing jaundice, the use of high-intensity phototherapy provides greater effectiveness and a faster decrement in bilirubin levels. The aim of this study is compare the effectiveness of intensive compact fluorescent tube (CFT) and intensive LED phototherapy in higher doses of irradiance.
Method: Forty three infants over 35 weeks of gestation with severe severe nonhemolytic hyperbilirubinaemia were enrolled in the prospective study. All infants received multidirectional (circular shaped) high-intensity phototherapy. Of these 20 infants received CFT while 23 infants received LED phototherapy. Bilirubin levels and body temperatures were measured periodically and the rates of bilirubin decrement were calculated.
Results: Mean serum bilirubin level of the 43 infants was 20.5 ± 1.5 mg/dl at the beginning of the therapy and mean duration of phototherapy was 20.6 ± 1.1 hours. The rate of mean bilirubin decline was 47.2% and the declination was more prominent in the first four hours. Clinical characteristics, initial bilirubin levels, rates of bilirubin decrement and the phototherapy durations were comparable for LED and CFT groups. Slightly elevated mean body temperature (37.1ºC) was determined in CFT group ($p < 0.05$).
Conclusion: Circumferential phototherapy units are effective devices, can provide up to 50% reduction in bilirubin levels within 24 hours in infants with nonhemolytic jaundice. Since it was shown that these devices can provide rapid decrease in bilirubin levels in the first few hours, they are useful in cases with high risk of bilirubin encephalopathy and kern icterus. These units decrease the hospitalization period so can help to maintain breast feeding.

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PO09: Pietro Brusa and the First Heated Room for Preterm Infant Neonatal Care in Italy

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It is largely accepted that institutional medical care of premature infants, the so called weakling newborn, begun in Paris at the end of the XIXth century.
In 1880 Stephane Tarnier, head obstetrician in Paris, charged his pupil dr. Auvard to apply the warming needing to maintain the best level of temperature to the premature infant held in a special wooden box (the *couveuse*) useful to protect him from infection. Nutrition was supplied mainly by gavage.
Those principles were fully understood by professor Pierre Budin, the great French physician accoucheur, and the text he published in 1900, Le Nourrisson (The Nursling) still is a classic today. Unfortunately, in the first 3 decades of the XXth the majority of obstetricians forgot the newborn infant, largely consigned to the care of the nursery nurses.
Only few peoples in the next half century were deeply interested in the newborn: among them John Ballantyne of Edinburgh, Arvo Yllpo of Finland, Julius Hess of Chicago, and V.Mary Crosse of Birmingham (UK). She is until today believed to be the first to open a special care unit for premature babies (the Sorrento Home) in 1933.
Authors suggest that probably the first unit for premature newborns in Italy have been organized by dr Piero Brusa, in 1930 in the IPPAI (Istituto Provinciale Protezione e Assistenza all'Infanzia) in Milan, formerly a Hospital for giving care to foundling newborn infant and to unmarried mothers and their child.
At the time, premature infants were usually starved for days in order to avoid aspiration pneumonia, or left to become chilled in their bed. Eighty years ago dr Brusa, in cooperation with Carlo Fontana and Giovanni Terzano, both engineers, was able to do a program in order to build a nursery well equipped for preterm infants. They builded a room for 6 beds only with a three different heater system. Dr Brusa and engineer Terzano designed and projected a heated bed and also an incubator with transparent cover obtaining the so-called Brusa-Terzano incubator.
In this way, Dr. Brusa and his coworkers obtained an important improvement to the premature babies survival rate.

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PO10: Abscess of the Newborn Eye Cosket:

A Case Report

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Cellulitis of orbit is acuta inflamation of all contents in orbit that can pass into purulent infection or can be purulent from the beginning. It can be formed puss collection in the course of clisease (abscess of orbit). The inflamation of orbit can be provoked from inflamation of paranasal sinusses, inflamation of watery bag, nose, ear, or any injury of eye or nose. Case here we present of a newborn with on time recognised orbital abscess confirmed with diagnostical means and healed with quite good result. The male newborn received in our hospital in his 24th day of life. Left eyelids were red and swollen. Left eye was closed with yellow-green secrection in nasal corner.Right eye appears normal. Anamnesis taken from parents indicated that diseases had been started day before. First symptoms were swelling and redness of the left eye lids with yelloy-green secretion of it. On first hospital day the child got fever (39°) and was more silent than usually. BSR was 60/100 mm HG, WBC 28.6 x 109, CRP 168 mg/L; PCT 4.2 ng/ml; fibrinogen 8.8 g/l; citologic, biochemical and mikrobiological examinations of liquor cebebralis were normal. Blood cultura was steril. Brush of eye shows Staphyloccocus Aureus. The newborn was treated with parenteral and local antibiotics. CT of head and orbit showed periorbital cellulit with consecutive exophtalmus. Response on the conservative treatement through five days was not clinicaly and laboratory improvements, what was the reason that maxilofacial surgeon made on incision and a drainage of abscessus. Brust taken from incision of abscessus also shows Staphyloccocus Aureus. After that came to significant clinical improvement. The signes of inflamation disappeared and newborn was dismissed from hospital after 16 days and that time local findings were normal.
The ophtalmia neonatorum, docriocistitis and celluliitis is the mostly cost by Clamydia, but the other bacteria presented in delivering chanal could be carriers of newborn conjunctivitis too. The prevention of newborn conjunctivitis is indisperensable.The most number of centars practice the prevention with 1% (2.5%) Povidon Jod solution, solution Tetracyclin or solution Erytromicin now from birth, that has been driped in eyes what is incarporated in the first dressing of newborn.

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PO11: Testosterone and 2D4D Digit Ratio in Newborn Infants

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Introduction: The 2D:4D digit ratio is sexually-dimorphic, probably due to testosterone action throughout the perinatal period. This ratio has attracted attention because it could be a marker for prenatal androgen exposure, help predicting pathology and behavior later in life, and facilitate early screening of individuals at risk. The purpose of this study is to examine dimorphism in the 2D:4D digit ratio at delivery (first 48 hours), a period of time in between the pre- and postnatal peaks of testosterone production. We report on how the ratio of the newborn (NB) infant correlates with testosterone in maternal plasma and amniotic fluid (AF).
Subjects and Methods: Testosterone was assayed in samples of maternal plasma and AF, both collected when the mothers attended amniocentesis (16-23 weeks of pregnancy). Shortly after birth, 106 mother-newborn pairs were measured for finger length and 2D:4D ratio. We characterized the 2D:4D and related it to testosterone levels in the mother's plasma and AF.
Results: NB males had longer fingers and lower mean 2D:4D ratio than females. However, the difference in 2D:4D was significant only for the left hand (males: 0.927; females: 0.950; $t = 2.95$, $p = 0.004$). The 2D:4D mean ratios of NBs were lower than those of their mothers ($p < 0.001$) regardless of sex and hand. Testosterone in the AF of males was significantly higher than in that of females (males: 0.83 nmol/L, females: 0.34 nmol/L; $p < 0.001$); there was no correlation between testosterone in the AF and in the mother's plasma. Both hands of NB females were negatively correlated with AF testosterone, but males showed no significant association in either hand. Maternal plasma testosterone also showed a negative weak correlation with NB digit ratio in both hands and sexes.
Conclusions:– Sexual dimorphism was already present at birth, indicating the effect of prenatal testosterone, but it was only significant for the left hand, in contrast with previous reports for individuals older than 2 years old, suggesting that postnatal testosterone is determinant for ratio stabilization in the right hand. Our data also supports the claim that 2D:4D increases from birth to adulthood. The association between AF testosterone and female's digit ratio, but not male's, suggests that because the male fetus is normally subjected to higher levels of testosterone, levels of above average do not have any significant impact in further decreasing their 2D:4D ratio.

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PO12: Septic Arthritis as a Manifestation of Late-Onset Group B Streptococcus Disease

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Introduction: Group B Streptococcus (GBS) is the leading cause of invasive bacterial infections in neonates. Whereas programs for universal prenatal screening and intrapartum antibiotic prophylaxis appear to significantly reduce the incidence of early-onset GBS infections, late-onset disease incidence remains unchanged. Late-onset GBS disease usually presents as occult bacteremia or meningitis. Septic arthritis and osteomyelitis occur in approximately 5% of cases.
Clinical Case: The authors present a full-term female neonate born via vaginal delivery. Prenatal GBS screening at 35 weeks of gestation was negative. She was discharged after 48 hours of life. At 12 days, was referred to the emergency department for irritability and decreased movements of the upper and lower left limb. Physical examination revealed an afebrile, uncomfortable neonate with asymmetric Moro's reflex with flaccid paralysis of the left arm, mild swelling of the knee with limitation of movement by pain. Complete blood count revealed white blood cell count of 17600/mm^3 with 7850/mm^3 neutrophils and platelet count of 853000/mm^3. C-reactive protein was 149.3mg/L. Blood, urine and cerebral spinal fluid were collected for culture and ampicillin, gentamicin and vancomycin were started empirically. At this point, the clinical suspicion was of brachial plexus palsy and septic arthritis of the knee. Upon 24 hours of admission, ultrasound and radiograph of the knee joint revealed mild joint effusion. Needle aspiration revealed purulent drainage and she was submitted to an arthrotomy. GBS was isolated from the blood and joint culture and antimicrobial therapy were changed to Penicillin G. A 21-day course of intravenous antibiotic was completed and there were no long-term complications. She gradually recovered from brachial plexus palsy with physical the-

rapy rehabilitation.
Conclusions: GBS septic arthritis was only reported twice in a Portuguese epidemiological surveillance. The paucity of signs suggesting infection and the presence of brachial plexus palsy made the diagnosis more difficult. Decreased movement of the involved extremity and pain with manipulation are important clues to GBS join infection. This case raises concern about the route of transmission.

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PO13: Adverse Neonatal Outcome at Birth in Relation to Mode of Delivery and Maternal Characteristics

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Aim: To study adverse neonatal outcome at birth (neonatal trauma, NICU admission and breast feeding) in relation to mode of delivery and maternal characteristics.
Methods: Retrospective data analysis of all term and near term births in the 3rd Department of Obstetrics & Gynecology, Attikon Hospital Athens Greece, for the period Jan-Dec 2010.
Results: Data collected from 1513 deliveries between 32-41 weeks gestational age (GA). Boys = 50.4%. Vaginal deliveries (VD) = 46% (4.7% instrumental). Caeserian section (CS) = 53.3%. Post term (GA ≥ 41 weeks) = 11%, near term (GA ≤ 37 weeks) = 11%. Mean birth weight (BW) = 3247 ± 445gr, BW ≥ 4000gr = 5.4%. Mean Head Circumference OFC = 34.2 ± 1.5cm. Mean maternal age at birth (MA) = 30.9 ± 4.9 years, MA 35-39 years = 18.1%, MA ≥ 40years = 4.3%. Primi-gravidas = 58%. Gestational-Diabetes (GD) = 8.2% (71.8% treated with diet). Abnormal Thyroid Tests (ATTs) = 11.8% (20.7% positive thyroid antibodies). In GD 19.3% had also ATTs. Elective CS (ELCS) = 35.2%, CS due to maternal wish = 4%, emergency CS (EmCS) = 1.75%. Intrauterine deaths = 0.4%. CS in GD was statisticaly significant ($p < 0.001$). In the group of women with MA ≥ 35years Primi-Gravidas = 38.75%, GD = 3.75% (65.90% treated with diet) and ATT = 20%. Multi-variant analysis showed that the mode of delivery depends on GA, OFC and MA. MA ≥ 35years increases the probability of CS by two, while 1cm increase in OFC increases CS by 9%. In near term CS is 76%, while post term CS is 25.4%. NICU admission was 3.1% after CS vs 1.9% in VD. There were statistical differences in NICU admission between EmCS (7.1%) vs ELCS (2.3%) vs VD (1.9%) $p < 0.001$. There was no difference between ELCS and VD. Neonatal trauma was more often in VD (22.1%) vs ELCS (7.1%). In VD there were no differences in neonatal trauma in relation to BW, MA and GD. Neonatal was statisticaly significant in instrumental VD ($p < 0.001$). Exclusive Breast feeding (BF) was 85.1% after VD, 69.3% after ELCS and 79.3% after EmCS. There was statistical difference in BF between VD and ELCS ($p < 0.001$). In old women EBF was 75%.
Conclusions: Neonatal trauma is related to instrumental delivery. NICU admission is related to EmCS. Maternal age, BW and GD shouldn't be an indication for ELCS. About one-forth of women at birth were ≥ 35 years and for more than one-third of them this was their fist child. ELSC is related to less BF.

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PO14: Extreme Prematurity - 23 to 27 Weeks: Review of 13 Years

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Objective: To evaluate the incidence of extreme prematurity and its characteristics, as well as the main associated comorbidities.
Methods: Retrospective analysis of medical records of newborns, and their mothers, with gestational age (GA) ≤ 27 weeks born in CHEDV, between April 1999 and March 2012. Statistical analysis with SPSS v17.
Results: Of a total of 37,633 newborns, 156 (0.41%) had 23-27 weeks GA, 93 were live births, and 19 (20.4%) died before discharge, most of them due to Late Neonatal Sepsis. Stillbirths account for 40.4%, most of them due to Medical Interruption of Pregnancy (42.6%). Sixty one per cent of the preterm infants were male. The mean GA was 25.6 weeks, the mean birth weight was 808.6g (± 199.6g) and the mean CRIB score at admission was 7.08 ± 4.26. The main comorbidities observed were: hyaline membrane disease (87.9%), patent ductus arteriosus (39.3%), bronchopulmonary dysplasia (29.2%, of which 33% were discharged home under oxygen therapy), retinopathy of prematurity (50 %) and subependymal hemorrhage (26.3%). Regarding long-term follow-up at 2 and 4 years of age, 54.3% and 42.9% had normal psychomotor development (PMD), and 6.5% and 7.1% had moderate PMD delay, respectively. It was registered only one case of severe cerebral palsy. Analyzing data from two different periods (≤ 2008 and ≥ 2009) there was a statistically significant decrease in CRIB score (7.98 ± 4.35 vs 4.95 ± 3.20, $p = 0.005$), total days of invasive ventilation (30.1 ± 23.0 vs 15.9 ± 15.7 days, $p = 0.007$) and need for supplemental oxygen (61.7 ± 44.2 vs 61.4 ± 35.13 days, $p = 0.048$). There were no statistically significant differences regarding comorbidities at follow-up.
Conclusion: Extreme prematurity is associated with high perinatal and long-term morbidity and mortality. However, in recent years, due to new technologies and therapeutic approaches, we observed improving results in terms of need for invasive ventilation and supplementary oxygen therapy. It is also noteworthy that more than half of preterms had normal PMD, with only one case of severe cerebral palsy.

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PO15: Neonatal Incubators, Electromagnetic Emissions and Melatonin Production

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Introduction: Many newborns spend their first hours of life in incubator. The incubator preserves them from cold, dehydration, external noises and consequent stress. Nevertheless, during this permanence, newborns are very close to the electric engine, a source of magnetic fields (MF). Previous studies demonstrated a decrease in melatonin production in adults and animals exposed to MF. Scope of our study was to test the hypothesis that incubator MF interfere with neonatal melatonin production in a group of newborns during and after the permanence in incubator.
Methods: 28 babies who spent at least 48 h in neonatal electronic incubators in which we previously assessed the presence of significant MF (> 9.7 milliGauss) were enrolled in the study. Melatonin activity was assessed by measuring 6-hydroxy-melatonin-sulfate (6OHSM), its major urine metabolite, normalized to creatinine va-

lue (6OHSM/cr). Mean 6OHMS/cr excretion, measured at the end of the stay in the incubators, was compared with the same value obtained after being out in cribs where MF are below the detectable limit (< 0.1 milliGauss). Control group consisted in 27 babies of the same gestational age and birth weight who were never been exposed to MF. They were checked twice for 6OHMS, with an interval of 48 h

Results: Babies did not differ in BW and GA 34.44.1 vs 34.52.7 weeks, and 2182.9781.051 vs 2338.3813.02 grams respectively). 6OHMS/cr mean values were respectively 5.344.6 and 7.685.1 ng/mg (p = 0.026) during the exposure to MF in incubators and after at least 24 hour of the stay in crib. In the control group, mean 6OHSM/cr values in the first and in the second sample were respectively 5.915.41 vs 6.173.94 ng/mg (p = 0.679).

Conclusions: We found an increase in 6OHSM production after the exit from incubators. MF show to interfere with melatonin production increasing its metabolism. More clinical trials in a larger number of newborns are needed to confirm these data.

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PO16: Changes in Mortality Rates of Elbw Infants over Thirteen Years in Croatia

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Introduction: Mortality of ELBW (BW < 1000 g) infants is important measure of successfulness of perinatal - neonatal and pediatric services. Decrease in newborn death rate is expected. Comparison with other national data will enable to identify places and nature of measures which should be done for further decrease of newborns' deaths.

Methods: Data are collected by questionnaire from all maternities and pediatric services in Croatia for 1998-2010 years. Only data on mortality are analyzed, and data on morbidity and deaths' causes are not collected.

Results: Number or percentage of died from all ELBW liveborns in the period 1998-2010 years are shown in the Table. These scattered data show graduate declining rates of all mortalities of ELBW infants, including mortality to discharge from hospital, although some data are missing.

Conclusion: Results show some level of successfulness of perinatal / neonatal /pediatric services, but international comparison of effectiveness of services requires data on mortality to discharge from hospital, chronic morbidity, as well as on length of stay and expenses of the hospital stay. Chronic morbidity / handicaps should include the incidence of chronic lung disease, retinopathy of prematurity, hydrocephalus, and the incidence of cerebral palsy, at least, to give more informations of effectiveness of above mentioned services at national level.

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PO17: Skull Fracture Resulting of Birth Trauma: Report of Three Cases With Intracranial Lesions

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Introduction: Birth injuries have declined due to advances in obstetric techniques and neonatal care, although they remain a significant cause of neonatal morbidity and mortality. Risk factors include macrosomia, prematurity, instrumental delivery, abnormal fetal presentation and prolonged labor. Bone injuries occur in 1/1000 live births, with only 2.9 – 11.4% being skull fractures, which usually are linear, non displaced or depressed, called 'ping-pong' fractures.

Cases report: We report three cases of term newborns of nulliparous mothers, with uneventful pregnancies, admitted in NICU after cesarean deliveries, due to head trauma suspicion. All had weight below P50, with head circumference ranging from P10-25 to P50-75. Case 1, in which cesarean delivery was due to cephalopelvic disproportion, was admitted with wide anterior and posterior fontanel as well as a parieto-occipital swelling, had a linear fracture affecting right parietal bone, with subgaleal and subarachnoid hemorrhages. Case 2, born from cesarean after fetal bradycardia, had a right parieto-occipital cephalhematoma. CT scan evidenced displaced frontal fracture, extraaxial hematoma and frontal hemorrhagic contusion. Both were asymptomatic. Case 3 was born after three attempted vacuum extraction, with an Apgar score of 4 and 6 at 1 and 5 minutes, respectively. Neurologic signs (irritability and generalised hypertonia) occurred during first 5 days of life and completely resolved till discharge. CT scan showed a linear right parietal fracture with hemorrhagic signs at inter-hemispheric fissure, cerebellar tent and lateral ventricles. Cases were discussed with neurosurgery and completely recovered with conservative treatment, being discharged 8 days (mean) after admission. A mean follow-up of 26 months was performed. Good outcome was verified, with adequate neurodevelopmental evolution and complete radiologic resolution in all cases.

Discussion: Even though incidence of obstetric skull fractures is low with persistent disabilities being rare, authors emphasize importance of interventions to prevent them as well as clinical suspicion, allowing its early detection and adequate follow-up of children affected, looking for evidence from a possible brain injury compromising prognosis.

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PO18: Disparities in Early Neonatal Causes of Deaths Between Differrent Data Sources in Croatia

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Introduction: Perinatal death certificate has been implemented in Croatian maternities since 2001 for perinatal death monitoring and quality improvement, in addition to death certificate in national statistical office.

Objective: To compare data about underlying causes of early neonatal deaths from different national sources (perinatal and mortality databases) that are meaningful for neonatal health assessment.

Methods: Underlying causes of early neonatal deaths from perinatal and mortality databases were analyzed for the year 2010. According to ICD 10 manual, perinatal death certificate has separate spaces for maternal, fetal and other conditions. Death certificate has spaces for antecendent causes and diseases/condition directly leading for death. Only underlying causes have been used for international comparison. Results are shown in table. These underlying codes of death show quantitative and qualitative differences.

Conclusion: Problem is in misclassification and non harmonized guidelines for perinatal death coding on international level. Civil registration system includes very little clinical information about birth and factors leading to death. International guidelines for perinatal death classification would be helpful for reliable reporting as well

as for linkage between main data sources for underlying causes of perinatal deaths.

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PO19: Mothers and newborns vitamin D status and bone mass according to season – preliminary results

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Background: Due to the latitude, it is likely that pregnant Polish women and their offspring delivered during winter-time are vitamin D deficient. Vitamin D insufficiency in pregnancy may result in reduced bone mass in the offspring. We examined maternal serum 25-hydroksyvitamin D (25OHD) concentrations according to the delivery season, and its influence on newborn's vitamin D status and their bone mass at birth.

Methods: Vitamin D status and bone mass of 116 healthy Caucasian women and their term newborns in Warsaw, Poland (52°N) were determined. 25OHD concentrations were measured in the maternal and umbilical cord blood after the delivery. Dual-energy x-ray absorptiometry (DXA) were carried out for mothers (TB BMC, TB BMD, L2-L4 BMC, L2-L4 BMD) and newborns (TB BMC, TB BMD, TBLH BMC, TBLH BMD) within the first 3 weeks after delivery.

Results: Mean 25OHD concentrations in mothers and newborns were 16.25 ± 8.2 ng/ml and 17.14 ± 9.7ng/ml, respectively. We found a strong positive correlation between maternal and neonatal 25OHD concentrations (r = 0.78, p < 0.001). Vitamin D-containing multivitamins (200-400IU/d) were used by 95 (82%) mothers during pregnancy. There were 76 winter (November- May) and 40 summer (June-October) deliveries. There were differences between summer and winter 25OHD concentrations in the mothers and their newborns, these being 19.57 ± 6.7 ng/ml vs. 14.5 ± 8.4 ng/ml (p < 0.001) and 24.01 ± 8.5ng/ml vs. 13.52 ± 8.15ng/ml (p < 0.001), respectively. Severe vitamin D deficiency (< 10ng/ml) was observed in 29 (25%) mothers (only in winter) and 37 (32%) newborns (35 in winter). Vitamin D sufficiency (> 30ng/ml) was detected during summer and winter, in only 7.5%, 5.3% mothers and 20%, 5.3% infants, respectively. We found no differences in maternal and neonatal DXA results according to the delivery season and no correlation between 25OHD and DXA results in mothers and infants.

Conclusions: Vitamin D insufficiency is a problem of the majority of mothers and their newborns even in summer time in Poland. Appropriate vitamin D supplementation during pregnancy is necessary to reduce the risk of perinatal vitamin D deficiency. Maternal and neonatal bone mass is not affected by the vitamin D status at birth, at least in state of vitamin D insufficiency.

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PO20: Look at the Newborn, Not the Scale: Acute Weight Loosing Versus Neutrophils

Snezhana JANCHEVSKA, Zagorka RACHANOVSKA

Introduction: In the first 24 to 72 hours after birth newborn babies tend to lose about 3-10% of their birth weight. This study to investigate the influence of acute weight loosing more than 7% to newborn infant's neutrophils dynamic in the beginning of semanatal period.

Methods: A total of 184 full-term infants, eutrophic, healthy, were enrolled in this study. A cohort is collected from April 2011 to April 2012 in the University Clinics of Gynecology/ Obstetrics in Skopje. Neonates' body weight is determinate for four times. The first measurement is made after delivery and others in the end of next three days. Neutrophils subpopulations counts were measured in the peripheral neonate's venous blood for three times: first, second and third day.

Results: The mean acute weight loosing (AWL) to reach 9.4% (range 7.8 -11.4%), with statistically significant difference between two subgroups by delivery way (expect among from Cesarean Section and natural way). Postnatal weight loosing was prolonged, in the end of second day, AWL = 9.1 % (range 7.1-11.3%), with the tendency to stabilize in the third day. The first measurement showed high neonatal neutrophilia of 78% (rang 72-86%). Second control confirmed stop to neutrophils counts increasing and last control showed sever neutrophils level decreasing just to normalize. The degree of neutrophyalia depends on the severity of the disorder and of the way of delivery. There is not also significance between babies' gender subgroups.

Conclusion: Transitory neutrophilia in normal newborn infants at birth can be induced by multiple factors, including an acute dehydration with acute weight loosing. This entity can wake up neutrophils in the peripheral blood. Acute neonatal weight loosing by acute dehydration is one severe provocation or stress, with promptly answer just like high peripheral neutrophilia. This is acute post-stress reaction. Every kind of therapy is not necessary. The weight of a newborn baby is often used a marker of general health. The peripheral neutrophilia of a newborn is often a marker of general stress with out of infection.

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PO21: GSTP1 Genetic Polymorphism and Susceptibility of Bronchopulmonary Dysplasia In Preterm Neonates

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Introduction: The development of bronchopulmonary dysplasia (BPD) involves genetic and environmental factors. Although supplemental oxygen is the most commonly used therapy, direct exposure to oxygen can damage the pulmonary epithelium through the generation of reactive oxygen species (ROS). The glutathione-S-transferases (GSTs) isoenzymes detoxify commonly encountered products generated by oxidative damage. The GSTP1 gene is subject to an inactivating single nucleotide polymorphism ($A^{313}G$) leading to an aminoacid change (Ile105Val). Homozygotes (G/G) or heterozygotes (A/G) have reduced abilities to toxic metabolize and thus neonates carrying the mutant G allele may be at increased risk of BPD. The aim was to investigate the potential role of GSTP1 inborn polymorphism in BPD susceptibility.

Methods: This case-report study enrolled 127 Greek premature neonates with gestational age ≤ 32 weeks. Of these 46 developed BPD and 81 did not developed BPD. Genomic DNA was extracted from peripheral blood samples of all neonates. The GSTP1 genotype was examined by real-time polymerase chain reaction (Real-

Time PCR).
Results: The distribution of GSTP1 genotypes did not differ signi ficantly between neonates who developed BPD and controls; homozygous wild type (A/A), heterozygous (A/G) and homozygous mutant (G/G): 56.5%, 36.9% and 6.5% *vs* 45.6%, 50.6% and 3.7% respectively. Stratification of both BPD and control neonates according to birth weight into two categories (≤ 1,200g and > 1,201g) revealed a statistically significant different GSTP1 distribution (p = 0.026, $\chi 2$ = 7.31, d.f. = 2) with a higher incidence of homozygous mutant G/G genotype among BPD neonates of ≤ 1,200g as compared to the controls of the same birth weight category (6.8 *vs* 0% respectively).
Conclusion: The main finding of the present genetic research is the higher incidence of homozygous mutants G/G among BPD neonates as compared to preterm neonates of < 1,200g birth weight who did not developed BPD. This effect suggests that lower GSTP1 enzymatic activity may be implicated in BPD susceptibility. Larger case-control studies are required to confirm the pathogenetic role of GSTP1 inactivating polymorphism in BPD development. The control population should include only preterm neonates < 1,200g birth weight who did not developed BPD in order to eliminate the probability of prematurity to be implicated in possible GSTP1 genotypic distribution differences.

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PO22: Homocysteine, Folate and Cobalamin Concentrations in Mothers and Their Neonates Born With Neural Tube Defects and Congenital Heart Defects

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Introduction: Folate and cobalamin deficiencies and hyperhomocysteinemia in pregnant women are related to increased occurrence of congenital anomalies observed in infants, including neural tube defects (NTD) and congenital heart defects (CHD). The aim of the research was to answer the question: if there are any differences in plasma homocysteine (Hcy), serum folates and cobalamin levels in mothers and their neonates born with NTD and CHD.
Methods: Forty–two pairs of mothers and their neonates born with CHD (group I) and NTD (group II) were enrolled in the study. The control group consists of 54 pairs of mothers and their healthy children. Venous blood samples from mothers and umbilical cord blood of neonates were taken to measure plasma total Hcy, serum folates and vitamin B12 concentrations. Data were compared between cases and controls using the U Mann – Whitney test. The associations between variables were measured by Spearman's rank correlation. $p < 0.05$ was considered statistically significant.
Results: In our study the mean Hcy concentrations were significant elevated in umbilical cord blood of neonates born with CHD ($p < 0.001$) and NTD ($p < 0.001$) compared to healthy children. Hcy concentrations were also significant elevated in mothers from group II compared with control ($p < 0.001$). We observed significantly lower concentrations of folic acid in newborns with NTD compared to children affected by CHD ($p < 0.05$). There were no differences in cobalamin concentrations between children born with NTD and CHD and their mothers. We found negative correlation between Hcy and folic acid levels in serum mothers who born neonates with CHD. We observed positive correlation between folic acid levels in mothers and Hcy levels in neonates born with NTD.
Conclusions: Positive correlation between folates levels in mothers and Hcy levels in newborns with NTD suggest that the basis for the observed abnormal metabolic profile among women and their children born with neural tube defects and congenital heart defects cannot be defined without further analysis of relevant genetic and environmental factors.

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PO23: Cerebellar Growth in Preterm Infants: A Longitudinal Sonographic Study

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Objective: Recent studies realized with volumetric magnetic resonance have shown decreased cerebellar volumes in follow-up of preterm infants. These abnormalities were correlated with supratentorial white matter disease and intraventricular hemorrhage as well as with posterior fossa hemorrhage. Cerebellar injury may contribute to impaired motor functions but also to long-term cognitive, language, and behavioral dysfunction seen among formerly preterm babies. This study was design to study cerebellar growth in preterm infants over time by ultrasound which allows its observation since first days of life until at term-equivalent age.
Methods: In this prospective study, postnatal cerebellar growth measured by transverse cerebellar diameter was assessed in 88 consecutive preterm infants born ≤ 32 weeks gestation in a tertiary care centre. The transverse cerebellar diameter was obtained via masthoid fontanelle ultrasound in a weekly basis, since the first week of life until 40 weeks post menstrual age (p.m.a.). Variables that could influence cerebellar growth, like gestational age (GA), periventricular leukomalacia, peri-intraventricular hemorrhage, posterior fossa hemorrhage and intrauterine growth restriction (IUGR) were evaluated. The association between cerebellar growth and IUGR was analyzed by parametric test (T-Test). The relation between cerebellar size at 40 weeks p.m.a. and different variables was analysed by ANCOVA adjusted for GA. A p-value less than 0.05 was considered significant.
Results: At 40th p.m.a. week, the transverse cerebellar diameter was smaller in the IUGR group compared with the no IUGR infants ($p < 0.05$). Nevertheless, there was no statistically significant difference in the weekly cerebellar growth between IUGR and no IUGR babies. At term-equivalent age, the cerebellar size was influenced by periventricular leukomalacia gravity ($f = 10.320$; $p = 0.000$) and the presence of fossa posterior hemorrhage ($f = 7.59$; $0 = 0.007$).
Conclusion: Our results suggest that IUGR infant's cerebellum is smaller than no IUGR infants' cerebellum maybe due to their smaller global size. The most important risk factors related to cerebellar hypoplasia in preterm babies at term-equivalent age were periventricular leukomalacia gravity and the presence of fossa posterior hemorrhage. We suggest that preterm cerebellar size should be studied at-term equivalent age using masthoid fontanelle ultrasound and/or magnetic resonance.

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PO24: Neonatal Cerebral Infarction: An Unusual Clinical Presentation of Congenital Neurosyphilis

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Introduction: In the last years, the incidence of syphilis has been increasing significantly. Anually, 500,000 gestations are affected by syphilis and 60% of these children will have neurosyphilis. There are both meningovascular and parenchymatous forms of neonatal neurosyphilis. Arteritis due to syphilis can cause an occlusion of vessels which can be responsible for a cerebral infartion. Such condition has rarely been described in neonates.
Clinical Case: A male neonate, first child of a healthy mother without prenatal visits, was delivered at 32 weeks´gestation in HFF. Maternal serological tests results were negative at the time of birth. On his first 2 hours of life he was transferred to HDE for ventilatory support (HFF NICU crowded). At admission in HDE NICU, congenital syphilis was suspected due to hepatosplenomegaly and desquamation of feet and hands. VDRL-test (+ 1:1024), TPHA-test and IgM anti-Treponema Pallidum were positive as well as CSF-VDRL. On the 5th day of life, the baby was transferred back to HFF. Serial brain ultrasound until D13 shown mild bilateral peri-intraventricular hemorrhage grade 1 and calcified lenticulostriated vasculopathy. On the 27th day of life, an echogenic lesion located in the head and body of left caudate nucleus and left internal capsule was detected by ecography, suggesting the presence of an infartion of the parenchyma. The lesion was confirmed by magnetic ressonance imaging (MRI) on the 39th day of life. EEG revealed altered electrogenesis suggesting significant cortical dysfunction. The baby is now 2-months-old and presents axial hipotony.
Discussion: In neonatal congenital neurosyphilis, cerebral infartion is a possible associated condition and must be considered as a diagnostic hypothesis. Brain ultrasound is an essential diagnostic method in this context. It must be realized weekly in a serial mode, once the lesion is usually not present in the first days of life. MRI is important to confirm the diagnosis and to study cerebral migration and mielinization.

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PO25: Late Preterm: A Population in Continuous Increase

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Aim: The study of late preterm newborns, and the most frequent problems of them.
Materials and Methods:
We studied the late preterm infants who were born in the 3rd Department of Obstetrics and Gynaecology, University of Athens during the years 2010-2011. We studied the birth weight of those newborns, the weight loss in the first days of their lives, their admission to NICU, their ability to breastfeed exclusively. We also studied the presence of jaundice, hypoglycemia, hypothermia, hypocalcemia and respiratory distress.
Results: The period of 2010-2011 were born 2980 infants. The late preterm were 5% of the births and 70% of the preterm. The 84.3% stayed with their mothers in the maternity ward, while 15.7% were admitted to NICU of the 3rd University Paediatric Clinic of Athens. The 5.1%, of the late preterm were IUGR (average BW 2.540 gr). The 22.7%, of the late preterm had weight loss > 10%. Jaundice (bil > 11mgr/dl) was presented in 65.6% of them (average bil max:14.7 mg/dl) and the 59.3% of them needed phototherapy. The 13.7% presented hypoglycemia while the 4.6% had hypocalcaemia. Respiratory distress affected the 7.6%.of the late preterm newborns.
The 34.6% of them breastfed exclusively; the 59.4% had both breastfeeding and formula and the 6% were fed with formula only.
Conclusions: The rates of late-preterm infants in our department are increasing, according to international data. Despite the fact that the late preterm are normal newborns and metabolically mature, they are a population with an increased risk of complications and morbidity.

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PO26: GBS Status Unknown or Hidden?

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Introduction: Neonatal meningitis occurs in 2-4 cases per 10,000 live births and contributes significantly to mortality from neonatal sepsis. The principal pathogens are Group B Streptococcus (GBS), E. coli and Listeria species. However, the implementation of a prenatal screening and treatment protocol for GBS has resulted in a decreasing incidence of GBS infection. Moreover, because the American Academy of Pediatrics, the American Academy of Obstetrics and Gynecology and the Centers for Disease Control and Prevention have recommended sepsis screening or treatment for various risk factors related to GBS infections, many asymptomatic neonates now undergo evaluation. If early signs or risk factors are missed, mortality increases and, in 15-30% of neonates with septic meningitis, residual neurologic damage can occur.
Clinical Case: The authors report the case of a newborn, first child of healthy young parents. The GBS status of the mother was unknown, no prophylaxis was given. Birth occurred at 38 weeks by vaginal discharge with suction pad with an Apgar score (1'/5') 9/10. The newborn was well and was discharged on D2. At D11 he was admitted with tonic seizures that stopped after a loading dose of phenobarbital. The laboratory workup showed leucocitosis and neutrophilia, an elevated C-reactive protein and cerebral spinal fluid (CSF) analysis confirming the diagnosis of meningitis. Blood and CSF cultures isolated GBS. Treatment with ampicillin and cefotaxime was done during two weeks. Cerebral ultrasonography at D12 revealed evidence of ventriculitis, ventricular dilatation and abnormal parenchymal echogenicity. Magnetic resonance imaging at D18 showed ventricular dilatation with periventricular cavities. No complications or further seizures occurred. At discharge, his head circumference was at the 5th percentile. A ventriculo-peritoneal shunt was placed a month later. Presently, at 7 month of age, he has no significant development delay.
Discussion: In this case GBS status was unknown and, because no other risk factors were present, prophylaxis was not instituted nor was the newborn screened according to up to date recommendations. The authors open to discussion to whether prophylaxis should be instituted when screening has not been done.

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PO27: Foetomaternal Haemorrhage as a Cause of Severe Neonatal Anaemia: A Case Report

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Introduction: Foetomaternal haemorrhage results from to the entry of foetal blood into the maternal circulation before or during delivery. Massive antenatal foetomaternal bleed is considered a rare cause of foetal anaemia, probably underdiagnosed. Secondary to the anaemia, this condition may have devastating foetal consequences, such as neurological injury, stillbirth or neonatal death.
Clinical case: A 25-year-old healthy primigravida presented to the ER at 29 weeks gestation with decreased foetal movements. There was no history of pain, trauma or vaginal bleeding. Pregnancy was uneventful until that date. CTG revealed a base line heart rate of 150 bpm, no episodes of high variation and no accelerations. Ultrasound exam revealed IUGR - EFW 1016g (1.5MoM in MCA, compatible with foetal anaemia. FBP 6/8, no foetal breathing. Lung maturation with betamethasone (2 doses) was initiated and delivery was planned. Twelve hours afterwards, CTG showed reduced variability (< 5 bpm), no accelerations, episodic decelerations and periods of sinusoidal pattern. Ultrasound re-evaluation revealed abnormal DV Doppler (PI>p95 with positive a-wave). FBP 4/8, no foetal breathing or movements. An emergency caesarean-section was performed. A male baby of 995g was born, with Apgar score 4/8/8. He was pale, hypotensive (MAP = 25mmHg), with respiratory depression. He had metabolic acidosis (cord blood gas pH = 7.12, HCO_3^-= 11.2mmol/l; pCO_2 = 36mmHg) and severe anaemia (Hb = 2.4g/dl, Ht = 8.4%). Etiologic investigation excluded parvovirus B19 or CMV infection. Placental pathology showed no signs of infarct or infection and microbiology was negative. The Kleihauer-Betke test was 1.6%, corresponding to a transfusion volume of 49ml (52.3% of foetal blood volume), leading to the diagnosis of severe foetomaternal haemorrhage. The baby evolved well.
Discussion: Foetomaternal haemorrhage can begin any time from the mid-first trimester onwards. A precipitating factor is not always evident. The most common antenatal presentation is decreased foetal activity and a heightened index of suspicion is warranted in cases of persistent maternal perception of decreased foetal movements. The MCA Doppler evaluation may be crucial in the early diagnosis of this condition.

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PO28: Low Risk, High Responsibility

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Introduction: Daily observation of low risk newborns permits the diagnosis and orientation of clinical and social problems. These newborns stay in the maternity ward with their mothers and, because they are not sick, the importance of the daily work done in this ward is dismissed. The aims of this study are to identify and characterize the group of low risk newborns that were admitted to the neonatal unit in their first days of life.
Methods: Retrospective study of the newborns admitted to the neonatal unit of a level II hospital from the maternity ward, from January 1, 2000 to December 31, 2011. The following variables were analyzed: gestational age, birth weight, median age at admission, diagnosis, evolution, days of hospitalization and mortality.
Results: In the study period, 19619 live births were registered. 2813 newborns were admitted to the neonatal unit, and 857 (30.5 %) came from the maternity ward. The main diagnosis was jaundice (28.2 %). The median age at admission was 3.1 days of life, with a median gestational age of 38.4 weeks and a median birth weight of 3258g. The median hospital stay was 4.3 days. Forty eight newborns (5.6 %) were transferred to level III units: 15 with critical congenital cardiopathy, 14 with severe respiratory distress and 6 with surgical pathology. 15 newborns (30.2%) required mechanical ventilation. During the study period, 2 deaths occurred.
Conclusions: This study revealed that a significant number of low risk newborns developed complications that justified admission to the neonatal unit and even transference to a level III unit. Systematic observation of low risk newborns in the first days of life confirms their well-being and allows early identification of clinical and social problems. Nowadays there is a trend to shorten maternity stay with the resulting risk of missing a diagnosis. Discharge from hospital of these newborns is an act of high responsibility that must be performed by the most differentiated professionals.

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PO29: Therapy Resistant Hypotension Following Antenatal Exposure to Magnesium Sulfate in a Neonate

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Introduction: Magnesium sulfate (MgS04) has been used for many years as a prophylaxis against seizures in women with preeclampsia in addition to its use as a tocolytic drug. Evidence that antenatal administration of MgS04 to women in preterm labor may confer fetal neuroprotection is also growing. Selecting the right patient and identifying the optimal dose regimen is still unclear.
Clinical case: A 27 year old woman with spina bifida occulta and decreased renal function (serum creatinine during pregnancy varying between 1.0 and 1.11 mg/dL) was admitted to hospital because of preeclampsia. She received MgS04 infusion during 7 days (MgSO4 4g bolus and 1g/h continuous infusion). The median magnesium serum level was 6.71 mg/dL (range 4.27-7.12 mg/dL). Therapeutic magnesium levels should vary between 4.8 and 8.4 mg/dL. Urgent cesarean section was performed at PMA 27w - 5d for a non-reassuring fetal heart trace. At birth the baby boy was flaccid and apneic requiring endotracheal intubation and ventilation. A few hours after birth the neonate developed a severe and persistent hypotension with bradycardia despite maximum circulatory support with dopamine, dobutamine and hydrocortisone. Blood results revealed hypermagnesemia of 6 mg/dL. He received continuous SOPP and calcium gluconate infusion and magnesium serum level normalized on the 5th day of life.
Discussion: Administration of MgS04 to pregnant women is not without risk for the fetus or the newborn. Babies who have been exposed to MgS04 in utero are found to be born with high serum levels of magnesium and magnesium is cleared very slowly. This should be considered in order to prevent hypermagnesemia related pathology. It is important to find a 'therapeutic window' for antenatal MgS04 to provide a neurologic benefit, but above which a potentially lethal cascade of events is precipitated in susceptible children. Neonates who are exposed to magnesium sulfate before delivery warrant evaluation by a physician and the magnitude of exposure should prompt the level of clinical concern.
Conclusion: Always consider magnesium intoxication in a neonate with persistent bradycardia, hypotension and hypotonia.

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PO30: Neonates Concieved Via Assisted Reproductive Techology

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Objective: Retrospective analysis of perinatal outcomes in neonates conceived after assisted reproduction.
Results: During the fist half of 2008 (in period Janyary-June 2008) in Gynaecology and Obsterics Clinic "Narodni front" were born 3620 neonates and 51 (1.40%) of them were born as a result of assisted reproductive techology (ART) through 43 pregnancies. Among 43 ART pregnancies 39 were using IVF/ET procedure, 2 pregnancies were after IVF/ICSI and 2 after IUI procedure. There were 8 twin births (18.6%). Average age of mothers were 37 and most of them were primiparous women (93.02%). Mode of delivery was caesarean section in 86.05% (37) and vaginal in 13.95% (6) births. More than two thirds neonates (74.51%) were delivered at full term, while 7.8% babies were under 35 week of gestation, but no baby was under 33 week. Female sex dominates (70.58%). Seven newborns (13.72%) had birth weight under 2500 g and one thirds were bethween 3000g and 3500g. All children were born with high Apgar score. In morbidity structure, neonatal icterus was present in 9 (19.65%) newborns, perinatal asphyxia in 5 (6.70%), anaemia in one (1.96%) and RD in one (1.96%) neonate. Congenital anomalies were not registred in this group. Thirty nine (76.47%) babies were discharged in good general condition, 11 (21.56%) were discharged after had been recovered and one was referred in another paediatric clinic because of need for assisted ventilation.
Disscussion and conclusion: Data analysis schows that patients who were subject to assisted reproductive techology had higher average age compared with women with spontaneous conception, caesarean section as a mode of delivery was more frequent than vahginal and famale sex dominates. In our group we had more full term births and less multiple pregnancies than in literature data - it is result of adequate control, continuous monitoring, and labour in Institution of the highest level.

J.K., M.R., L.A., T.J., M.H., S.K.: Medical ethics in Neonatal Care.

PO31: Neonatal Jaundice: A Rare Manifestation of the Deficiency of Alpha-1antitrypsin

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Introduction: The deficit of alpha1-antitrypsin (A1AT) is a hereditary disease, clinically under diagnosed, which affects the lungs, liver, and rarely the skin. Neonatal jaundice with liver damage is one of its presentations with very variable evolution.
Clinical Case: A term newborn, male, with appropriate weight, jaundiced at 24 hours of life. The pregnancy was complicated with gestational diabetes and hypothyroidism, that was treated with levothyroxine 10 days before delivery. The mother's blood group was O Rh+. Analytical study carried out in newborn revealed cholestasis - total bilirubin (TB) 8.4 mg / dl and direct bilirubin (DB) of 2.2 mg/dl. Direct Coombs test and eluate were negative. The examination was normal except for jaundice. Urine and feces were normal. The additional study performed was normal - thyroid function, coagulation studies, and urinary sediment. The urine culture was negative too. Between D1 and D6 a progressive increase of DB has ocurred with a slight increase in transaminases. The newborn made phototherapy between D1 and D5 of life. By the seventh day of life a gastroenterology consultation was held. Urine samples were collected for detecting reducing substances and CMV DNA in urine which were both negative. Abdominal ultrasound in the fasting state and after meal was normal. The assay of A1AT of 29 mg/dl confirmed the suspected diagnosis. After initiation of treatment with ursodeoxycholic acid and liposoluble vitamins a clinical improvement occured with reduction of the parameters of cholestasis. Maximum values of TB 16.8mg/dl, DB of 5.7 mg/dl and GGT of 1702 IU/L.
Conclusion: With this case we want to highlight the importance of the deficit of alpha1-antitrypsin as a differential diagnosis of cholestatic jaundice in newborns.

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PO32: Nonimmune Hydrops Fetalis in a Tertiary Center

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Introduction: With the widespread use of Rh(D) immune globulin nonimmune hydrops fetalis (NIHF) now accounts for almost 90 percent of hydrops cases, with an incidence of 1/1500 - 1/3800 births. The causes of NIHF are heterogeneous and include cardiac, pulmonary, metabolic, hematological, infectious and idiopathic. Notwithstanding with the advances in the diagnosis and treatment, its morbidity and mortality are still high. Intrauterine evaluation and management provided at a tertiary center may improve perinatal outcome.
Aims: Characterize the cases of NIHF admitted at level III Center, reference for cardiac, surgical and metabolic patients.
Methods: A retrospective and descriptive study of the newborns with NIHF admitted to the Neonatal Intensive Care Unit of São João Hospital, between 1997 and 2012. Data on pregnancy, delivery, perinatal approach, etiological evaluation and outcome were collected.
Results: Twenty-two cases were studied, with a median gestational age of 32 weeks (26-39) and median birth weight 2520g (884-4270), including 21 preterm (95.5%). Twelve (54.5%) were females. C-section was performed in 17 (77.3%) and 21 (95.5%) needed resuscitation in the delivery room. Antenatal diagnosis was made in 15 (68.2%), and 4 received in uterus treatment. The etiological diagnosis was made in 20 (91.0%). The most common etiology was cardiovascular (n = 8), with 6 arrhythmias; hematological (n = 6); lymphatic malformation (n = 2); infectious (n = 2); chromosomal (n = 1); and metabolic (n = 1). Twenty-one (95.5%) patients needed mechanical ventilation for 11 (1-41) days and 12 (54.5%) needed a drainage (thoracentesis / paracentesis). Fifteen (68.2%) needed packed red blood cells transfusion. The median length of hospital stay was 16 (1-77) days. Thirteen (59.1%) neonates were deceased. Six of the survivors (n = 9) had a normal cranial ultrasound.
Conclusion: The prevalence of NIHF at our unit was 3:1000. The mortality rate is still high, according to literature. The prompt etiological diagnosis and its proper ante and postnatal management are the most important steps to reduce the morbidity and mortality of this condition, as well as to provide information on prognosis and genetic counseling.

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PO33: Perinatal Asphyxia: A Casuistic Report

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Introduction: Perinatal asphyxia is a cause of major morbidity worldwide, responsible for 23% of all neonatal deaths and it is the fifth cause of death before 5 years of age. It is responsible for hypoxic-ischemic encephalopathy, which may result in long term sequelae such as cerebral palsy, mental retardation and learning difficulties. Risk factors are found in some cases, but others happen for no apparent reason.

Methods: descriptive study based on the clinical chart consultation of a convenience sample of patients, who suffered perinatal asphyxia in a secondary hospital. The analysis focused on risk factors, association with hypoxic-ischemic encephalopathy, resuscitation and stabilization measures, diagnostic workup and sequelae, between January 2001 and December 2010.
Results: We analyzed 34 cases of perinatal asphyxia occurring during 10 years, 29 of which required transfer to a tertiary hospital, to an intensive care unit. The majority of cases were term pregnancies (82.4%) and deliveries were mainly C-sections (38.2%) or eutocic deliveries (38.2%). Risk factors included mainly fetal bradicardia (*n* = 5), placental abruption (*n* = 3), non supervised pregnancies (*n* = 2) and drug use (*n* = 1). Perinatal asphyxia was responsible for neonatal encephalopathy in 50% of cases. It manifested as seizures in 32.4%, hypotonia in 29.4%, hypertonia in 14.7%, feeding intolerance in 14.7%, hyporeflexia in 8.8%, hypereflexia in 5.9% and irritability in 8.8%. Regarding visceral involvement, liver enzyme increase was present in 26.5%. In patients that presented with seizures the electroencephalogram showed no abnormalities in 85.3% and mainly burst suppression in the remaining cases (*n* = 2). Cranial ultrasonography was performed in 52.9% and 14.7% showed abnormalities, the most common of which was hyperechogenicity (60%). Non invasive ventilation was performed in 5.9% and 82.4% required invasive ventilation. Perinatal asphyxia resulted in long term sequelae in 20.6%, mainly cerebral palsy (33.3%).
Conclusions: This study shows that perinatal asphyxia is an important cause of death and morbidity. A minority of cases presented with risk factors, some of which could be subject to intervention, such as unsupervised pregnancies and drug use. Patients followed up in time showed a significant percentage of long term sequelae, mostly cerebral palsy, which required a multidisciplinary approach.

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PO34: Prenatal Diagnosis of Cardiac Rhabdomyoma as a Marker of Tuberous Sclerosis

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Introduction: Tuberous Sclerosis (TS) is an autosomal dominant multisystemic disorder characterized by development of hamartomas in different organs such as heart and brain. Cardiac involvement may be the only finding in prenatal and neonatal periods.
Case Report: We report an infant male, first son of non consanguineous healthy parents, low socioeconomical status, with unremarkable family history. Full term pregnancy with prenatal diagnosis of an intraventricular right mass at 29 weeks compatible with rhabdomyoma. No other anomalies detected. Normal delivery and uneventful neonatal period. Postnatal echocardiography confirmed the presence of multiple intraventricular masses, without hemodynamic dysfunction and progressive regression over time. Neonatal cerebral ultrasound was normal. At 3 months old we observed multiple depigmented spots on the trunk and limbs, sparing face, about 0.5 cm in greatest diameter, and a dorsal large lesion compatible with Shagreen patch was present at 17 months old. Cerebral magnetic resonance imaging at 16 months revealed multiple cortical and periventricular hamartomas. A mosaic deletion was found on 26-33 exons of Tuberous Sclerosis Complex-2 (TSC-2) gene. After etiological investigation, the mother abandoned the consultations and had two more children without prior genetic counseling. Now aged 3 years old, this child has got a borderline psychomotor development, with severe sleep disturbance, and an hyperactive behavior, without seizures so far. Normal neurologic examination.
Discussion: This case emphasizes the role of echocardiography in early diagnosis of tuberous sclerosis through prenatal detection of a cardiac rhabdomyoma, which must motivate careful investigation of fetal morphology (namely the central nervous system), in order to identify other potential anomalies and plan postnatal multidisciplinary follow-up.

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PO35: Congenital Syphilis: A Reemerging Disease

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Introduction: Congenital syphilis is still a public health concern in the 21st century and an increase in number of cases is described on the literature. We report 3 cases diagnosed in a second level hospital during an 8 month period.
Case report 1: Female newborn, term pregnancy with a 1st trimester Blood Venereal Disease Research Laboratory (VDRL) positive (titre 1/8) and a 2nd trimester Treponema Pallidum Heamagglutination Assay Test (TPHA) positive (titre 1/1280). Mother was treated with penicillin 2 months before birth but no VDRL follow-up was performed. Cesarean delivery, birth weight: 3700g. Newborn and mother VDRL was positive (titre 1/4). Cerebrospinal fluid analysis (CSF) was normal. She was treated with penicillin for 10 days and discharged clinically well.
Case Report 2: Female preterm newborn, mother with regular cocaine consumption and low socio-economic background, was diagnosed to be VDRL positive (titre1/4) on delivery day.Unsupervised pregnancy. Birth at 31 weeks, birth weight: 1365g. Clinical examination was normal and newborn VDRL and syphilis serology were negative. The treatment was performed with penicillin for 10 days.
Case report 3: Newborn, female, mother with positive VDRL on 2nd and 3rd trimesters, titre 1/16 and 1/64, respectively, and prenatal ultrasound (33 weeks) with hepatoesplenomegaly and intracranial hyperechogenic formations. Mother was treated in last month of pregnancy with penicillin. Pre-term distocic delivery, birth weight: 1925g. Clinical examination at birth showed cutaneous pallor, multiple petechiaes and hepatoesplenomegaly. Laboratory findings: anemia, leukocytosis, thrombocytopenia and high liver enzymes, positive VDRL (titre 1/256), positive TPHA and fluorescent-treponema antibody-absorbed test imunoglobulin M (FTA-ABS). CSF was normal. She also developed acute renal failure, hypertension and hepatic colestasis. Tibial and femural osteochondritis was found on the radiographic examination. Cerebral ultrasound showed bilateral subependymal hemorrhage and frontoparietal and periventricular hyperechogenicity. She was treated with penicillin for 14 days.
Discussion: Serologic tests in newborns may be negative even if the mother is VDRL-positive, which can pose diagnostic challenges. Nevertheless, these newborn must be treated and undergo proper follow-up. We hereby emphasize the importance of routine screening of pregnant women for a well-know, reemerging disease, with easy and cost-effective treatment.

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PO36: Iniencephaly: A Case Report

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Introduction: We present a case of an iniencephalic boy first des-

cribed in Estonia born at 36 +1 weeks of gestation.
Background: Inencephaly (IE) is a rare neural tube malformation characterized by extreme retroflexion of the head with the absence of neck due to spinal deformities. The exact ethiology of IE is not known. The overall incidence of IE is 0.1 to 10 per 10,000.
Materials and methods: A 17-year-old primipara visited obstetric out-patient department regularly as a normal pregnant patient. Due to the suspicion of fetal hypotrophia at gestational age (GA) 35 +1 ultrasonography (US) was performed. Estimated fetal weight was 1170g, which corresponds to GA 28+4 weeks. At US increased head circumference, short and hyperextended neck and the upward turned face were noticed. Fetal spine was deformed, but no cephalocele or meningocele was detected. There were no fetal movements; arms, wrists and knees were hyperflexed and the fists were clenched. Computer tomography (CT) was performed to plan the method of delivery. Cesarean section was performed at GA 36 + 1 because of dysproportion of maternal pelvis and fetal head size and position. Birth weight was 1080 g, length 33 cm, head circumference 29.5 cm. Apgar score 1/1/0. The baby died at 7 minutes after delivery. According to previous decision of the medical council and the consent of parents, resuscitation was not performed. The above described US finding was confirmed. He had dysmorphic phenotype: posteriorly sloping forehead, hypertelorism, blepharophimosis, depressed nasal bridge, bifid nasal tip, cleft palate, microretrognathia, low-set dysmorphic ears, short neck, narrow deformed thorax, wide-spaced inverted nipples, contractures, club hands, club foot, cryptorchid testes. The preliminary results of the genetic investigations were normal, karyotype was 46,XY. Necropsy of the newborn showed congenital sceletal, cranium and brain malformations, palatochisis, agenesia corpus callosum, bilateral ventricular enlargement, right kidney hydronephrosis. The placenta was hypoplastic with a disorder of maturation. Clinical and pathological diagnoses conformed.
Conclusion: Iniencephaly is a very rare untreatable malformation. This is the first presentation of IE patient in Estonia.

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PO37: Expectant Management of Premature Rupture of Membranes between 18 and 24 Weeks' Gestation

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Introduction: Preterm Prelabour Rupture of Membranes (PPRMO) prior to 24 weeks gestation is uncommon (< 1% pregnancies) but accounts for significant neonatal and maternal morbility and mortality. Management includes termination of pregnancy (TOP) or conservative management with administration of antibiotics and corticosteroids.
Methods: We conducted a retrospective study, including patients presenting with PPROM from 18 to 24 weeks gestation between January, 2010 and December, 2011. Statistical analysis was in SPSS®. Our aims were to asses neonatal and maternal complications of the expectant management of pregnancies with PPRMO prior to 24 weeks and define the prognostic factors in order to give objective informations to parents facing these obstetric situations.
Results: A total of 19 pregnant women, 21 fetuses were included. Four women patients agreed with medical TOP. Among the remaining 17 fetus, the median latency period was 27 days and the median gestational age (GA) at delivery was 25,3 weeks. Overall, 12/17 neonates were live-births. The main prognostic factors were gestational age at ROM (p = 0.005) and the use of antenatal corticosteroids (p = 0.011). There were six cases of pulmonary hipoplasy. All twelve of the live-births had neonatal respiratory distress syndrome and in 33.3% sepsis was diagnosed. Severe intraventricular haemorrhage (IVH > 2) was rare (1/12). In general survival rate was 17.6%, however in GA from 18 to 19+ weeks, was 0%, from 20 to 21+ weeks was 25% (1/4) and from 22-23+ weeks was 22.2% (2/9). The percentage of infants born after 24 weeks and still alive was 25% (3/12). Maternal chorioamnionitis, sepsis or death weren't observed.
Conclusions: Neonatal survival is positively associated with gestational age at ROM and use of antenatal corticosteroids. In very early midtrimister PPROM (< 22 weeks), complications rate outweighs the poor neonatal outcome and expectant management should be reconsider.

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PO38: Are Neonates Born with Ductal – Dependent Congenital Heart Defects Affect by Cardiorenal Syndrome?

Malgorzata BAUMERT, Piotr SURMIAK, Malgorzata FIALA

Introduction: Cardiorenal syndrome (CRS) is defined as a pathophysiologic disorder of the heart and kidneys whereby acute or chronic dysfunction of one organ may induce dysfunction of the other. The aim of the study was answer to the question: if newborns with Congenital Heart Defects (CHD) were affect by Cardiorenal Syndrome?
Methods: Thirteen newborns with Ductal – Dependent forms of Congenital Heart Defects (HLHS – 6, CoA – 5, DORV – 1, TAC – 1). The control group consists of 20 healthy newborns.
Umbilical cord blood of newborns from case and control study were taken to measure level of serum NGAL (Neutrophil gelatinase – associated lipocalin) and plasma total Homocystiene (Hcy). Data were tested for normality with the Shapiro – Wilk W test. Data were compared between cases and controls using the *U* Mann – Whitney test. The associations between variables was measured by Spearman's rank correlation. The $p < 0.05$ was considered statistically significant.
Results: There were no statistically significant differences between case and control group regarding the gestational age, number of pregnancy, the state of newborns according to Apgar score in the 1st minute after delivery, birth weight and mother's age were found. We observed significantly higher level of NGAL and Hcy in newborns with CHD compared with healthy children. There was also positive correlation between NGAL and Hcy concentrations in newborns with Ductal – Dependent CHD.
Conclusion: In neonates born with Ductal – Dependent Congenital Heart Defects the Cardiorenal Syndrome may develop.

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PO39: Neonatal Outcomes in Triplets

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Introduction: The rate of triplet pregnancies has increased substantially over the past decades due to the use of assisted reproductive technology. An important factor to be considered is that triplets are in disadvantage in all perinatal aspects when compared to singletons and twins, thus analyzing which subsets are at particular risk can help develop new strategies to improve outcomes. The

mean gestational age of triplets is 32 weeks, contributing to 91.6% being premature and 92% born with low birth weight (< 2500g).
Methods: Retrospective, descriptive and analytical study of all triplet pregnancies from January 1995 to January 2012 born in Maternidade Alfredo da Costa, Lisbon, Portugal. Perinatal outcomes were analyzed and a 5 year follow up was assessed when possible. Triplets who died in utero or went through pregnancy reduction were also included. All non-triplet pregnancies were excluded.
Results: A total of 84 pregnancies were included, 8 were monochorionic, 33 bichorionic and 43 were trichorionic comprising a total of 240 neonates. The mean gestational age in the monochorionic group was 31 weeks, 31.8 weeks in the bichorionic group and 32.2 weeks in the trichorionic group. The mean birth weight in the monochorionic group was 1475g, in the bichorionic group was 1609g and 1626g in the trichorionic group. The mean number of days in the intensive care unit was 7.7, but 38 neonates were transferred to other hospitals. Neonatal complications were assessed and 7.9% had early sepsis (*n* = 19) while 20.8 % (*n* = 50) had late sepsis, the most common agents being S. epidermidis and S. aureus. A total of 24.2 % (*n* = 58) neonates were treated with surfactant and 12.5% (*n* = 30) neonates needed ventilation. Fifteen neonatal deaths occurred, 7 in the bichorionic group while 6 were in the trichorionic neonates.
Conclusion: As demonstrated in previous studies worst outcomes are present in monochorionic and bichorionic, compared to trichorionic triplets. Neonatal mortality was similar in the Maternidade, with an average of 6.2%, compared to 5.9% reported.

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PO40: A Two Penis Boy: Etiologic Challenges

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Introduction: Sacrococcygeal teratomas are relatively uncommon tumors, which may be present at birth or in the prenatal period, with an estimated incidence of one in 35000 to 40000 live births. They contain derivatives of the three embryonic germ layers, arise from the coccygeal region and can grow intra-abdominal or intrapelvic.
Clinical case: A 36 year old woman conceived with in vitro fertilization, having no abnormal medical or obstetric history. Ultrasounds were normal displaying a dichorinonic triamniotic pregnancy. A caesarian section was performed at 34 weeks of gestation. The second boy of triplets was born, having an Apgar score of 9 /10, weight of 2425 grams. The physical examination revealed a congenital malformation of 12 mm by 9 mm of smooth, soft, spherical pedunculated mass in the perianal region with cylindrical 5 mm form attached, similar to an accessory penis and scrotum. The neonate performed an abdominal, pelvic and renal ultrasound exhibiting normal structures with an external congenital malformation measuring 13.8x8.7 mm, without apparent connection to the renal or vesicle structures, compatible with an accessory testicle. The MRI however showed a complex structure, predominantly composed of adipose tissue with a cystic component, mostly extrinsic but with extension to the perianal region with fibrous tissue, compatible with a type I sacrococcygeal teratoma. He was referred to a surgical consult and will have surgery before turning six months old.
Discussion: Sacrococcygeal teratoma is the most common congenital tumor present at birth. This presentation posed specific diagnostic issues since the shape of the teratoma was particularly uncommon and reassembled an accessory scrotum. According to the classification of the surgical section of the American Academy of Pediatrics the type 1 sacroccygeal teratoma (predominantly external with minimal presacral component) is the most common type with an incidence of 47%. The recommended treatment is early surgical resection with complete excision of the tumor and coccygectomy to prevent recurrence.

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PO41: A Population of Adolescent Mothers in a Second Level Portuguese Hospital: Our Perspective

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Introduction: generally, a pregnancy in adolescence is faced as a negative event. Moreover, teenage childbearing may carry specific problems for the mother. This all results in a wide range of adverse (medical, psychological, developmental and social) consequences both for the mother and baby.
Methods: retrospective descriptive study aimed at characterizing the population of adolescent mothers (younger than 20 years old) and their infants, born at Vila Franca de Xira Hospital in 2011, and comparing it to the same subpopulation during 2004. Authors evaluated social-demographic, obstetric and neonatal outcomes obtained from medical reports.
Results: authors found 75 births from adolescent mothers out of 1022 births, in 2011. There was a big increase in this number compared to 2004 data (28 births out of 1351). The median age of mothers was 18 and fathers 23. Forty-seven percent of adolescent mothers didn`t have basic education. Thirty-five percent of mothers and 20% of fathers were unemployed, 23% of mothers and 7% of fathers were students. Twenty-four percent of mothers smoked during pregnancy. Concerning prenatal care, 37% of mothers attended less than 5 medical appointments during their pregnancies, more than in 2004 (11%). There were 8% premature and 5% low birth weight newborns among adolescent mothers. The median birth weight was 3160g. In 4 cases, first minute Apgar score was < = 5. There were neonatal complications in 37% of cases, specially jaundice (21%), followed by feeding problems (9%). There was no mortality. There was a known social service intervention in 10 cases. A pediatrician follow-up was recommended to 39% of infants.
Conclusions: In 2011, 6.6% of all births that occurred at Vila Franca de Xira Hospital were from adolescent mothers. The collected data is consistent with the fact that teenage childbearing is more associated with adverse parents social-demographic conditions, such as lower economic background, poorer educational status and more difficulties in adequate parenting performance. For that reason, there is a need to prevent adolescent pregnancy and to adequate medical and social assistance to the specific needs of these young parents and their infants.

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PO42: Congenital Hypothyroidism: A Diagnosis To Be Considered

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Introduction: Congenital hypothyroidism (CH) usually presents with no symptoms at birth. However, rare forms of presentation featuring unspecific manifestations have been reported.
Clinical case: a female term infant, born to a 17-year-old healthy

mother following an uneventful pregnancy, was delivered by vacuum with difficult and prolonged extraction, weighing 2985g at birth. Apgar score 4/7/9 at 1/5/10 minutes. The patient was admitted in the Neonatal Care Unit, in order to maintain clinical surveillance. Upon initial physical examination, generalized hypotonia, rare spontaneous distal motor activity, right parietal cephalohematoma, ecchymotic mask, decreased sucking and swallowing reflexes and right brachial paresis were noted. Laboratory exams revealed elevated creatine kinase (CK) (7452 IU/L), CK-MB (439 IU/L) and lactate dehydrogenase (3157 IU/L). Persistence of hypotonia and feeding difficulties were the dominant features. Feeding intolerance and abdominal distention were noted when enteral feeding was introduced on day 2 (negative laboratory markers of infection). Mild hyponatremia was observed on day 3 of life, interpreted in the context of syndrome of SIADH. Cranial ultrasound on day 2 was normal. Magnetic resonance imaging of the brain, neck and right shoulder showed no abnormalities. Neonatal metabolic screening performed at day 6 revealed elevated serum thyroid-stimulating hormone (482 mU/L) and established the diagnosis of CH.
Treatment with levothyroxine 25ug/day was initiated on day 12, with normal serum fT4 four days later. The patient was discharged on day 26, maintaining right brachial paresis, with improved tonus and primitive reflexes and adequate feeding tolerance. A multidisciplinary follow-up plan was implemented involving Endocrinology, Cardiology, Plastic Surgery and Physical and Rehabilitation Medicine.
Discussion: The authors present this case in order to draw attention on the matter of CH which might express itself through symptoms related to other clinical entities. In this particular case, the clinical context was suggestive of perinatal asphyxia, with precarious neurological evolution. However, ultrasound imaging and MRI results incompatible with the previous diagnosis led to the suspicion that a different clinical entity could be causing the previously observed symptoms.

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PO43: Late Preterm Birth in a Perinatal Support Hospital: A Look Over the Last 5 Years

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Introduction: Late preterm infants (LPT), defined as infants born between 34 and 36 weeks and 6 days, increased over the last decade accounting for more than 70% of all preterm births and are related to higher morbidity and mortality rates.
Methods: A retrospective and descriptive study was made in order to characterize the population of LPT admitted to a Neonatal Special Care Unit (UCEN) of a Perinatal Support Hospital, between January 2007 and December 2011. Statistical analysis was performed using Excel® 2007.
Results: Overall, 7493 neonates were born, 5.8% were preterm, 92% of which LPT and of these, 38.8% required hospitalization in UCEN. Additionally 9 LPT were admitted from other units, so our study included 164 LPT. The mean gestational age was 35.6 weeks. Mean age at admission was 1.5 days (< 1-10), and the average length of stay 4.6 days (< 1-21). The pregnancy was followed in 92% and there was spontaneous onset of preterm labor at 7%, preeclampsia in 4%, gestational diabetes in 3% and urinary infection in 2.5%. Cesarean delivery occurred in 38% (non progression of labor-16%, twin pregnancy-16%, fetal distress-13% and breech presentation-11.5%). The mean birth weight was 2499g (1350-4300g) and 9.8% were light-for-dates. The most common diagnoses were jaundice in 84%, respiratory disease in 50%, feeding difficulties in 17% and infectious risk in 12.2%. Thirty-two percent were exclusively breastfed, 53% had complementary feeding. Phototherapy was required to 77.5% and 19% needed antibiotics. Ventilation was required to 7.3%, and 10% were transferred to other hospitals. Readmission in the first month of life occurred in 8% and the main reasons were jaundice (53%), poor weight gain (40%) and respiratory infection (33%). There were no deaths.
Conclusions: This study intent to highlight that late preterm births cause significant morbidity and it is important that health professionals are aware of their specificities. The most usual complications were jaundice, respiratory distress and feeding difficulties. It was also observed a high rate of readmission over first month, which is consistent to that described in the literature. The authors point out strategies to reduce preterm births, optimize breastfeeding, earl detect and treat associated complications.

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PO44: Clinical and Laboratorial Features of Neonatal Classical Congenital Adrenal Hyperplasia (Cah) in a Tertiary Pediatric Care Hospital

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Introduction: CAH is a group of autossomal recessive disorders most often caused by enzyme 21-hydroxylase deficiency. This defect results in impaired cortisol and (in most cases) aldosterone synthesis. The phenotype of CAH varies greatly and is usually classified as classical or nonclassical, depending on the degree of 21-hydroxylase activity. The classical form is divided into salt-wasting (SW) and simple virilizing (SV) forms. The SW form can lead to severe mineralocorticoid deficiency in the first weeks after birth with inability to conserve urinary sodium causing hyponatremic dehydration and hyperkalemia. In the classical SV form, virilization begins prenatally and females present with ambiguous genitalia at birth.
Methods: Retrospective analysis of the medical records of the neonates with CAH admitted to the paediatric endocrinology unit of a tertiary centre over a six year period (January 2006 to May 2012). Clinical and laboratory parameters were reviewed. CYP21 gene analysis was performed in all patients.
Results: Nine newborn children met inclusion criteria (6 male and 3 female). The SW form was diagnosed in all cases and 6 developed a salt-wasting crisis with severe electrolyte imbalance at D17 of life (median). Two females presented with virilization of the external genitalia (III and V Prader score). The median serum values found were: 17-hydroxyprogesterone 614ng/ml, renin 500 µUI/ml, ACTH 197 pg/ml, cortisol 10,3 µg/dl, androstenediona 15.7 ng/ml, testosterone 431 ng/dl, DHEAS-SO4 58.5 µg/dl, Na^+ 123.5 mmol/l (min. 103), K^+ 8.2 mmol/l (max. 10.6). Both hydrocortisone and 9α-fludrocortisone were used for treatment. The median initial dose of hydrocortisone required was 40mg/m2/day (max.50 mg/m2/day). Apart from gene deletions/conversions in CYP21A2 >CYP21A1P, the most frequent point mutation in our patient sample was IVS2-13A/C > G, a severe mutation commonly associated to the SW form. There was a positive family history in 3 of the children and 2 of them had prenatal diagnosis and treatment.
Conclusions: Our study provides evidence that males with SW-CAH are more likely to suffer from delayed diagnosis, neonatal salt loss and potentially fatal hypovolemia because there is no genital ambiguity. On the other hand, female virilization is a major problem that can be avoided with prenatal treatment whenever it's possible.

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PO45: Late- Preterm Birth and Maternal Pathology: Experience in Level III of Maternity

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Objectives: The authors want to analise the maternal conditions associated with late-preterm birth and the early complications in this group.
Material and methods: It's a retrospective longitudinal study made in a III-level-unit in Cluj, District University Hospital in 2009. The studied population was late preterm: 34 0/7 - 36 6/7 weeks of gestation. The authors analised: the maternal conditions, the anthropometric data (gestational age, weight, ponderal Index, head circumference, sex), the type of delivery, the Apgar Score (1', 5' and 10'), the early complications and mortality. The statistic program that was used was Statistica VI.
Results: The number of births was of 2406, while the Late-Preterm were 178. The incidence was of 7.40%. The anthropometrics parameters are: Means Weight (95%CI) = 2342.6g (2278-2407), HC(95%CI) = 31.4cm (31-32) and Length (95%CI) = 48.5cm (48-49). Type of delivery was: Vaginal delivery: 23%, C-section 22%, 3% breech presentation for 34w, Vaginal delivery 25%, C-section 16%, 2% breech presentation for 35w and Vaginal delivery: 48%, C-section 35%, 2% breech presentation for 36w. The mean of Apgar score (95%CI) = 8.7 at 1min. The main cause associated with late preterm birth was the premature rupture of membrane: 31.25% for 34w; 39.53% for 35w, 40.23% for 36w. Gemelarity was the second cause: 25% for 34w, 16.28% for 35w, 11.49% for 36w. In addition to these are: maternal hypertension, IVF (in vitro fertilization), hemorrhage placenta praevia, isoimmunization, oligoamnios, coma, diabetes type I, mammary neoplasm, urinary tract infection, preeclamsia, infection, HIV, new viruses infection (H1N1), Hepatitis B and C infection, IUGR, chronic fetal sufferance. The main early complication was respiratory pathology: 16.67% congenital pneumonia, 4.17% hyaline membrane disease (HMD), 6.75 transient tahypneea of the newborn (TTN) for 34w; 2.33% HMD, 6.98% TTN and no pneumonia for 35w and 10.34% TTN and 1.15% congenital pneumonia for 36w. Other early complications were: hyperbilirubinemia 78%, early sepsis 4.87%, seizures 0.35%, hypoglycemia 3 cases. There was only 1 case of death.
Conclusions: The incidence in our study of the late preterm was of 7.4%. The main maternal conditions associated with delivery at 34-36 weeks were the premature rupture of the membranes, gemelarity and maternal hypertension. The most encountered morbidities were transient tahypnea, hyaline membranes disease and hyperbilirubinemia.

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PO46: Outcome of Infants Receiving Intrauterine Transfusion for Red-Cell Alloimmune Haemolytic Disease

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Introduction: Although never studied in randomized trials, the intrauterine transfusion (IUT) continues to be an essential modality for treatment of severe fetal anemia. One of the most common causes is red cell alloimmunization. Among fetuses with erythroblastosis fetalis requiring IUTs, the most prevalent anti-red cell antibodies are anti-D, anti-K1 (Kell), and anti–c. The aim of this study is to review the outcome of infants following IUT for severe alloimmune haemolytic disease in our Maternity over a 10-year period.
Methods: A retrospective analysis of infants delivered in our Maternity, over a 10-year period, which had received IUT for hemolytic disease.
Results: A total of 48 IUT were performed, involving 27 pregnancies, of which 23 were undertaken for red cell alloimmunization. There was one intrauterine fetal death after IUT, in a fetus with severe hydrops (1/23). 5 infants were excluded due to incomplete data. A total of 17 infants were included in the study. Alloimmunization was related to Rhesus D in 94% cases; 23% of the fetuses were hydropic. The mean gestational age at first transfusion was 25.6 weeks and the mean number of transfusion was 2.4 (range 1-5). Intravascular transfusion was the method elected for transfusing the anemic fetus. All pregnancies were delivered between 29 and 37 weeks of gestation (mean gestational age –33.6 weeks; mean birth weight - 2372 g). All 17 infants survived. Neonatal exchange transfusion was necessary in 3 of 17. Approximately 66% of these infants required a top-up transfusion. Late transfusion (> 3 weeks) was required in 50% of infants. In some cases, up to four top-up transfusions were necessary. We used recombinant erythropoietin in 6 neonates. Follow-up after discharge (range 2 months- 5 years; median 11.5 months) revealed one case of language delay; no other infant was reported to have neurodevelopmental impairment. No infant had hearing loss.
Conclusion: This review corroborates the good outcome following IUT, although some infants continue to require transfusions for up to 3 months after birth. Antenatal counselling should address the likely postnatal course for these infants.

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PO47: Birth Asphyxia in The Full-Term Newborn: 10-Year Experience

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Introduction: Birth asphyxia is the third leading cause of neonatal death and the main cause of long-term neurodevelopmental handicap throughout the world. The aim of the present study is to analyse the clinical profile of full-term asphyxiated newborns in our hospital.
Methods: Retrospective observational study. All full-term newborns admitted to the Neonatal Care Unit with Apgar scores < 7 at minute 5 or evidence of hypoxic-isquemic encephalopathy (HIE) were included. Exclusion criteria were major congenital malformation, evidence of severe infection or opioid-induced respiratory depression. Birth asphyxia was defined as an Apgar score < 7 at minute 5, prematurity as a gestational age < 36 weeks and low birth weight as a birth weight < 3rd centile for gestational age. HIE was classified based on the Sarnat & Sarnat score. Data were analyzed for statistical significance ($p < 0.05$) by Chi-square or Fisher exact test.
Results: From 2001-2010 39 newborns fulfilled inclusion criteria. 2 were excluded due to major congenital malformation ($n = 1$) and evidence of severe infection ($n = 1$). 25 inborn and 12 outborn. 54.1% of mothers were under 30 years of age (mean age = 29). 73% of newborns were males. 8.1% of newborns were small-for-gestational age. 56.7% of newborns presented with various stages of HIE: HIE-I 13.5%, HIE-II 27%, HIE-III 16.2%. All newborns (= 2) with Apgar score < 4 at minute 5 developed HIE-III. Seizures occurred in 29.7% ($n = 11$) of infants, all developed encephalopathy. HIE was significantly more common in outborns ($p = 0,026$). 4 infants died (minimum age: 3 days; maximum age: 11 months) all diagnosed previously with HIE-III, 3 of them were transferred after birth to

our Neonatal Care Unit.
Conclusion: Although HIE was predominantly associated with a lower Apgar score this was not the only explanation. There were 2 newborns who developed encephalopathy with Apgar score 7 at minute 5. Outborns were associated with a poorer prognosis compared with inborns, probably because newborns transferred were the most severely asphyxiated. Early identification of high-risk cases and early referral to an intensive care unit may reduce perinatal deaths from birth asphyxia.

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PO48: Morbidity and Mortality of the "Late Preterm" Infants (Gestational Age: 34-366/7 Weeks)

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Introduction: Late preterm infants (LPI) are defined as newborns with a gestational age of $34^{+0/7}$- $36^{6/7}$ weeks. The LPI are mistakenly considered as 'near term' and that is because both the morbidity and perinatal mortality at these gestational ages (GA) are being referred as increased. This is due to immaturity of the LPI and their delayed transition from intrauterine to extauterine life.
Purpose: To determine the incidence, morbidity and mortality of LPI in a tertiary care perinatal center.
Patients and Methods: A retrospectively study was undertaken in all deliveries that took place in our perinatal center from April 2004 until December 2011. It was recorded both the morbidity and mortality.
Results: Out of 10650 deliveries, the 1280 (12%) were referred to GA $34^{+0/7}$- $36^{6/7}$ weeks, of which 1004 (78.5%) were carried out by cesarean section (CS). Two hundred thirty-nine deliveries (239) were multiple [231 (18%) twins, and 8 (0.6%) triplet] and 1041 (81.4%) were singletons. A total of 1527 infants were studied (770 males) of which 326 (21.3%) required direct admission to the neonatal intensive care unit (NICU). The perinatal mortality rate was 9.8‰ [15 deaths were recorded (8 intrauterine, 4 in delivery room and 3 in NICU)]. Table 1 describes the incidence of births, morbidity and mortality of infants per GA.
Conclusions: Delivery in GA between 34 - 366/7 weeks is associated with increased neonatal morbidity and perinatal mortality.

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PO49: Low Birth Weight: Which influences?

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Background: Birth weight (BW) is the factor with strongest influence on neonatal morbid-mortality. Low birth weight (< 2500g) (LBW) is a public health problem worldwide with increasing prevalence, associated with greater risk of respiratory, cardiac, metabolic, developmental and vascular diseases. It may occur due to restriction of intrauterine growth (IUGR), prematurity, combination of both, or other factors.
Material and Methods: A retrospective and descriptive study was done on the basis of clinical files of neonates (NN) born in a level II hospital in 2011. The gestational age (GA) was determined by means of the first ultrasound and assessed in completed weeks. All neonates with a GA lower than 37 weeks were classified as preterm, those with BW lower than 2500g and higher than 1499g as LBW. A BW less than the 10th percentile for the GA was assessed as intrauterine growth restriction (IUGR).
Results: During the period of the study, 1120 deliveries took place that originated 1130 neonates. Of the total of them, 5.75% (n = 65) had LBW, 0.53% very low birth weight (BW lower than 1500g) and 0.09% extreme low birth weight (BW lower than 1000g). Of the LBW neonates, the average BW was 2174g, the average GA was 35.9 weeks, with 56.9% of preterm neonates. In over half of the cases IUGR was detected, associated with prematurity in 22.9% of the cases. The average age of the mothers was 28.9 years with 13.9% aged over 34 years, 24.6% had one and 12.3% had two or more diseases. The most frequent causes were infection during pregnancy (12.1%, placenta pathologies and high blood pressure (6.7% each). A 10.8% rate of cigarette smoking was observed. About one fourth of the pregnancies (24.3%) was considered as not dully followed. A fifth of the neonates with LBW (23.1%) were born of twin pregnancy.
Conclusions: Although the low birth weight rate has been increasing worldwide, in this study a lower rate was detected. The authors view as essential the characterization of the NBLBW and the assessment the factors that are most frequently associated with LBW so that action can be taken to prevent it.

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PO50: Congenital Toxoplasmosis Sequelae in 21th Century: Still a Matter of Concern

Table 1: Morbidity and mortality of LPI infants

GA (weeks)	**34 – 34$^{6/7}$**	**35 – 35$^{6/7}$**	**36 – 36$^{6/7}$**
N (number of deliveries)	273	369	638
Cesarean Section	237 (87%)	298 (81%)	469 (73.5%)
N (number of infants, % of total number of LPI)	340 (22,2%)	457 (30%)	730 (47.8%)
Birth Weight (gr.)	2205 ± 409	2457 ± 449	2706 ± 422
NICU	230 (67%)	192 (42%)	89 (12%)
RDS	58 (17%)	40 (8.7%)	6 (0.8%)
Sepsis	29 (8.5%)	9 (1.9%)	4 (0.5%)
'Abnormal' Brain Ultrasound	23 (6.7)%	27 (6%)	7 (1%)
Mortality	4 (11.7‰)	7 (15.3‰)	4 (5.4‰)

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Introduction: Congenital toxoplasmosis is a potentially serious disease. Although much more frequent in developing countries, the incidence in Europe is 1-5/100,000 live births. Primary prevention is crucial and based on food preparation and hygiene measures, closely related to the socioeconomic status.
Clinical Case: 12 months-old male infant, born of young, non-consanguineous parents, with poor socioeconomic status including two eldest daughters institutionalized, poor hygiene status with close contact with soil and farm animals. The pregnancy surveillance was poor with only one serologic surveillance (in the second trimester) revealing: immunity for rubella and citomegalovirus, and negative for toxoplasmosis and other serologic tests. The infant was born at term by vaginal delivery complicated with the presence of meconium stained amniotic fluid, and respiratory depression with good response to resuscitation, Apgar score 1'= 4, 5' = 4, 10' = 8. He weighed 3.2kgs and no malformations were apparent. Blood analysis 1h after birth showed elevated transaminases (ALT 86 U/L, AST 113l/L), CK-MB (865 UI/L) and C-reactive-protein 12mg/dL. Antibiotics were started, and the blood culture was negative. Seizures started 12h after birth with good response to fenobarbital. Cerebral ultrasound in the first postnatal week evidenced bilateral vasculitis in basal ganglia associating to diffuse bilateral calcifications at age of one month, confirmed in MRI. Toxoplasmosis serology was notorious: IgG 1020.20UI/mL (> 9 UI/mL) and IgM 1.8 UI/mL (> 0.65 UI/mL); simultaneously the mother had positive IgM (3UI/mL) and IgG (1321.9UI/L) for toxoplasmosis, suggesting recent seroconvertion. The infant was treated orally with folinic acid, sulfadiazine and pirimetamine. At the age of 2 months poor eye tracking was noticed associated to bilateral papilar pallor. After discharge and on follow-up at 12 months of age he had otherwise normal psychomotor development without earing dysfunction. His socioeconomic issues are being solved, but still affecting the adherence to the treatment and to the multidisciplinary surveillance.
Discussion: Facing the current national socioeconomic crisis the medical community should reinforce the educational programs and proper medical surveillance. Despite the apparent satisfactory neurodevelopment outcome up to the age of 12 months, vision impairment and late neurologic sequelae cannot be excluded requiring long-term follow-up considering the early abnormal neuroimaging findings.

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PO51: Neonatal Outcome in Low Birth Weight

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Introduction: Newborns with low birth weight (LBW) are considered those who have a birth weight under 2500g but greater than or equal to 1500g. LBWs have been shown to be at greater risk of poor outcomes than normal weight newborns, since their immaturity leads to particular problems.
Methods: Retrospective descriptive study of neonatal complications in LBW infants who were born between January and December 2011 in the Neonatology Unit of a Level II Hospital. Data were obtained through the SONHO program (Integrated Hospital Information System) and SAM (Medical Support System).
Results: During the study period 1120 deliveries were recorded, which resulted in 1130 live births (LB). A total of 65 LBWs were identified (5.7% of total LB), with a mean birth weight 2174g and gender distribution of 36 females (55.4%) and 29 males (44.6%). Prematurity was identified in 37 cases (56.9%), most of them (29 cases) being late preterm infants (34 to 36 weeks), with a mean gestational age of 35.9 weeks. In more than half of the total LBWs (35 cases – 53.8%) was also detected an intrauterine growth restriction (IUGR). Fifty-five LBW infants (84.6%) had some type of complication. Jaundice requiring phototherapy was present in 23 cases (35.4%); feeding problems were present in 28 cases (43.1%) and hypoglycemia in 13 (20%). Respiratory distress syndrome was evident in eight newborns (12.3%), four with hyaline membrane disease and two with transitory tachypnea of newborn. Five newborns suffered from sepsis and one with grade II intraventricular hemorrhage. Eleven (16.9%) LBW infants required some kind of respiratory support, mainly nasal continuous positive airway pressure (nCPAP). Also 11 required an umbilical vein catheterization, and 15 (23.1%) were under intravenous antibiotic therapy. The mean hospitalization time was 6.3 days. No mortality was recorded, and the transfer rate to a tertiary hospital was 9.2% (6 cases).
Conclusion: LBW is associated with prematurity and intrauterine growth restriction, and may be an important risk factor responsible for increased neonatal morbidity.

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PO52: Perinatal Risks Beyhond Term: An Evidence Based Point of View

Celia IGLESIAS NEVES, Ana Teresa MARIA, Alexandra QUEIROZ

Post-term pregnancy, which is the one that extends to or beyond 42 weeks (294 days) of gestation age (GA),[1] has become an increasingly rare situation mainly since SOGC published its guidelines in late 90's. The following recomendation:[2,3] *"…Women should be offered induction at 41+0 to 42+0 weeks, as the present evidence reveals a decrease in perinatal mortality without increased risk of Caesarean section. (I-A)"…* tends to be undertaken in all developed countries. Notwithstanding working at a reference center maternity where that premise is mostly respected, authors felt concerned about their own practice and evaluated their institution's most recent data from an evidence based point of view. 5700 birth charts from 2011 have been retrospectively analized. 1375 were gestations lasting from 40 to 40 + 6 weeks and were matched with the 552 births that occurred after 41weeks. Only healthy pregnancies with fetal growth/ amniotic fluid normal until 40 weeks GA and an ultrasound examination, prior to 20 weeks as desired for GA determination (RCOG –grade A, Cochrane)[4] were matched. Peripartum complications and neonate morbilities (growth abnormalities, fetal distress, hypoxia and meconium aspiration) and mortality were comparatively studied. Knowing that beyond term the well being of the fetus can change quickly, the authors' aim was to contribute to such important discussion evidencing the most probable turned point gestational day, from which and onwards, an irrefutable if any, increasing perinatal risk emerges**.**

DISCLOSURE

The author has indicated that, in defense of ethics, patients were not randomized and there were not financial relationships relevant to this article to disclose.

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PO53: Lactobacillus Reuteri Enteral Supplementation to a Neonatal Preterm Population

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Introduction: Colonisation and multiplication of Lactobacillus Reuteri in the immature neonatal gut mucosa is believed to exert immunoregulatory properties by producing lactic acid and thus providing protection against necrotising enterocolitis and septicaemia in premature neonates.
Methods: To identify the efficacy of enteral supplementation of Lactobacillus Reuteri to a preterm population in controlling NEC, and sepsis we contacted the following study. Thirty eight neonates (19 males and 19 females) were randomly assigned in two groups. Their gestational age was 25-34 weeks of gestation (mean GA: 27.5 weeks) and their birth weight 650-1500gr (mean 890.65 gr) The study group received as oral supplementation a live preparation of Lactobacillus Reuteri 60 x 10^6 microrganisms/5 mls, once daily, over a period of 4 weeks, compared with a group of neonates which received placebo. The neonates were fed either on thawed breast milk or formula milk, according to maternal choice to breast feed. The enrolment was blinded as was the interpretation of results.
Results: One in 19 (1/19) neonates of the study group developed NEC (5.3%) versus 4/19 (21%) in the comparison group. Sepsis was diagnosed in 6/19 (31.6%) of the study group compared with 9/19 (47.3%) of the comparison group ($p<0.05$). The difference did not reach statistical significance.
Conclusion: Oral supplementation of Lactobacillus Reuteri was not proved, contrary to other studies, to reduce the incidence of NEC or sepsis in preterm neonates, although the small number of our study population is a limitation.

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PO54: Value of Early Serum Creatinine in Neonates With Posterior Urethral Valves to Predict Their Renal Prognosis

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Objective: Early diagnosis and treatment of boys with posterior urethral valves (PUV) have improved their outcome. Early prediction of long term renal prognosis may further guide care. In several previous studies serum creatinine (Scr) in early childhood after the neonatal period proved to be a reliable predictor of chronic kidney disease (CKD). We initiated a study to describe neonatal Scr evolution in a PUV population and aimed to establish an association between early Scr trends and their long term renal outcome.
Population and methods: We reviewed the medical records of 43 children with PUV treated in the University Hospitals Leuven between 2001 and 2011. Scr measurements and estimated glomerular filtration rate (eGFR) were collected from the neonatal period throughout childhood.
Results: A poor renal prognosis (eGFR<60ml/min/1.73m²) at age 2 years was observed in 7 patients (19.4%), 4 of them ended up with end stage renal disease (9.8%). We introduced 'percentile curves' of neonatal Scr values for our PUV population. Scr-s above the 75th percentile both at the peak of Scr (2,23 mg/dl) as well as at the Scr values between the 3rd and 6th week of life (3rd:1.81mg/dl, 4th:1.66mg/dl, 6th:1.52mg/dl) were a significant predictor of an impaired renal function at the age of 2 years. By contrast, PUV patients with a peak Scr below the 75th percentile had a significantly better eGFR at age 2 years, with a median eGFR of 75ml/min/1.73m² (range 64–116) versus 26 (16-66) in the patients with a peak Scr above the 75th percentile.
Conclusions: This study identified a peak of Scr as well as a Scr between the 3rd and 6th week of life above the 75th percentile as a prognostic factor for a decreased renal function at 2 years of age. The identification of this high risk group could be of great importance in follow-up and treatment of the PUV population. These adapted percentiles for PUV patients should be confirmed in other cohorts.

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PO55: Composition of the Mother Milk During the First Five Days in Low and High Risk Population

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Objective: Fresh colostrum samples were analyzed for major constituents in healthy and high risk mothers. We hypothesize that the composition of the colostrum in high risk is different and could influence the following neurodevelopment.
Methods: We compared the value of fat, protein, lactose, total solids and energy in colostrum on the second, third and fourth day after delivery of the healthy term newborn using bedside analyser MIRIS. We made the analysis in 30 healthy and 30 high risk mothers. The high risk mothers had minimum three of the five risk criteria. The groups were compared based on BMI why the median in healthy mothers was 26 (kg/m²) and in high risk mothers 25 (kg/m²). There was no significat difference in week of delivery.
Results: The measured level of fat, protein, lactose, total solids and energy was not significantly different between the two groups. The line plot of protein levels discovering a decrease from 4-6 g/100ml on the second day to 1,5-2,5 g/100ml on the fourth day.
Conclusion: Future research in this area might be directed toward refining the critical period during the first days of life, when the high protein levels are crutial for adequate low volume nutrition during the transition period. There was no significant difference between the composition of colostrum in healthy and high risk mothers during the second and fourth day after delivery. Based on our study we were able to establish the optimal nutritional composition of the colostrum in mothers delivering a term healthy newborn.

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PO56: Lactobacilllus Rhamnosus Atc A07fa for Preventing Necrotizing Enterocolitis in Very-Low-Birth-Weight Preterm Infants: A Randomized Controlled Trial (Preliminary Results)

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Background. Evidence suggests that probiotics, as a group, are reducing the risk of necrotizing enterocolitis (NEC). The efficacy of each probiotic strain needs to be evaluated separately.
Objective. To evaluate the efficacy of administering Lactobacillus rhamnosus ATC A07FA (L. rhamnosus) for the prevention of necrotizing enterocolitis (NEC) ≥ 2 by the criteria of Bell in very low-birth-weight preterm infants.
Method. Preterm infants children fulfilling the inclusion criteria (gestational age < 32 weeks and birth weight < 1500 g and partial or full enteral feeding) were enrolled in a randomized, double-blind, placebo-controlled trial. They received L. rhamnosus (commercially available as Lakcid L) at a dose of 1.2 x 10^{10} CFU or a placebo orally, twice daily, for the duration of the hospital stay. The primary outcome measures were NEC ≥ 2 by the criteria of Bell, sepsis and death.
Results. The study was stopped prematurely because of slow recruitment. Data from 55 preterm infants were included in the final analysis. In the experimental group, compared with the placebo group, the risk of developing NEC ≥2 by the criteria of Bell was reduced, however the difference was not statistically significant (1/30; 3.3% versus 4/25; 16%, RR 0.2, 95% CI 0.02 do 1.75). L. rhamnosus did not significantly affect the risk of developing sepsis or death. There was also no difference between the probiotic and placebo groups for any of the other secondary outcomes. No adverse events were reported.
Conclusion. The administration of L. rhamnosus ATC A07FA compared with placebo had no effect on the incidence of NEC. Further studies with sufficient sample size are warranted.

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PO57: Zero Period Prevalence of Necrotizing Enterocolitis in a Tertiary Care Hospital in Sri Lanka

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Introduction: Necrotizing enterocolitis (NEC) is an acute inflammatory disease occurring in the intestines of premature infants, and the commonest gastrointestinal emergency in neonates. The incidence is 1 to 3 per 1000 live births. The mortality is 30% - 50%. Of those infants who acquire NEC, 90% are preterm. Male and female are equally affected. The aetiology is multifactorial. Prematurity, LBW, IUGR secondary to placental insufficiency are important risk factors among them. Feeding policy is another important factor. Respiratory distress syndrome, congenital heart problems, infection and episodes of apnoea make new-borns susceptible to NEC. The clinical presentation: lethargy, abdominal distension, gastric residuals, bilious vomiting, and bloody stools. The diagnosis is made clinically and confirmed by a radiograph. To keep the gut active even after preterm birth it is important to start trophic feeds. Volume varies from 5 – 20 ml/kg/d. We give exclusively BM to all our premature infants and hardly observed any cases of NEC. This led us to find out the prevalence of the disease in our setup with our feeding practices.
Methods: A descriptive cross-sectional observational study was designed on cases of NEC. The study was carried out in NICU Teaching Hospital Peradeniya, Sri Lanka. Collected Data from March 2008 to March 2011 were analysed retrospectively. A total of 952 premature infants were included in the study and GA ranged from 26-36 weeks and birth weight varied from 650g-1800g. All were exclusively fed BM without added fortifiers and no parenteral nutrition or preterm formulas were given. Majority of the infants were started on feeds 0.5cc-1cc within the first three days of life. Feeds were given every three hourly and increased depending on the tolerability. Until they achieved full feeds fluid balance was maintained with 10% Dextrose and electrolytes.
Results: Out of 952 premature infants who were included in the study from March 2008 to March 2011 none of the infants were diagnosed as NEC.
Conclusion: The period prevalence of NEC is 0%.

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PO58: Thoracoscopy Versus Thoracotomy for Esophageal Atresia Repair: Experience of a Teaching Hospital

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Introduction: Thoracoscopic repair of esophageal atresia is one of the more advanced pediatric surgical procedures but is been applied in many centers. In the present study, we compared thoracoscopy with thoracotomy repair of esophageal atresia in a teaching hospital.
Methods: Retrospective observational study was performed and 28 cases of newborns diagnosed with esophageal atresia who underwent surgical correction between January 2007 and December 2011 were analyzed. The maximum follow-up time was five years and the minimum was four months. The information was obtained using the medical records and the data was grouped by epidemiological characteristics of the study population, surgical data, hospitalization data and early and late complications.
Results: Thoracotomy (n = 18) was the most common surgical approach used for the correction of esophageal atresia, despite the increase in the number of cases of thoracoscopy (n = 6). There were four cases of conversion from thoracoscopy to thoracotomy (n = 4). Thoracoscopy, as compared to thoracotomy, was associated with longer duration of surgery (243 ± 47 vs 194 ± 10 min, p = 0.048) and a higher degree of differentiation of the surgeon (Resident-to-specialist: 17/1 vs 6/0, p <.001). There were no statistically significant differences with regard to early and late complications.
Conclusion: Thoracoscopy and thoracotomy are equally safe and effective surgical approaches to esophageal atresia. The use of thoracoscopy is dependent on surgeon's experience in minimally invasive surgery. Studies of long-term follow-up are needed to validate thoracoscopy as the gold standard technique for the treatment of esophageal atresia.

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PO59: Sucking Rhythm from Preterm to Term Newborns Measured with a New Device

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Introduction: In the newborn period the success in oral feeding depends on the adequate coordination of sucking, swallowing and breathing and also on the behavioural states of the newborn. The sucking rhythm is a very good indicator of sucking competence. Also, information about the sucking strength is of great clinical relevance, as it provides information about hidden dimensions of muscular activity and general endurance.
Methods: A device based on a pressure sensor that is pneumatically connected to a pacifier was tested. Assuring a non-invasive measurement with galvanic isolation, it was connected to an A/D Biopac that performs analog to digital conversion (ADC). Time structure and pressure of sucking were measured. The variables analysed were: mean inter-suck intervals, number of burst sucks, mean interval between bursts, minimal and maximal pressure and pressure amplitude. A ten-minute period was recorded to obtain the non-nutritive sucking pattern. In the middle of this period, milk was placed in the mouth of the newborn causing a change of the sucking pattern. The newborns were in the period before feeding.
Results: A sample of 24 newborns with a mean gestational age 30.8 weeks (± 4.7) and mean birth weight 1565.4g (± 809.4). The non-nutritive sucking pattern obtained was: burst duration 4.1 s (± 1.9); sucks per burst 7 (± 3.4); frequency 1.3 Hz (± 0.6); inter-burst pause 21.9 s (± 29.4), and the sucking pressure amplitude 8.7 mmHg (± 4.6). The nutritive sucking rhythm obtained was: burst duration 16.5 s (± 7.0); sucks per burst 20 (± 8.8); frequency 0.9 Hz (± 0.3); inter-burst pause 20.4 s (± 21.5) and the sucking pressure amplitude 14.3 mmHg (±8.1). Preterm (< 37w) and term newborns were significantly different regarding the burst duration and the number of burst sucks. There was also a statistical significant difference between nutritive and non-nutritive sucking pattern concerning the burst duration, sucks per burst and frequency, but not in the sucking pressure amplitude.
Conclusion: The device that was tested is able to measure sucking patterns in preterm or term newborns. It also allowed the observation of changes in the sucking rhythm in the presence of milk, even in the very immature newborns, suggesting different central pattern generators.

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PO60: Feeding Intolerance in Preterm Infants Fed with Powdered or Liquid Formula: A Randomized, Double-Blind Pilot Study

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Background-Aim: Preterm formulas are supplied in powdered or liquid (ready-to-use) forms. Powdered and liquid forms of the same commercial preterm formula may differ in preservative substances although they have almost the same nutritional composition, osmolality and pH. After the introduction of liquid preterm formula in our neonatal intensive care unit two years ago, we have suspected of an increase in the incidence of feeding intolerance and therefore we aimed to investigate this in preterm infants who were fed with powdered or liquid forms of the same preterm formula.
Methods: In a prospective, double blind study, preterm infants who did not have any or adequate breast milk for enteral nutrition, were randomized to receive suplementary powdered or liquid form of the same commercial preterm formula every three hours a day according to the nursery feeding protocol. The pH of gastric fluid was measured in the fasting (just before enteral feeding) and postprandial (one hour after enteral feeding) periods and gastrointestinal complications were recorded during the hospitalisation period.
Results: 78 infants were involved in the study (powdered formula group: 44 infant, liquid formula group: 34 infants). The incidence of FI was significantly higher in infants fed by liquid formula when compared with infants fed with powdered formula (26.5% vs 4.5%, = 0.008) and mean fasting gastric pH was significantly lower (2.7 ± 1.2 vs 3.4 ± 1.1, p = 0.006) and mean postprandial gastric pH was significantly higher (5.8 ± 0.9 vs 5.4 ± 0.9, p = 0.020) in infants fed with liquid formula. However the incidence of NEC was similar in both groups.
Conclusion: This is the first study in the literature that showed an increased incidence of FI in preterm infants fed with liquid preterm formula. Although the pH of the two formula forms are equal, lower mean fasting gastric pH (more acidic) may be due to citric acid component while higher (more alkali) postprandial gastric pH may be a sign of delayed gastric emptying in preterm infants fed with liquid formula.

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PO61: Maternal and Neonatal Factors Influencing Neonatal Total Bilirubin Level

Dalia STONIENE, Jurate BUINAUSKIENE, Rasa TAMELIENE, Egle MARKUNIENE

Aim of the study: To establish maternal and neonatal factors influencing neonatal total serum bilirubin (TSB) level (mean value ± SD µmol/l) at the newborn's age of 6 hours.
Material and Method: A total of 597 healthy full-term (≥ 37 weeks of gestation) newborns were initially enrolled in the prospective study. We have made a search on and assessed maternal and neonatal factors: medications prescribed to mother during the labour, newborn's first stool time, and skin bruising. TSB was measured at the age of 6 hours.
Results: The main maternal factors that may influence newborn's TSB are medications given to mother during the labour. Newborns had significantly higher TSB if mothers were administered oxytocin (108.1 ± 24.7 / 99.8 ± 26.0) (p = 0.03), misoprostol (cytotec) (116 ± 14 / 100.3 ± 26) (p < 0.001) or hyoscine butylbromide (Buscopan) (73.5 ± 17.8 / 63.2 ± 19.8) (p= 0.03). An analysis of data on the influence of medications for labour anesthesia/analgesia to TSB level showed no significant difference although TSB was higher in those newborns whose mothers were administered bupivacaine (60.8 ± 13.3 / 59.5 ± 13.4) fentanyl (60.0 ± 13.2 / 59.5 ± 13.5), nitric monoxide (61.1 ± 1.17 / 59.3 ± 13.6) and pethidine (Dolsin*)* (62.1 ± 12.3 / 58.9 ± 13.5). Since the half-life of medications administered during the labour is short and the elimination of the drug is rapid, the observation of such drugs influence to TSB at the later age was not purposive. The time of first stool was recorded at the age of 6.7 ± 5.6 hours. We found that the time of newborn first time stool (≤ 6h and > 6h old) has no effect on TSB level (58.9 ± 59.6 / 61.4 ± 13.9) at the sixth hour of life. Female gender (59.6 ± 13.3 / 58.8 ± 13.5), bruising (61.4 ± 13.9 / 58.7 ± 13.3) and blood group A (59.6 ± 13.5 / 58.2 ± 13.3) influenced, albeit insignificantly, but still higher TSB level.
Conclusions: Medications for labour anaesthesia/analgesia and

newborn female gender, bruising and A blood group have a tendency to increase the level of TSB. Significant difference, however, appears only in those newborns whose mother's labour was stimulated with oxytocin, misoprostol or hyoscine butylbromide.

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PO62: Severe, Early Cow´S Milk Allergy Associated to Intestinal Malrotation

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Introduction: Allergic enterocolitis (AEC) usually presents as insidious gastrointestinal bleeding, diarrhea and failure to thrive without major hemodynamic repercussion. A rare association of AEC with intestinal malrotation leading to severe anaemia, occurring within the first days of life, is presented.
Clinical Case: a 16 days-old newborn was admitted for massive hematochezia and hematemesis. He was born at 35 weeks of gestational age, weighing 2670g. At birth, he was breastfed, supplemented with formula, before discharge. Due to regurgitation and diarrhea, with failure to thrive (15% weight loss at the D14) formula was restarted. On NICU admission, he was malnourished, dehydrated, with marked and painful abdominal distention; haemoglobin was 13.2 g/dL. Despite suspended feeding and prescription of antibiotics and fluids, there was a progressive clinical deterioration with symptomatic anaemia (8.9 g/dL). Intestinal malrotation was suspected by abdominal ultrasound and intestinal barium radiographic examination. The diagnosis of cow's milk allergy was confirmed by eosinophilic inflammatory infiltrate in gastric and colonic mucosa biopsies. Intestinal malrotation was confirmed during Ladd surgery. Enteral feeding was introduced with free aminoacids formula (Neocate®) with excellent tolerance. When semi-elemental formula (PeptiJunior®) was introduced, diarrhea reappeared and free acid formula was definitely instituted. When the infant was discharged, on 30th postnatal day, he was well, without blood losses and with adequate weight gain.
Discussion: This case highlights the need to consider in the differential diagnosis of a very severe suspected AEC case the association of multiple conditions. Whether the intestinal malrotation helped to reveal the AEC, increasing its clinical severity or the AEC highlighted the malrotation, remains unclear.

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PO63: Can Measurement of Intravesical Pressure Be Used for the Diagnosis and Follow up of Necrotizing Enterocolitis?

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Background and aims: Abdominal compartment syndrome refers to multiorgan failure secondary to increased intraabdominal pressure and circulatory failure. Early diagnosis and treatment of this clinical syndrome resulting with high mortality in children is possible via intravesical pressure (IVP) measurements. Data on IVP is limited in newborns with increased abdominal pressure due to diseases like necrotizing enterocolitis (NEC). We aimed to investigate the predictive value of consecutive IVP measurements for diagnosis and outcome of NEC.
Methods: IVP was measured twice daily in 61 premature infants below 1500 grams. Measurements of infants with and without NEC were compared.
Results: Infants were grouped as; Group 1: without NEC, Group 2: NEC medically treated, Group 3: operated for NEC. Group 1 had lower IVP values compared to infants with NEC (p = 0.001). Group 2 and 3 had similiar IVP values (p = 0.155). A 10% increase in the consecutive IVP measurements was valuable for predicting NEC. Infants who died due to NEC had higher IVP values compared to surviving infants with NEC (p = 0.043).
Conclusion: IVP measurements may be helpful for the diagnosis of NEC. Mortality due to NEC in premature infants may also be predicted with high IVP values.

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PO64: Usefulness of Cranberry in the Prevention of Neonatal Necrotizing Enterocolitis (Nec): Preliminary to Conducting a Clinical Trial

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The polyphenols derived from cranberry exert intestinal anti-inflammatory effects in various animal models,[1] besides being antiadherent properties of gram-negative bacteria to the urinary and gastrointestinal epithelia.[2,3,4] Previous clinical trials have demonstrated the safety of cranberry in infants up to 1 month of age[5] and throughout the gestational period[6,7] and lactation,[8] which a priori could indicate its safety for the fetus and newborn. Prior to conducting a clinical trial, it is hypothesized that the extract of cranberry (Vaccinium macrocarpon) is safe and effective in the prevention of NEC in preterm infants with an risk reduction of NEC. We propose conducting a pilot study in 40 neonates evaluated safety variables (ISRCTN20343063). The study population is addressed to infants less than 1800 g or less than 32 weeks gestational age. Following the recommendations of the Spanish Drug Agency raises the production of a dispersion of Cranberry (Gykacran, Pharmatoka) in 5% dextrose using the standards of effectiveness of an antimicrobial preparation in the European Pharmacopoeia (European Pharmacopoeia, 1997, 5.1. 3. Efficacy of Antimicrobial Preparation). Are administered daily orally 0.2 ml of a dispersion of cranberry in 5% dextrose or placebo. Prophylaxis will remain for 28 days. The observation of the primary effect is the development of NEC that is maintained until 37 weeks corrected gestational age. It evaluates the risk of NEC associated with the type of intervention and the frequency of secondary diagnoses (safety objectives). This trial is expected to start early next year

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PO65: Maternal Preeclampsia is Associated with Increased Risk of Necrotizing Enterocolitis in Preterm Infants

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Objective: Necrotizing enterocolitis (NEC) is an important cause of mortality and morbidity in preterm infants. The aim of this study was to evaluate the effect of maternal preeclampsia on development and severity of NEC in premature infants.
Methods: This prospective study consisted 2 groups of preterm infants (≤ 37 gestational age): the study group contained preterm infants born to a preeclamptic mother and the comparison group contained preterm infants born to a normotensive mother. NEC was diagnosed according to clinical and radiographic findings, and it was classified according to modified Bell's criteria. The maternal and neonatal demographic and clinical data were all recorded.
Result: The study population included a total of 501 premature infants. The study group consisted 174 premature infants born to preeclamptic mothers and the control group consisted 327 premature infants born to normotensive mothers.There were a total of 88 infants (40 infants in the study group and 48 infants in the control group) who had NEC diagnosis. The incidence of NEC in infants born to preeclamptic mothers (22.9%) was significantly higher compared with those born to normotensive mothers (14.6%). According to NEC stages, NEC was more advanced in preeclamptic mother infants. NEC developed significantly earlier in infants with NEC in the study group compared to those with NEC in the control group. The duration of NEC was also significantly longer in infants born to preeclamptic mothers.
Conclusion: Maternal preeclampsia may be an important risk factor for development of NEC in premature infants as NEC incidence and severity of NEC were found to be significantly higher in premature infants born to preeclamptic mothers. Also, NEC developed significantly earlier in preeclamptic mother infants and duration of NEC was also found to be significantly longer in these infants.

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PO66: Neonatal Cholestasis, a Report of Four Cases and Approach to the Early Diagnosis of Neonatal Cholestatic Jaundice

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Introduction: Neonatal cholestasis characterized by elevation of unconjugated serum bilirubin is uncommon, but potentially serious condition with an underlying hepatobiliary disfunction. Most common causes of cholestatic jaundice in infants are biliary atresia and neonatal hepatitis followed by a variety of other causes divided into extra-and intrahepatic.
Clinical case: We report four cases of neonatal onset cholestasis with favorable outcome that presented a diagnostic challenge. We also discuss the approach to early diagnosis of neonatal cholestatic jaundice. Investigations performed according to cholestasis algorithm were: CBC, glucose, proteins, bilirubin total and direct, liver function tests, alkaline phosphatase, GGT, coagulation profile, urine for reducing substances, alpha 1 antitrypsin, alpha fetoprotein, ceruloplasmin, amino acid profile of plasma and urine, metabolic screening; CF and TSH included, TORCH, Hepatitis markers and HIV, also abdominal ultrasound and scintigraphy (HIDA). Other investigations performed as clinically indicated for each separate case. Case 1 is a premature female infant delivered by SC due to placental abruption in 33 GN. She was treated at the ICU for early onset sepsis and DIC; three different antibiotic regimens were applied. She was transferred with emerging signs of cholestasis and hepatomegaly. Ultrasound and scintigraphy did not show biliary atresia. Case 2 is a term male infant who presented with signs of early sepsis, hepatosplenomegaly and ascites. HIDA scan and MRCP suggested biliary atresia although good weight gain and gradual improvements of symptoms did not correspond to the working diagnosis. Diagnosis was set by laparoptomy; intraoperative cholangiogram was normal. A hepatic biopsy sample taken during the procedure showed gigantocellular transformation of hepatocytes on pathohystology. Case 3 is a premature boy born in 32 GW, treated for neonatal sepsis. Amino acid screening of plasma showed significantly elevated tyrosine level. Repeated tyrosine profile was not consistent with tyrosinemia type 1. Case 4 is a premature male born in 34 GW, with RDSy and sepsis.
Discussion: We present four specific cases of infant cholestasis of hepatocellular origin with favorable clinical course. This shows that each case is different and interpretation of results requires awareness and critical approach. Early diagnosis and treatment are crucial for disease outcome and prognosis.

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PO67: Meckel's Diverticulum Perforation in a Preterm Infant

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Introduction: Meckel's diverticulum (MD) is the most common congenital anomaly of the gastrointestinal tract, occurring in 2–3% of the population. Clinical symptoms arise from complications of the MD such as peptic ulceration with haemorrhage, diverticulitis, intestinal obstruction, enterolithis and development of neoplasia within the diverticulum. Most complications manifest during childhood and they usually happen beyond the age of 4 months. Perforation is rare in the neonatal period. The literature did not reveal many similar cases.
Case report: A 1300g, male infant was born at 29 6/7 weeks'gestation by cesarean section because of preeclampsia. At birth the infant was vigorous, Apgar Scores were 7 and 8 at 1 and 5 min respectively, he needed nasal CPAP. On admission to the neonatal intensive care unit an umbilical venous catheter was inserted successfully. At 20 hours of life he presented apnea and abdominal distension. Not infectious signs were found in blood analysis, and abdominal X-ray showed pneumoperitoneum. Perforated Meckel's diverticulum was found at laparotomy. Neither inflammatory phenomena nor ectopic mucosa were found. As a complication the patient presented a suture dehiscence which required surgical treatment again at 16 days of life. The postoperative course was uneventful and the infant was discharged at the age of 28 days.
Discusion: Establish a preoperative diagnosis of perforated MD is difficult. Early surgical intervention is essential for a positive outcome. MD perforation is rare in the neonatal period. It can be an unusual complication of umbilical catheterisation.

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PO68: Gastroschisis: Risk Assessment and Prognostic Factors

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Introduction: The survival of gastroschisis has significantly improved over the last two decades. However, bowel dysmotility and dysfunction still lead to prolonged admissions and rising costs. The policy of elective preterm C-section (EPCS) was instituted in 2003.
Objectives: To identify factors associated with hospital outcome in patients with gastroschisis, particularly the role of elective preterm cesarean delivery (34-36 weeks).
Methods: Retrospective study of the cohort of neonates with gastroschisis admitted to a NICU, from 1988 to 2011. Case-fatality rate, days of parenteral nutrition (PN), and length of stay (LOS) were considered primary measures of outcome; time to the first enteral feeding was considered an intermediate end-point. Main exposures were gestational age (GA), EPCS and complex gastroschisis (CxG), defined as the association of gastroschisis with another congenital anomaly of the digestive system (Molik 2001). Multivariate logistic and linear regressions were used for obtaining adjusted odds ratios (OR).
Results: Among 79 cases, 15 had CxG. Case-fatality rate was 7.6% (6 cases); possibility of NICU death diminishes with GA (OR 0.548; IC95% 0.341-0.878 for increase in 1 week of GA). LOS increases with the presence of CxG (OR 7.795; IC95% 1.27-47.94 for LOS above the median of 61 days). The number of days on PN increases with the presence of CxG (OR 23.67; IC95% 1.96-285.94 for duration above the median of 44 days), and the time to first enteral feeding (OR 1.2 for each day of delay of enteral feeding, for duration of PN above the median of 44 days; IC95% 1.02-1.41). Time to first enteral feeding decreases with GA (OR 0.362 day; for each week more of GA; p = 0.045). EPCS, adjusted to the exposure variables, was not associated with any of the primary measures of outcome.
Conclusions: Concurrent bowel anomalies, prematurity and the delay of enteral feeding appear to contribute to worse in-hospital evolution of gastroschisis. Elective preterm C-section apparently doesn't improve outcomes.

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PO69: Neonatal Necrotizing Enterocolitis: A One-Year Retrospective Review

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Introduction: Necrotizing enterocolitis (NEC) is one of the most common gastrointestinal emergencies in the newborn. The sequence of events leading to NEC is complex and multifactorial. Despite appropriate and timely medical management, approximately 30% of patients with NEC require surgical intervention. Speciality of Pediatric Surgery is available in our hospital since May, 2011. The aim of this study is to review all cases of NEC diagnosed since then.
Methods: This is an observational retrospective study of NEC cases diagnosed in the Hospital de Braga, since May, 2011 to May 31, 2012.
Results: Five NEC cases were diagnosed during the study period (two males and three females). Median gestational age was 25.6 (range: 24.1-29.6) weeks. All of them were extremely low birth weight, with a median birth weight of 800 (range: 529-995) gr. Only one patient had intrauterine growth restriction. Newborns initiated trophic feeding in the first three days after birth (four with breast milk and one with formula). No newborn had received red blood cell transfusions in the 72 hours preceding presentation of NEC. NEC first signs were change in feeding tolerance and abdominal distension in all infants. Two patients were diagnosed within the first week, another two within the second week and one in the second month. Regarding to Bell staging criteria, two had stage IIB and three had stage IIIB. All had associated sepsis and metabolic acidosis, four had thrombocytopenia and three had hypoalbuminemia. Combined broad spectrum antibiotic treatment was initiated in all patients and three of them underwent surgical intervention. Primary peritoneal drainage was performed. Acute complications occurred in all patients: hypotension and/or respiratory failure/ worsening of ventilatory parameters. Intestinal strictures occurred in two patients as a late complication of NEC. Both patients required resection of the affected bowel segment and one required placement of a proximal enterostomy. One patient died.
Conclusion: Management of NEC presents many challenges. Several controversies still exist regarding risk factors, protective measures and most appropriate surgical management once the diagnosis is confirmed. Analysis of our NEC casuistic is a requisite to improve care quality.

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PO70: Transfusion-Associated Necrotizing Enterocolitis in a Preterm Newborn: Myth or Reality?

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Introduction: Necrotizing enterocolitis (NEC) is an inflammatory bowel disease of neonates and remains one of the most common gastrointestinal emergencies in newborns. It is considered a multifactorial disorder converging on a common final clinical presentation associated with several etiologic mechanisms, including ischemia (eg, reperfusion), infection (eg, gut colonization), mechanical injury (eg, viscosity, embolic), iatrogenic factors (eg, catheters, excessive enteral feeding), and immunological barrier dysfunction. To date, there is no consensus etiology. Recently, several studies have obtained results that indicate that transfusion of packed red blood cells may have causally related to the development of NEC.
Clinical case: A male preterm newborn (26 weeks gestational age) healthy and growing until 28th day of life, with enteral feeding, suddenly, 4 hours after a transfusion of packed red blood cells prescribed for symptomatic anemia, presented with abdominal distension and tenderness, vomiting, bloody stools and severe metabolic acidosis. Abdominal x-ray showed distended loops, pneumatosis intestinalis and pneumoperitoneum. Despite of peritoneal drain and colostomy, he died with disseminated intravascular coagulation and multi-organ failure 21 hours after. The authors presented this case of possible association between blood transfusion and NEC, to warn about the catastrophic and suddenly evolution that necrotizing enterocolitis could have in preterm, as well as, considering blood transfusion as a risk factor associated with this disease.

Discussion: The retrospective analysis of the case presented here highlight the fast installation of the clinical picture of acute abdomen in a previously well newborn and its short temporal relation to blood transfusion, seems to be a case of transfusion-associated NEC. Identification of reliable risk factors of NEC would allow the development of preventive measures that specifically would identify neonates at risk of NEC and reduce morbidity and mortality rates that are related to this complication. Prevention is better than treatment. Prospective studies are needed to clarify the etiology of NEC and new guidelines based evidence of blood transfusion policies that may contribute to the prevention of this disease.

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PO71: A Case of Down Syndrome with Associated Urea Cycle Defect

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Introduction: We would like to report a newborn with Down's syndrome and Urea Cycle Defect. Down's syndrome is one of the commonest chromosomal disorders in children. and is known to be associated with a variety of congenital problems relating to the heart, thyroid, eyes and ear. However, an association with metabolic conditions is unreported.
Clinical case: Baby A was born at 36 + 6 weeks of gestation weighing 1.93 Kg. At birth, he was noted to have classical features of Down's syndrome. The diagnosis was later confirmed by chromosomal analysis. He was cohorted in the postnatal ward with his mother and breastfeeding promoted. On the 3rd postnatal day he was admitted to the neonatal unit with poor feeding and hypothermia. A septic workup was performed and he was started on antibiotics, Benzyl Penicillin and Gentamicin and supportive therapy. An echocardiogram revealed the presence of an ASD and acceptable cardiac contractility. Since he continued to deteriorate, he required ventilation and inotropic support with both dopamine and dobutamine. He also developed pulmonary haemorrhage. A full metabolic work up that had been performed initially showed elevated serum ammonia levels of 933 mmols/L. Baby was therefore started on sodium benzoate and sodium phenylbutazone. In view of worsening ammonia levels, arginine was added to the regimen. However, he continued to deteriorate with worsening cardio respiratory status, refractory shock, ongoing pulmonary haemorrhage and worsening serum ammonia levels. Following discussion with parents intensive care was withdrawn and he expired in his parents' arms. Urinalysis later revealed very high orotic acid excretion and serum aminogram revealed very high citrulline levels, confirming a diagnosis of Citrullinaemia Type 1.
Discussion: An association between Down Syndrome and Urea Cycle Defects is unreported and we believe this to be the first ever such case report in a newborn. The paucity of evidence against metabolic disorders in children with Down's Syndrome should not preclude against investigation. Any unexplained clinical deterioration especially associated with hypotonia and hypoventilation should be investigated fully. As our baby did not respond to traditional therapy for hyperammonemia, we wonder whether there is any genetic mechanism behind an unusually severe form of urea cycle defect.

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PO72: The Prenatal Onset of Pyruvate Dehydrogenase Complex Deficiency

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Introduction: Pyruvate dehydrogenase deficiency (PDHD) affects energy metabolism of the body and is caused by the deficiency of one of the components of the pyruvate dehydrogenase (PDH) complex. Clinically it causes severe neurological impairment which in neonates is often accompanied by the combination of nonspecific symptoms such as prematurity and intrauterine growth retardation, persisting lactic acidosis, and poor feeding. Characteristic facial dysmorphism has been described in cases of early onset. The most common cause is mutations in the PDHA1 gene located to Xp22.12.
Clinical case: The girl was born from the first pregnancy of young healthy parents. On the 33rd week of gestation fetal hydrocephaly, intrauterine growth retardation, and oligohydramnion were diagnosed. The child was born on the 35th gestational week. Her birth weight was 1782 g (-2 SD), length 39 cm (> -2 SD), head circumference 29.5 cm (-2 SD), Apgar scores 7/7. Due to dysmorphic phenotype chromosomal disease was suspected at birth. On the 5th day rapid deterioration was observed: vomiting, respiratory depression, severe lethargy, lactic acidosis, and elevated lactate concentration in cerebrospinal fluid (CSF). The brain MRI investigation confirmed cerebral anomaly. Chromosomal aberration was excluded with normal karyotype. The specific metabolic alterations in serum, CSF, and urine indicated PDHD. The enzymatic study from muscle fibres revealed reduced PDH complex activity. Diagnosis was molecularly confirmed by detecting pathogenic mutation c.904C > T in PDHA1 gene. Despite the good metabolic control with specific treatment, the patient`s clinical condition gradually worsened. She had profound psychomotor retardation, and died at the age of 2.5 years.
Discussion: PDHD should be considered in cases of early-onset neurological disease, particularly if there are structural cerebral abnormalities and unexplained lactic acidosis. Due to overlapping features it should be considered in differential diagnosis of chromosomal disease. Definitive diagnosis is made by demonstrating abnormal enzyme function and by confirming gene mutation.

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PO73: Creatinine Quantification by Jaffe or Enzymatic Analysis in Neonatal Serum and Urine: Do Differences Reach Clinical Relevance?

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Introduction: Creatinine can be quantified by Jaffe or enzymatic techniques. We recently reported that the absolute difference between both techniques for serum creatinine in ELBW infants is between 0.15-0.25 mg/dl. This results in clinical relevant differences in serum reference values between both techniques.[1] In contrast, paired analysis of creatinine in urine samples of neonates are unreported.
Methods: Creatinine in 84 urine samples collected in a study on iv propylene glycol pharmacokinetics[2] were quantified by both Jaffe and enzymatic method (Cobas 8000 modular analyser). Absolute values were compared (paired Wilcoxon).
Results: Median Jaffe and enzymatic creatinine values in urine were 9.5 (3.7-42.2) and 9.15 (3.8-42.9) mg/dl ($p < 0.05$), the mean difference was 0.17 (SD 0.6) mg/dl. There was a significant correlation with gestational ($r = -0.22$), postnatal age ($r = -0.59$) and absolute creatinine values ($r = -0.64$).
Conclusion: The absolute difference between both techniques in

urine creatinine is of similar magnitude when compared to serum observations (0.17 vs 0.15-0.25 mg/dl). However, because of the much higher median absolute creatinine values in urine (9.5 and 9.1 mg/dl) compared to serum, the difference between both techniques in urine is only about 1-3 % and is of limited value for reference values in urine, in contrast to serum reference values.

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PO74: Acute Renal Failure in a Tertiary Neonatal Intensive Care Unit

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Introduction : Acute renal failure (ARF) is a common contributor to morbidity and mortality in newborns (NB). There are very limited data on overall epidemiology of ARF in newborn. Its prevalence varies widely, particularly among institutions with different levels of care. The aim of this study was to determine the prevalence of ARF, the aetiology, mortality and risk factors for mortality in NB in a tertiary Neonatal Intensive Care Unit.
Methods: We analyzed retrospectively the charts of the NB admitted to the NICU, with an increased serum creatinine between 2004 and 2011.
Results: We identified 93 NB, 53 (57%) were male. Sixty-seven (72%) NB with a gestational age less than 37 weeks; fifty-two (55.9%) with birth weight < 1500g and sixteen (17.2%) between 1500-2500g. The global prevalence of ARF was 3% and remained stable during the study period, with similar values in the groups with < 1500g and > 1500g. The diagnosis was done in sixty-three (67.7%) NB at postnatal age of 3-7 days. Prerenal failure was the most common type of ARF in seventy *(*75,3%) NB. Sepsis (51.8%) and hypovolemia/hypotension (35.5%) were the main identified causes of ARF in all ages, followed by urinary tract malformations (8.6%) and asphyxia (4.3%). However, we have found that seventy-eight (83.9%) NB had two or more conditions associated (infection, hypovolemia, asphyxia, nephrotoxic drugs). Sepsis accounted for 61% of ARF in NB < 34 weeks; 51.6% of the NB underwent surgery and 92% received at least one nephrotoxic drug. Thirteen (14%) NB underwent dialysis. The average mortality rate was 4.9% in all hospitalized NB, being 50.3% in NB with ARF. Mortality in sepsis and hypovolemia-induced ARF was 50% and 51.5%, respectively. The mortality rate was 76.9% in dialysed patients.
Conclusion: The prevalence of ARF in our population was 3% and more than 50% developed ARF within the first week of life. Multiple factors caused the ARF, being sepsis the most important one. The highest mortality occurred in both sepsis and hypovolemia-induced ARF. Neonatologists must be aware of the ARF in the high risk NB to identify them and to start accurate prevention or treatment.

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PO75: Neonatal Hypertension: A Case Report

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Introduction: The incidence of neonatal hypertension is low, ranging from 0.08% to 2% when excluding chronic lung disease such as Bronchopulmonary Dysplasia (BPD). It has a cumbersome definition and diagnosis, and thresholds for starting antihypertensive treatment in the first month of life are not clear partially due to idiosyncratic responses in neonates with varying renal and hepatic function.
Case Report: We report a case of a 27 weeks' gestational age male newborn, delivered by emergent caesarian section due to maternal pre-eclampsia and HELLP syndrome. The baby was born with 995 grams, bradicardic, hypotonic, apneic, responding to positive pressure ventilation resuscitation. He was on invasive ventilation for 9 days, non-invasive ventilation for 21 days and supplementary oxygen therapy for another 4 days. Umbilical artery catheter (UAC) was removed on the 8th day. On the 10th day of life initiated persistent elevation of systolic blood pressure (90-100mmHg) with elevated creatinine (max. 1.6mg/dl) and blood urea nitrogen (max. 95mg/dl) levels, with pulmonary hemorrhage, leading to fresh frozen plasma and red blood cells transfusion. Ever since he remained clinically asymptomatic, with normal physical examination, namely, femoral pulses and abdomen. Due to failure of diuretic therapy, it was started intravenous labetolol, later replaced by oral propranolol and nifedipine, with correct blood pressure control. Chest radiograph, echocardiography, urinalysis, urine culture, thyroid function, renin and aldosterone levels were all normal. Cranial ultrasonography showed no signs of intraventricular hemorrhage. Renal ultrasonography showed focal stenosis / dysplasia of the right renal artery.
Conclusion: Most cases of neonatal hypertension are due to renovascular or renal causes, in the absence of BPD and/or Patent Ductus Arteriosus, UAC associated thromboembolism; all were excluded in this case. In the near future, an angiography and/or anteriography will be performed to further evaluate this infant and confirm the probable diagnosis of fibromuscular dysplasia. It should be noted that hypertension may not be diagnosed in some infants until after NICU 's discharge. Thus, BP measurement should always be included in the follow-up of these 'NICU graduates', particularly those with known risk factors.

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PO76: Ultrasonographic Screening for Congenital Anomalies of the Kidney and Urinary Tract in Newborns

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Introduction: Congenital anomalies of the kidney and urinary tract (CAKUT) represent a broad range of disorders. Many urinary tract malformations are detected antenatally. The purpose of our study was to investigate the proportion of newborns with CAKUT and evaluate contribution of the postnatal ultrasonographic screening in detecting CAKUT in comparison to prenatal ultrasonographic screening.
Method: We performed renal ultrasonographic screening on 10713 newborns born from 2007 to 2011, for CAKUT. The examination was performed on the fourth day, along with the ultrasound screening of the hips that is obligatory for every newborn in our country, so the burden of extraexamination was minimized. We used the adapted Society of Fetal Urology (SFU) grading of hydronephrosis based on ultrasonography to discriminate between high-grade hydronephrosis (HN), that needed prompt diagnostic intervention and management and mild-to-moderate HN, that needed only follow-up. Babies with mild-to-moderate HN (grade II) or other urinary tract anomalies were followed up by our neonatal unit. When hy-

dronephrosis did not resolve spontaneously, further follow-up was made by pediatric nephrologist.
Results: Overall frequency of CAKUT was 0.4%: 11 infants with urinary tract obstruction (0.1%), 14 with VUR (0.13%). Of these 5 needed prompt surgical intervention. 15 newborns had either renal agenesis or hypoplasia, or urinary tract duplication or horseshoe-shaped kidney. In 13 cases, the diagnosis was suspected prenatally, other 30 were discovered with our neonatal screening.
Conclusion: In our study postnatal ultrasound screening was shown to be effective in early detection of renal and urinary tract anomalies, adding an important contribution in CAKUT detection. In our study prenatal sonography proved less sensitive than postnatal sonography in revealing CAKUT. Neonatal ultrasound screening added an important contribution to prevention or at least slowing down evolution towards chronic renal disease of 25 newborns (0.2%) and according to our data, none of significant urinary obstruction was missed.

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PO77: Urinary Excretion of Phosphate in Very Low Birth Weight Infants During First Days of Life

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Aims. There are few references to the ranges of urinary excretion of phosphorus in the first days of life. Differentially analyze the urinary excretion of phosphate in preterm infants during the first days of life.
Methods. We analyze a sample of 39 infants with GA below 32 weeks and weighing less than 1500 g urinary excretion of phosphorus during the first 10 days of life. It is estimated phosphorus excretion (mg / dl) associated with urinary creatinine excretion (mg / dl).
Results. The mean of gestational age in preterm infants studied was 29.4 weeks (SD 2.7). The mean of birth weight was 1120 g (SD 320). The excretion of phosphorus for days 1 to 10 was: 1.3 mg / mg (95% CI 0.25-2.38), 0.64 mg / mg (95% CI 0.20-1.08), 0.78 mg / mg (95% CI 0.43-1.13), 0.92 mg / mg (95% CI 0.47-1.37), 0.80 mg / mg (95% CI 0.42-1.17), 1.55 mg / mg (95% CI 1.07-2.02), 1.24 mg / mg (95% CI 0.78-1.69), 1.11 mg / mg (95% CI 0.66-1.56), 1.44 mg / mg (95% CI 0.72.2.17), 1.09 mg / mg (95% CI 0.49-1.69) respectively. The value of excretion of phosphorus in the 10 percentile on days 1 to 10 is: 0.01, 0.01, 0.02, 0.02, 0.02, 0.07, 0.10, 0.02, 0.05, 0.03.
Conclusions. We appreciate a trend to increased urinary excretion of phosphorus from 5 th day of life.

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PO78: Urinary Calcium Excretion in Very Low Birth Weight Infants During First Days of Life

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Aims. There are few references to the ranges of urinary excretion of calcium in the first days of life. We analyze differentially urinary calcium excretion in preterm infants during the first days of life.
Methods. We analyze a sample of 39 newborn infants with GA below 32 weeks and weighing less than 1500 g urinary excretion of calcium during the first 10 days of life. It is estimated calcium excretion (mg / dl) associated with urinary creatinine excretion (mg / dl).
Results. The mean gestational age of infants studied was 29.4 weeks (SD 2.7). The mean of birth weight was 1120 g (SD 320). Urinary calcium excretion for days 1 to 10 was: 0.23 mg / mg (95% CI 0.09 to 0.37), 0.22 mg / mg (95% CI 0.08 to 0.36), 0.43 mg / mg (95% CI 0.15 to 0.71), 0.29 mg / mg (95% CI 0.15 to 0.44), 0.32 mg / mg (95% CI 0.14 to 0.50), 0.40 mg / mg (95% CI 0.19 to 0.62), 0.40 mg / mg (95% CI 0.14 -0.65), 0.40 mg / mg (95% CI 0.20-0.60), 0.45 mg / mg (95% CI 0.26 to 0.64) and 0.43 mg / mg (95% CI 0.33 to 0.53) respectively. The value of calcium excretion in the 10 percentile on days 1 to 10 is: 0.01, 0.01, 0.01, 0.01, 0.03, 0.06, 0.04, 0.06, 0.13 and 0.18.
Conclusions. There was a trend to increased urinary calcium excretion from the 7 th day of life.

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PO79: Abdominal Mass with Hypertension

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Introduction: Although rare, congenital mesoblastic nephroma (CMS) is the most common solid renal tumour in the neonatal period. It generally exhibits benign behavior (and rarely metastasizes), with a good prognosis after complete surgical excision.
Clinical case: A 34-week gestacional age male newborn with normal prenatal ultrasound findings was born by eutocic delivery. Pregnancy was uneventful, labour occurred by spontaneous prematurity, with prolonged rupture of membranes, apgar score was 9/10 and birth weigh 2920g. The patient was admitted within the first 2h of life in Neonatology with suspected sepsis. On physical examination at birth, he presented grunting, large abdominal mass on the left flank, with a firm consistency, smooth and defined borders, not crossing midline and elevated blood pressure. Serial white blood cells and C-reactive protein were normal, blood culture was sterile, electrolytes, urinalysis and renal function were within normal ranges. Abdominal ultrasound, computerized tomography and magnetic resonance imaging revealed a large solid mass within the left kidney, suggestive of Wilms tumour, without signs of local invasion or distant metastasis. On the third day of admission he exhibited hypertension aggravation and on the sixth day bilious vomiting. On day 12 the patient underwent left nephrectomy and adrenalectomy. Histological findings were consistent with typical CMN. On postoperative course, blood pressure normalized within a few days after surgery, with a favorable clinical outcome.
Discussion: MCN should be considered in the differential diagnosis of an abdominal mass, vomiting and hypertension in the neonate. Renal imaging can be useful in differentiating other renal neoplasms from CMN, nevertheless Wilm's tumour can only be ruled out by histology. Early and accurate prenatal diagnosis of the renal tumour may improve the outcome of affected pregnancies by implementing the best strategy for prenatal management (targeted to possible complications), delivery and posnatal surgical treatment.

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PO80: When a Particular Smile Is an Alert

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Introduction: The urofacial syndrome, also known as Ochoa syndrome (OS), is a rare disease that affects both genders. It is characterized by an abnormal facial expression, dysfunctional urinary voiding and hydroureteronephrosis. It is an autosomal recessive disease caused by homozygous or compound heterozygous mutation in the HPSE2 gene on chromosome 10q23-q24. The peculiar facial expression (facial inversion when smiling, giving the appearance of crying) facilitates an early detection of this disease, essential to prevent severe upper urinary tract damage and eventual irreversible renal failure.
Clinical case: We describe a female child of consanguineous parents (second cousins of a gipsy family) with a family history of a male cousin and a paternal grandmother with peculiar facial expressions when smiling. It was a medically supervised and uneventful pregnancy with normal ultrasounds and negative serologies. She was born by vaginal delivery at term, weighting 3580g. At birth it was noticed an apparent microstomia and when she had her first smile, an inversion of facial expression. With this clinical sign, the diagnosis of OS was suspected. Ultrasound study of kidneys and brain, cystourethrography and renal scintigrafy were normal, at this age, and the chromosome study showed 46 XX. By 3 years, she developed sporadic abdominal pain, urinary frequency and post micturition residual volumes, so she started medication with a selective alpha-1-adrenergic receptor blocker. When she was 2, her cousin (9 years old), was admitted to the emergency department with abdominal and lumbar pain and a growing effort to voiding. The ultrasonography revealed bilateral hydronephrosis, right megaureter and bladder distended with urine sediment and thickened wall. The urodynamic evaluation showed typical signs of detrusor-sphincter discoordination. He started self-catheterization and anticholinergic therapy, with improvement. Their grandmother has no urinary symptoms so far. The genetic study confirmed the mutation of HPSE2 in homozygosity in both children. The grandmother has two heterozygous changes and the girl's father and boy's mother are heterozygous.
Conclusion: Despite being a rare disease, the early recognition and treatment may prevent its evolution into irreversible damage of the urinary tract system, so it is important to be aware of the existence of this syndrome.

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PO81: Serum and Urinary NGAL Concentrations in Newborns Treated in Neonatal Intensive Care Unit

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Background: Neurtophil gelatinase-associated lipocalin (NGAL) has been postulated as a new diagnostic marker of acute kidney-injury. NGAL is expressed by epithelial cells of various organs and neutrophiles and is rapidly eliminated from the circulation. It's role in the diagnostics of newborns has not been established.
Aim: The aim of the study is to analyze serum and urinary NGAL levels in various clinical settings in newborns treated in the intensive care unit.
Material and method: 28 newborns admitted to NICU and suspected for infection was enrolled. In 3 patients congenital pneumonia was diagnosed, in 10 urinary tract infection, and severe intrauterine hypoxia and hypoperfusion with congenital infection in two. Unspecified intrauterine infection in seven infants was recognized, while in six patients intrauterine infection was not confirmed during the clinical course. Serum and urinary NGAL concentrations were assessed during the three subsequent days.
Results: At admission the highest serum NGAL levels were observed in patients with congenital pneumonia (231 ± 308 ng/ml) and asphyxiated during the labor (208 + 31ng/ml), while the highest urinary concentrations (higher than in serum), were found in neonates with urinary tract infection (181 ± 246 ng/ml) and with asphyxia. During the observation, rapid decline in serum NGAL occurred in patients with unspecified congenital infection, remained elevated among asphyxiated neonates and those with urinary tract infections. Simultaneously, urinary NGAL levels were decreasing, most slowly, in patients with urinary tract infection.
Conclusions: 1. Increased serum NGAL concentration cannot be assigned to kidney injury solely. 2. Increased urinary NGAL could be the promising marker of acute kidney injury after exclusion patients with urinary tract infection. 3. Serial measurements are more useful than a single measurement.

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PO82: Evaluation of the Infants in Terms of Preparation for the Discharge and Following

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Introduction: This study was carried out with the aims of assessing the validity and reliability of Neonatal Discharge Assessment Tool (NDAT); of assessing the preterm infant and its parents in terms of discharge risks and of testing the risks after the discharge by following the health conditions of infants.
Methods: The sample group included 238 preterm infants and their parents. Data was collected by; High Risk Infant and Parent Information Form, Neonatal Discharge Assessment Tool, Post-discharge Infant Following Form and Telephone Counselling Form. In the step of data evaluation; number, percentage, mean, standard deviation, single-direction variance analysis, Mann-Whitney U-test, X^2 and Spearman correlation analysis were used.
Results: NDAT is proved to be a reliable and valid questionnaire for the evaluation of the high risk infants' discharge (α = .94) and that 55.5% of the infants were discharged with low risk, 37.8% with middle level risk and 6.7% with high-level risk. Of the 238 preterm infants, 95 (39.9%) were readmitted within the first two months after discharge because of their health problems. The most common causes of rehospitalization (51.5%) were respiratory disorders such as pneumonia, acute bronchiolitis, apnea. According to the NDAT grades, the infants that were discharged with high and middle level risk had higher possibility to be rehospitalized after the discharge than the ones with lower risks (p < .001) and that the mothers with high and middle level risk infant had higher possibilities of having problems of baby care after the discharge (p < .001).
Conclusion: Nearly half of the infants are discharged with high and middle level risk and so there is a high rate of rehospitalization of those infants and high rate of mothers having problems of baby care after the discharge, indicates that the discharge services are not effective and sufficient for the potential discharges. It is suggested that NDAT should be used by the nurses to determine the risk levels of the infant discharges and accordingly plan the following steps and manage the successful discharges and also the ones with high and middle level risk be observed and followed frequently and discharged with a service of nursery at home.

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PO83: Comparison of Uncorrected and Corrected Quotients of the Griffiths Scale in a Cohort of Preterm Infants at Two Years Corrected Age

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Introduction The Griffiths Mental Development Scales assesses a child's abilities in five separate areas of development. However there are complexities regarding prematurity. The aim of the study was to compare uncorrected and corrected quotients in a cohort of preterm infants at two years corrected age.
Methods The subjects described in this study were prospectively enrolled preterm infants, born before 34 weeks gestation (mean 28.8 ± 2.5, range 24-34) referred to a tertiary neonatal intensive care unit, with various findings on neuroimaging. 73 infants were initially included. The Griffiths Mental Development Scales-updated were performed at approximately 24 months corrected age, by two trained and certified neonatologists.
Results Neurodevelopmental follow-up assessment was performed at 55 preterm infants (75% of the cohort), at a mean uncorrected age of 27.2 ± 0.9 months (range 25.5-29) corresponding at a mean corrected age of 24.5 ± 0.6 months (range 24-26). Both uncorrected and corrected quotients were calculated. The mean overall uncorrected quotient was 64.8 ± 17.3 (range 14.8-90.3, median 70.4). The mean overall corrected quotient was 70.4 ± 19.2 (range 14.8-95.7, median 76.9), which was significantly higher compared to the uncorrected one ($p < 0.01$). The same was seen in all the subscales mean quotients as well. Based on the uncorrected age, normal quotients were found in 3 infants (5.5%), mildly abnormal in 31 (56.4%), moderately abnormal in 11 (20%) and severely abnormal in 10 (18.2%). Based on the corrected age, normal quotients were found in 10 infants (18.2%), mildly abnormal in 27 (49.1%), moderately abnormal in 8 (14.5%) and severely abnormal in 10 (18.2%).
Conclusion There is much debate in the literature on the use of adjusted versus unadjusted scores. Clinicians frequently face the dilemma of how to evaluate the development of children born prematurely. Either ways, the Griffiths Scales, did not miss children with severe delays. Besides, the classification of mildly or moderately abnormal scores, does not change the way of intervene to the child's trajectory. Reservations can be expressed for the normal outcomes, when scored according to the corrected age.

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PO84: Depression in Mothers of Preterm Infants Post Discharge and Related Risk Factors

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Introduction: Mothers of infants born preterm may present psychological distress and depression. The aim of the study was to investigate the incidence of depression in mothers of preterm infants post discharge from the Neonatal Intensive Care Unit, to observe changes in symptoms during the two first years of life and to correlate neonatal risk factors as well as the outcome of the infants to maternal depression. This is a prospective longitudinal follow up study.
Methods: 57 mothers of preterm infants admitted in the Neonatal Intensive Care Unit from February 2006 to May 2011 and followed up longitudinally post discharge were included in the study. Neonatal risk factors, socioeconomic status, stressful life events and neurodevelopmental outcome of the infants at 6, 12 and 24 months corrected age was recorded. The Beck Depression Inventory (BDI) was administered to mothers as a screening tool for depression.
Results: Mothers of preterm infants showed different levels of depression according to the scoring and interpretation of the questionnaire provided. At the age of 6 months, 21.1% were mildly depressed while 5.3% moderate/severely depressed. At the age of 12 months 9.4% were mildly depressed while 3.1% moderate/severely depressed. At the age of 24 months 25% were mildly depressed while 6.3% moderate/severely depressed. A correlation was seen between the score at the Beck Depression Inventory and neonatal risk factors as well as neurodevelopmental outcome: at 6 months with birth weight ($p < 0.034$), at 12 months with the presence of severe brain lesions ($p < 0.008$) and developmental delay ($p < 0.018$) and at 24 months with abnormal neurological examination at term equivalent age ($p < 0.001$). Depressive scores increased between 6 months and 24 months ($p < 0.05$)
Conclusion: Mothers of preterm infants present depression, related to neonatal risk factors and developmental outcome. The symptoms persist with time. Follow up programs of preterm infants should include identification of mothers presenting depression and psychological intervention to these mothers.

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PO85: Follow-Up of Neonates Born to Female Liver or Renal Recipients

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The aim of this study was to analyze the results of brain USG, ophthalmologic examination and neurological development of neonates born to female liver (LTx) or renal (RTx) transplant recipients.
Material and methods: 74 children born to female liver or kidney recipients from 2001 to 2011 were analyzed. There were 42 neonates (the gestational age 33-41 weeks, the birth weight 1420- 4100g) born to liver recipients and 32 newborns (the gestational age 27 to 39 weeks, the birth weight 580-3450g) born to renal recipients. The control group – 43 neonates of non-transplanted mothers. Results of brain USG, ophthalmologic examination and neurological development were analyzed. The Fischer's Test was used for the statistical analysis.
Results: In the brain USG, (intraventricular hemorrhage) IVH-1 was observed in 2.4% of LTx neonates, 3.1% of RTx neonates and 6.9% of the control group. IVH-2 was observed in 9.3% of RTx neonates and 9.3% of neonates in the control group. There were no periventricular leucomalacia-PLV, IVH-3 or IVH-4 in LTx and RTx group. Likewise, there were no IVH-2 in LTx neonates. No significant differences were observed between the frequency of IVH: in LTx and RTx groups $p = 0.1591$ and both LTx, RTx and control group $p = 0.12132$. Abnormal results of ophthalmologic examination (different) were observed more often in RTx neonates - 15.6% as compared to 11.9% in LTx neonates, (differences were no significant $p = 0.7374$) and more often in neonates born to transplant recipients than in control group neonates (9.5%), difference is not significant: $p = 0.6073$. Normal neurological development were reported more often in LTx children 92.1% vs RTx 77.8%, (differences were not significant $p = 0.1468$.) Neurological examination showed

lower frequency of moderate disorders in LTx children 7.9% vs RTx 22.2% vs control group 11.3%. These differences were not significant LTx and RTx group p = 0.1468, control group and both LTx, RTx groups p=0.79105.
Conclusions: 1. Development of neonates born to female liver or renal recipients was similar to control group. 2. Better follow-up was observed in neonates born to female liver recipients than renal recipients but these differences were not statistically significant.

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PO86: Good Prognosis in a Hydropic Preterm Infant With Noonan Syndrome

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Introduction: The incidence of non immune hydrops fetalis (NIHF) varies from 1 in 830 to 3500 deliveries. Congenital heart defects and rhythm abnormalities (19-25%), chromosomal disorders (35%), infections (1-8%) and some syndromes (9%) are associated with NIHF. Mortality rates differ (around 50%) related to prematurity, lethal malformations and the presence of fetal pleural effusions producing pulmonary hypoplasia in NIHF. Here we present a preterm hydropic infant with bilateral chylothorax diagnosed as Noonan syndrome.

Case Report: Fourty two year old G2P1 mother had amniocentesis because of increased fetal nuchal thickness. Chromosomes were normal however PTPN11 gene mutation was positive. Emergency delivery by s/c was performed because of hydrops fetalis at 31 gw. Hydropic female infant weighing 2500g had ascites and severe generalized edema. She was entubated, given surfactant and bilateral thorax drainage was performed immediately. Thorax drainage was 340 ml in one hour and microscopic investigation revealed 90% lymphocytes with sterile culture which is compatible with chylothorax. Echocardiography was normal at the first day. The weight dropped to 1850g. Since chylothorax continued (120ml/day) despite total parenteral nutrition (TPN) and minimal enteral feeding with medium chain triglyceride (MCT) formula intravenous octreotide infusion was started (5µg/kg/h) on day 7. The chylothorax was managed successfully then. The baby was extubated on day 11. Second echocardiography performed because of a murmer revealed pulmonary valve stenosis on day 15. TPN was stopped on day 19 and MCT formula was transitioned to breast milk. Hypertelorism and epicanthic folds was prominent on the face when she was 1 month old. Respiratory stature improved and she was discharged home at 39 day of life.
Discussion: This baby had the PTPN 11 gene mutation which is associated with Noonan syndrome (NS). The estimated incidence of NS is 1,000 to 2,500 in live births. It is an autosomal dominant dysmorphic syndrome characterized by hypertelorism, downward eyeslant, short stature, a short neck with webbing, cardiac anomalies and motor delay. Cardiac anomalies in NS are late-onset progressive pathologies, developing through the course of gestation and postnatal life. Disorder of lymphatic development in NS may cause peripheral lymphedema, chylothorax and NIHF. Early prognosis in this hydropic preterm infant with NS was good.

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PO87: Neonatal Abstinence Syndrome

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Introduction: Drug addiction is an increasing problem in women of childbearing age. 90% of newborns (NB) exposed to opioid during pregnancy develop withdrawal syndrome and 50-75% of them, require treatment. Our objective with this study was to characterize addict mother´s NB, admitted to the Neonatal Unit (NU) of Hospital José Joaquim Fernandes (HJJF), between 01/01/2000 and 31/05/2012.
Methods: Retrospective analysis of medical files. Studied data from mother (including illicit drug / methadone use during pregnancy), childbirth and NB (including symptoms, Finnegan Index (FI) and therapeutic).
Results: During this period, 16.003 children were born in HJJF, 1876 (11.7%) of which were admitted to the NU. Of these, 42 (2.2%) were children of 36 mothers with a history of drugs illicit abuse. Mean maternal age at the time of delivery was 29Yr (20-39), and 45% of them had infectious comorbidities. 35 NB (83.3%) were children of mothers on methadone program at the time of delivery, with about half reporting consumption of other drugs during pregnancy. Only half of the pregnancies were properly supervised. The delivery was eutocic in 64.3% of cases and 19.05% were preterm. The main withdrawal symptoms had a neurological origin and took place mostly on the 1st day of life (73.8%). The maximum index Finnegan ranged between 2-27 and occurred between the 1st-17th day of life (median 2.5 days). NB were treated with fenobarbital (59.5%) or morphine (19.0%), which began mainly in the first 2days of life (73.8%). Weaning occurred between the 2nd-16th days of life (median 9 days) and treatment was discontinued, on average, after 19.5days. 73.8% were not breastfed. The length of stay varied between 4-38 days (average 21.5 days).
Conclusion: Prematurity was associated with a lower maximum IF (9.5 vs 15.3) and less duration of therapy (8.2 vs 17.5 days). There were treated pharmacologically 75% of NB of mothers on methadone program exclusively vs 93.8% of NB of mothers with consumption of other drugs associated. The morphine treatment was associated with longer duration of therapy and hospitalization. There was no need for association of a second drug. There were not rehospitalization.

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PO88: Follow-Up Service for High Risk Neonates in Russian Federation

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Follow-up management system for high risk neonates in Russian Federation has been functioning for a 5-year period and comprises variant health-care institutions in different regions of the country. Moscow Scientific Research Institute of Pediatrics and Child Surgery is an example of research, tutorial and health-care practice institution in Russian Federation megacity. Medical data in preterm neonates of high risk is directed to the Health-care consulting centre with setting a time for initial visit for a medical assessment a month after the discharge. Later follow-up rate is considered to be once in a month up till the age of 6 months of corrected age, and once in every two months until a year and a half, and every half a year in elder children. Neonatal pediatric specialist examines a child for physical growth and development, neurodevelopment and motor function in CAT-CLAMS scale, and also somatic and neurological assessment, giving recommendations on feeding, development, body exercises and medicine prescription if necessary. The medical assessment for the same child is carried out by the same pediatrician, who defines the need for additional examination, special doctor check-up, feeding pattern and therapy. There is an

opportunity for supplementary checkup if necessary, in conditions of one-day or daytime hospital stay. If having some complications such as bronchopulmonary dysplasia, neurological impairment and neurodevelopmental delay, long-term hospital stay is also available within the same healthcare centre. Such a follow-up system for high risk neonates makes it possible to provide an appropriate medical care, scientific research and also give an accurate health prediction in child outcomes.

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PO89: Evaluation of Incidence and Risk Factors for Retinopathy of Prematurity

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Introduction: Retinopathy of prematurity (ROP) is a multifactorial disease that occurs in premature infants and is considered the main cause of blindness. The aim of our study was to estimate the incidence of retinopathy of prematurity and risk factors for development severe form of ROP.
Methods: The study was conducted at the Center for Neonatology, Pediatric Clinic of the Clinical Center Kragujevac, Serbia, in the period from June 2006 to December 2011. Ophtalmological screening was performed on all children with body weight lower than 2000 g and/or gestational age lower than 36 weeks. The results of fundoscopy were classified in accordance with the International Classification of Retinopathy of Prematurity. The treatment of infants with Retinopathy of prematurity was conducted in accordance with early treatment of Retinopathy of prematurity study recommendations. We analyzed eighteen postnatal and six perinatal risk factors for development severe form of ROP.
Results: Out of 675 children that were screened, 148 (21.9%) developed severe form of ROP. From the infants with severe Retinopathy of prematurity, fifteen had Aggressive Posterior Disease (10.1%). Two of the infants with APD remained blind (0.4%). The average gestational age of infants with Aggressive Posterior Disease was 29.8 GW (from 25 to 34 weeks). The average birth weight was 1405.8 g (from 700 to 1950 g) and when Aggressive Posterior Disease was diagnosed, postconceptional age was 231.2 days (33 weeks). Univariate analysis revealed large number of statistically significant risk factors for development of ROP, especially the severe form. Multivariate logistical analysis further separated out the four independent risk factors: small gestational ages, duration of oxygen therapy ($p < 0.001$), and bronchopulmonary dysplasia, number of blood transfusions ($p < 0.05$). Perinatal risk factors did not reach statistical significance for development of severe forms of ROP.
Conclusion: The incidence of severe forms of retinopathy of prematurity was 21.9%. Aggressive form of ROP was present in 10.1% of children. Small gestational ages, duration of oxygen therapy, bronchopulmonary dysplasia, number of blood transfusions was risk factors for development severe form of ROP.

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PO90: Cardiovascular Consequences of Bronchopulmonary Dysplasia in Prematurely Born Preschool Children

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Backgroud and aims: Bronchopulmonary dysplasia (BPD) is one of the most important chronic complications of premature birth. Although long term effects of BPD are more commonly known by the well-defined pulmonary consequences, cardiovascular sequelae related to BPD have also been reported. In the post-surfactant era data on the cardiovascular changes in new BPD patients is limited. In this study we aimed to investigate the role of myocardial tissue Doppler echocardiography in detecting cardiac pathology in preschool BPD patients and to find out possible risk factors related to cardiovascular sequela.
Methods: Prematurely born children with BPD (n = 21.4 severe BPD, 3 moderate BPD and 14 mild BPD) and without BPD (n = 20) at 2 to 4 years of age were enrolled to the study. Conventional and myocardial tissue Doppler echocardiography studies were performed.
Results: In conventional echocardiography; right ventricular fractional shortening, tricuspid E/A ratio, mitral late diastolic inflow velocity and pulmonary acceleration time were decreased; mitral E/A ratio, left and right ventricular myocardial performance indexes were increased in BPD group compared to controls. In myocardial tissue Doppler measurements; tricuspid annulus E'/A'ratio was decreased and interventricular septum systolic velocity was increased in BPD group. Low birth weight, disease severity and postnatal cumulative steroid dosage were related with echocardiographic changes.
Conclusion: BPD affects global cardiac performances up to 2 to 4 year of age with regard to birth weight, disease severity and cumulative steroid dosage. Myocardial tissue Doppler examination did not have additional value to conventional echocardiography in demonstration of these changes.

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PO91: Developmental Profile of Premature Children: A Follow-Up Study

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Introduction: Preterm birth is often related with negative consequences for global development, demanding longitudinal studies combining different type of factors. Development assessment is an important procedure to detect potential developmental problems demanding early intervention. In this is study our aim was to examine de developmental profile of premature children born with low birthweight at the third year (Mean:32.67 months) and sixth year (Mean: 55.87) of life, and to explore the importance of sociodemografic factors (e.g. mother's age, parental socioeconomic status) and clinical factors (e.g. gestational age, birthweight, period of hospitalization) in the developmental outcomes, along the developmental trajectory.
Methods*:* A cohort of 25 children born at 2007 in a public hospital was evaluated with the Griffiths Mental Developmental Scales (2004). The scales yield standardized subquotient scores (Mean 100, SD 16) percentiles and developmental ages in six domains: Locomotor, Personal-Social, Hearing and language, Eye and Hand Coordination, Performance, Practical Reasoning. The result can also be expressed in a General Quocient (GQ) score (Mean 100, SD 12).
Results*:* The GQ scores at third year (Mean: 74.78) and at sixth year (Mean: 83.80) are below average, but presents an improvement. This difference was significant for GQ scores ($p < 0.05$), and was also significant for Personal-social subscale, Hearing and Language subscale and Eye-Hand Coordination subscale ($p < 0.05$). Lower birthweight (< 1250gr) is significantly correlated with worse

GQ at third and sixth year.
Conclusions*:* Results indicate that this population is at risk considering the transition for school, requiring adequate complementary assessment and intervention measures.

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PO92: Use of The Parenting Stress Index in Parents of Preterm Infants

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Introduction: The aim of the study was to describe parenting stress experienced by parents of preterm infants following hospital discharge longitudinally and to correlate risk factors of the infants to parenting stress.
Methods: Parents of 148 preterm infants admitted in the Neonatal Intensive Care Unit from February 2006 to May 2011 and followed up longitudinally post discharge were included in the study. Neonatal risk factors, socioeconomic status, stressful life events and neurodevelopmental outcome of the infants at 6, 12 and 24 months corrected age were recorded. Mothers and fathers were administered as a screening tool for Parenting Stress, the Parenting Stress Index -short form (PSI-Short form), a 36-item self - scoring questionnaire that includes a Total Stress score (PSI IV) and 3 subscales: parental distress (PSI I), parent-child dysfunctional interaction (PSI II), and difficult child (PSI III).
Results: Total Stress (PSI IV) (scores at or above the 85th percentile) was shown in 6%, 10% and 16% of the mothers at 6, 12 and 24 months respectively. Total Stress (PSI IV) was shown in 7.5%, 4.7% and 13.3% of the fathers at 6, 12 and 24 months respectively. Equivalent results were shown in the subscales. A significant correlation was shown between the total PSI score at 6 months with birth weight (mothers $p = 0.031$, fathers $p = 0.044$), IVF pregnancy (mothers at 12 months $p = 0.05$, mothers at 24 months $p = 0.024$), ROP with Laser treatment (mothers at 12 months $p = 0.05$, fathers at 6 months $p = 0.011$), duration of hospitalization (mothers at 6 months $p = 0.01$, mothers at 12 months $p = 0.05$), severe visual problems (mothers at 6 months $p = 0.044$,), developmental deficits (fathers at 24 months $p = 0.05$), educational status (fathers at 6 months $p = 0.002$), stressful life events (mothers at 6 months $p = 0.011$, mothers at 12 months $p = 0.011$).
Conclusion: The PSI-short form may be used in follow up programs of preterm infants to quantify parenting stress. Findings show that parents of preterm infants experience stress that can be related to neonatal risk factors, socioeconomic factors and developmental outcome. Therefore there are implications for the appropriate support of parents in the early years of parenting a preterm infant

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PO93: Presumptive Aetiology of Cerebral Palsy at Age 5 in Portugal in the Birth-Cohort 2001-2003

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Introduction. Cerebral palsy (CP) is a group of permanent, but not unchanging, disorders of movement and/or posture and of motor function, which are due to a non-progressive interference, lesion, or abnormality of the developing/immature brain (SCPE). The surveillance of CP among 5-years-old children is a useful tool to monitor health care through the identification of presumptive aetiologies of CP.
Methods. Cross-sectional with nested retrospective cohort study, based on active surveillance data from the 5-years-old children in Portugal, born in 2001-2003, reported to the National Surveillance of Cerebral Palsy in Portugal. Compatible syndromes and congenital brain anomalies were assumed when specifically reported; developmental disorder of the very premature brain (DDVPB) was assumed in those born < 34 weeks if no other cause was identified; lesion due to congenital infection (TORCH or other) was assumed when reported; perinatal asphyxia was assumed if Apgar score ≤6 and seizure in the first 72 hours after birth or Apgar score ≤ 3 or suggestive MRI or compatible obstetric events; post-neonatal cause was assumed when the attributed event happened after the 27th day of life. Non-parametric statistical tests were used.
Results. From 553 registered CP children (526 born in Portugal), 513 children living in Portugal at age 5 were included (496 born in Portugal): 23.9% born < 32 weeks, 15.5% at 32-36 weeks and 47.4% at term. Aetiology was attributed to 319 cases (61%), as follows: DDVPB 144 (45.1%), perinatal asphyxia 48 (15%), congenital brain anomaly 28 (8.8%), congenital infection 20 (6.3%); syndromes 7 (2.2%), other perinatal and neonatal causes 35 (11%), post-neonatal causes 36 (11.3%). Specific causes: CMV 16 cases (5%), herpetic encephalitis 6 (1.9%), stroke 22 (6.9%; 6 post-neonatal), trauma (5), kernicterus (4), HIV (4), malaria (3; 1 congenital, born in Portugal). Through this period there was a decrease in the cases attributed to perinatal asphyxia, congenital infection and post-neonatal causes. Children born in maternities with < 1500 deliveries/year are overrepresented among cases of perinatal asphyxia (33.3%).
Conclusions. DDVPB is the main presumptive cause of CP in Portugal, followed by perinatal asphyxia and post-neonatal causes. CP risk factors analysis may provide grounds for the reduction of CP prevalence.

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PO94: Neurological Outcomes in Preterm Infants with Neonatal Seizures

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Introduction. Preterm infants with perinatal brain damage and neonatal seizures (NS) are at high risk of unfavorable neurological outcomes. The objective of the study was to evaluate the neurological outcomes in preterm infants with NS by the corrected age of 1 year.
Methods. 83 newborns with gestational age (GA) of 22-33 weeks (27.6 ± 2.31 weeks) with moderate or severe perinatal brain damage and NS were assessed. All the patients were subdivided into two groups matched on severity of brain damage and GA. The diagnostic procedure included prospective neurological assessments, electroencephalography during physiological day-time sleeping at the corrected age of 36-40 weeks, 1 and 6 month, brain imaging

(cranial ultrasound).
Results. All infants were seizure free but 51 were treated with anticonvulsants upon discharge. Abnormal EEG patterns at the corrected age of 6 months were determined in 27 (90%) of cases in group 1 (neonates with moderate perinatal brain damage and NS, *n* = 30) and in 46 (87%) of cases in group 2 (neonates with severe perinatal brain damage and NS, *n* = 53). Clinical seizures beyond the neonatal period were observed in 1 (3.3%) and in 21 (39.6%) of cases in group 1 and in group 2 respectively (Pearson χ^2 = (df = 1) = 12.95; *p* = 0.0003). Presence of periventricular leukomalacia (PVL) cysts was higher in infants with severe perinatal brain damage and NS (Pearson χ^2 = (df = 1) = 20.17; *p* = 0.0000). By the corrected age of 1 year 18 (60%) infants in group 1 and 9 (17%) infants in group 2 had normal psychomotor development. Unfavorable neurological outcomes (developmental delay, cerebral palsy and symptomatic epilepsy) were observed significantly more often in infants with severe perinatal brain damage, regardless of GA and presence of PVL cysts.
Conclusion. Unfavorable neurological outcomes by the corrected age of 1 year were observed in 68% of preterm infants with perinatal brain damage and NS regardless of GA and presence of PVL cysts. Presence of abnormal EEG patterns (including epileptiform activity) at the corrected age of 6 months in preterm infants with the history of perinatal brain damage and NS who are clinically seizure free and are at high risk of developing postneonatal epilepsy requires repeated EEG monitoring assessments.

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PO95: Neonatal Outcomes Following a Tight Nuchal Cord

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Introduction: Best practices have not been defined for the care of a neonate born after a tight nuchal cord. We compared outcomes of neonates born after a tight nuchal cord *vs.* after a loose nuchal cord *vs.* after no nuchal cord.
Methods: This was a retrospective comparison using electronic data of all deliveries between 2005 and 2011 in a multihospital healthcare system in the United States. At delivery, each birth was recorded as either having a tight nuchal cord, a loose nuchal cord, or no nuchal cord. Nuchal cord was defined as a loop of umbilical cord ≥ 360 degrees around the fetal neck. 'Tight' was defined as inability to manually reduce the loop over the fetal head, and 'loose' as the ability to manually reduce the loop.
Results: Of 219,337 live births in this period 6.6% had a tight and 21.6% had a loose nuchal cord. Owing to the very large sample size, several intergroup differences were statistically significant but all were judged as too small for clinical significance. Term neonates with a tight nuchal cord were slightly more likely to be admitted to a Neonatal Intensive Care Unit (NICU). Those with a tight nuchal cord were not more likely to have dopamine administered or blood hemoglobin measured in the first day, nor were they more likely to receive a transfusion or to die. The subset of Very Low Birth Weight neonates with a tight nuchal cord, compared to those with no nuchal cord, were of the same gestational age and birth weight, with the same Apgar scores, and were not more likely to have severe intraventrucular hemorrhage, retinopathy of prematurity, periventricular leukomalacia, or death.
Conclusions: Tight nuchal cords are not uncommon, occurring in 6.6% of over 200,000 consecutive live births in a multi-hospital health system. No differences in demographics or outcomes, judged as clinically significant, were associated with a tight nuchal cord. Thus, we speculate that best practices for neonatal care after a tight nuchal cord do not involve an obligation to perform extra laboratory studies or monitoring solely on the basis of a tight nuchal cord.

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PO96: Predictive Value of Acid-Base Status in Critically Ill Neonates

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Introduction: Neonates have a high affinity for acid-base disorders. Although reports about the correlation between acid-base abnormalities and outcome are contradictory, metabolic acidosis remains a strong indicator of poor prognosis in critically ill patients. Aim of this study is to analyze the predictive value of acid-base parameters in predicting outcome in critically ill neonates.
Methods: Data were prospectively collected from 101 consecutive neonates, admitted to the Department of intensive therapy and care, Pediatrics clinic of University Clinical Center of Tuzla during 2011. We analyzed acid-base parameters by the traditional and Stewart's method and tested their predictive value in predicting outcome.
Resaults: Patients who died had much worse all acid-base parameters. Differences in the derived parameters of acid-base analysis were also significant. In univariate logistic regression analysis the base excess (BE) and corrected anion gap (AGcorr) were statistically significant predictors of mortality, in contrast to the strong ion gap (SIG). In multivariate logistic regression analysis, AGcor was no longer a significant predictor (OR = 1.052, 95% CI = 0.94 to 1.18, *p* = 0.37), while the BE, according to this analysis, was an independent prognostic factor for mortality (OR = 0.725; 95% CI = 0.62 to 0.85, *p* < 0.001), which practically means, that for every decrease in BE by one unit, risk of death increased by 37.9%.
Conclusion: Acid-base status is a reliable assessment method of current health condition, may indicate signs of deterioration or crisis, and predict mortality risk. Metabolic acidosis remains strong predictor of mortality among critically ill neonates.

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PO97: Morbimortality Among Very Low Birth Weight Infants: Casuistic of a Neonatal Intensive Care Unit

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Introduction:Medical care of Very Low Birth(VLBW) infants has changed dramatically with new approaches for both obstetric management and neonatal care. Significant improvements in preventive, diagnostic and therapeutic actions have allowed for better embryo evaluation and more precise care in relation to foetal health, leading to an increasing survival rate for these infants. This study had as objective to investigate the morbimortality among VLBW infants admitted at the Neonatal Intensive Care Unit (NICU) of Bom Jesus Hospital-Toledo-Pr-BRASIL.
Methods: a retrospective observational hospital-based study with newborns admitted between 2000/april and 2010/august. It was analyzed the variables: birth weight, gestational age by

Capurro's method, comorbidities such as hyaline membrane disease (HMD), patent ductus arteriosusus(PDA), sepsis, necrotizing enterocolitis(NEC), intraventricular hemorrhage(IVH), bronchopulmonary dysplasia(BPD), and therapeutic(surfactant, ventilation). We compared our results with medical literature.
Results: 1551 newborns were admitted during the studied period, of which 337 (21.7%) were classified as VLBW infants. Among these infants, 122 (36.2%) were classified as extremely low weight (ELW) infants (< or = 1000g) and 215 (63.7%) as VLBW infants (> 1000 and < or = 1500g). Gestational age ranged from 25 to 36 weeks and the birth weight ranged from 590g to 1500g. 79 neonates died (23.4%). Concerning the group ELW infants, 115 (94.3%) presented HMD and ventilation with surfactant replacement therapy; 37 (30.3%) infants presented PDA; 97 (79.5%) had sepsis (being early-onset sepsis: 56 (57.7%) cases and late-onset sepsis: 41 (42.2%); 10 (8.2%) infants presented NEC; there were 43 (35.2%) cases of BPD and five (4%) cases of IVH; 58 (47.5%) infants died. Concerning the group VLW infants, HMD occurred in 112 (52%) infants and ventilation with surfactant replacement therapy too; 132 (61.3%) infants had sepsis, being of early-onset: 63 (47.7%) cases and late-sepsis: 69 (52.2%) infants; NEC occurred in 19 (8.8%) cases and IVH had 10 (4.6%) infants; 25 (11.6%) infants presented BPD and 21 (9.8%) died in this group.
Conclusion: premature infants comprise the majority of high-risk newborns. HMD was the most cause of respiratory distress in this study, similar at the literature. Our data showed an increased incidence of sepsis and PDA when compared with medical literature. There wasn't PDA in the group VLW. With recent knowledge about pathophysiology of these babies and better antenatal care we hope to see an improvement in their neonates.

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PO98: Prevalence of Surgical Disorders on The Neonatal Intensive Care Unit

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Introduction: Surgical disorders in newborns a lot of times is a emergency. An infant can develop pneumothorax spontaneously or due to ventilator associated barotrauma, when symptomatic (tension) is as emergency and a needle aspiration can be done as an emergency. Intestinal perforation by necrotizing enterocolitis (NEC) is usually manifested by pneumoperitoneum, which is an indication for surgery. NEC is the most frequent gastrointestinal neonatal problem related to serious morbidity and mortality in the NICU. Inguinal hernia tend to present as lumps or bulge that come and go at the pubic tubercle, usually surgically repaired when the infant's general medical conditions permits. Infants with duodenal obstruction typically experience vomiting (often bilious). Infants with obstructing lesions in the distal intestine have typically distended abdomens, fail to pass meconium, and vomit bilious material. This study had as objective to investigate the prevalence of surgical disorders of newborns admitted at the Neonatal Intensive Care Unit (NICU) of Bom Jesus Hospital-Toledo-PR-BRASIL.
Methods: a retrospective observational hospital-based study with newborns admitted between 2000/april and 2010/august. It was analyzed birth weight, gestational age by Capurro's method and presence of surgical disorders as main diagnosis or as co-morbidity.
Results: 1551 newborns were admitted during the studied period, of which 123 (7.9%) presented surgical disorders. Gestational age ranged from 25 to 42 weeks (mean: 36.92 weeks) and the birth weight ranged from 590g to 4800g (mean: 2696g). Eighteen neonates died (14.6%). Surgical disorders more frequent were: pneumothorax (36 cases - 29.2%); intestinal perforation by necrotizing enterocolitis (19 cases - 15.4%); inguinal hernia (12 cases - 9.7%); duodenal atresia (9 - 7.3%); jejunal/ileal atresia (8 - 6.5%); esophageal atresia, hypospadias and gastroschisis: five cases each; cryptorchidism (undescended testis): four cases; bladder exstrophy, hydrocele, diaphragmatic hernia, colonic atresia, omphalocele, 'white laparotomy', congenital aganglionic megacolon: two cases each; tracheostomy, abdominal congenital teratoma, imperforate anus, cloacal exstrophy, peritoneal adhesions and gastrostomy: one case each.
Conclusion: surgical disorders are very frequent in the neonatal period, being in this study the most frequent were: pneumothorax, intestinal perforation by necrotizing enterocolitis, inguinal hernia, duodenal atresia and jejunal/ileal atresia. 14.6% newborns died. Significant improvements in diagnostic and therapeutic actions have allowed for better embryo evaluation and more precise care in relation to foetal health, leading to an increasing survival rate for these infants.

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PO99: Thoracoscopy Versus Thoracotomy in Surgical Treatment of Congenital Diaphragmatic Hernia in a Teaching Hospital

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Introduction: Correction of congenital diaphragmatic hernia (CDH) by minimally invasive surgery may have some advantages. The classical approach is still a useful option in complicated cases. In the present study we compare thoracoscopy with thoracotomy for surgical repair of CDH.
Methods: Patients diagnosed with CHD (n = 21), aged less than 28 days, that underwent surgery at the Pediatric Surgery Department of Centro Hospitalar São João, between January 2006 and December 2010, were selected for retrospective analysis. Parameters related to prenatal development, surgery, hospitalization and follow-up were collected.
Results: Classical approach was used in 71% (n = 15) of newborns and thoracoscopic approach in 29% (n = 6). The two groups had similar characteristics with regard to prenatal variables. In thoracoscopic group, the time of hospitalization (23 ± 6 vs 38 ± 10 days) and mechanical ventilation (16 ± 6 vs 23 ± 5 days) were lower, but there was a higher rate of intraoperative complications (17% vs. 7%). However, these variables were not statistically different. The classical approach had more immediate postoperative complications (20% vs 0%). Regarding the differentiation of the surgeon, 80% of classical approaches were performed by residents and 83% of thoracoscopic by specialists (p = 0.014). Thoracoscopic approach had a higher recurrence rate (33% vs 13%) but this difference was not statistically different.
Conclusion: In our Hospital both approaches were safe in the correction of CDH. Thoracoscopic approach may offer some advantages but also disadvantages and the best approach is still a matter of debate.

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PO100: The Use of Transcutaneous Bilirubinomerty in Newborns

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Introduction: Neonatal hiperbillirubinemia is one of the most common potentially pathological occurences in newborns. The non-invasive method for mesuring the concentration of billirubin such as transcutaneous billirubin measurement /TCB/, has a great significance in reduction of the unnecessary traumatization of the newborns by repeated venipuncture in order to obtain blood for the analysis, medical expenses and hospitalization. Analyse diagnostic TCB values in healthy full term newborns based on the following parameters: the co-relation of the TCB coefficient and standard biochemical analysis (diazo method) /SBR/; the level of sensitivity and the specifity of the appliance on the cut-off values; both positive and negative predictive values of the TCB; the level of TCB's efficiency; the high percentage of cutting down on the unnecessary venipunctures.
Methods: Sixty-six healthy, full term newborns were taken in for the prospective study. A yellowing of the skin was registered in all of these infants. By using both TCB SBR methods, the level of billirubin on the second and on the third day was measured and compared. Transcutaneous billirubinometer BILITEST M 2000, by Technomedica was used for measurement.
Results: Transcutaneous billirubin measurment has higher coefficient of co-relation than SBR on the second and third day of life (r = 0.758, p < 0.0001). Based on our research, the highest efficient cut-off value of TBC is 215 mmol/L. At the values higher than 215 mmol/L, the sensitivity of the method is 0.92, while the specificity is 0.77. The positive predictible value is 0.49, as the negative predictible value is extremely high -0.98. Total diagnostic efficency is 0.8. If the blood samples were taken only from the newborns with TCB > 215 mmol/L, the number of newborns whose blood is taken for the analyses would be reduced for 64.39%.
Conclusion: The transcutaneous billirubin measurement is highly effective in healthy full term newborns. This method can be recommened as extremely useful for screaning of the clinically significant jaundice in newborns.

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PO101: Subcutaneous Fat Necrosis Following Hypothermia and Complicated By Hypercalcaemia: Case Report

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Introduction: Fat necrosis (FN) of the subcutaneous tissue of the newborn (NB) is a rare entity associated with neonatal asphyxia, meconium aspiration, seizures or hypothermia. Lesions are characterized by subcutaneous nodules/plaques preceded by local edema. Evolution is usually benign, without scarring. Hypercalcaemia is the complication most frequently associated with FN, which can lead to death.
Clinical Case: NB, male, 2nd child of a 32 years old woman, badly monitored pregnancy. Only one normal ultrasound at 35 weeks of gestation. Other prenatal history is unknown. Emergency c-section at 39 weeks by decreased fetal movements and abnormal cardiotocographic registration. Meconium-stained amniotical fluid. At first observation was seen an hemorrhagic mass at the basis of the cord. Intubation at 1st minute. Apgar score 2/8/9. Extubated at 15th minute. For clinical and analytical criteria of Hypoxic-Ischemic Encephalopathy (HIE) was initiated protocol of induced hypothermia for 72 hours. During the rewarming period, there were episodes of transient hypotension and extrasystoles. Electroencephalogram (D8) with widespread critical activity and MRI (D9) compatible with severe HIE. At D11 of life emerges plaque injury: extensive, erythematous, hard on touch, reaching the back, shoulder and thighs. Skin biopsy (D12) was compatible with FN. At D23 found hypercalcaemia of 3.53mmol/l treated with hyperhydration and furosemide 2mg/kg/day EV. Maximum serum calcium of 3.97 mmol/l (ionized calcium 1.94 mmol/l), so pamidronate 0.45 mg/kg/day IV (4 doses) was begun. Gradual decline of the values of ionized calcium to 1.23 mmol/l on day of discharge (D34). Skin lesions and values of ionized calcium were normal at 4 months re-evaluation.
Discussion: Early identification of FN was important in order to anticipate the possibility of hypercalcaemia and the start of addressed therapy beforehand. As described in the literature, the FN situation is benign and resolves spontaneously. The treatment of hypercalcaemia constitutes intravenous hyperhydration, furosemide to induce urinary excretion of calcium and bisphosphonates in order to decrease osteoclast activity.

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PO102: Epidermolysis Bullosa in Newborn: A Case Report

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Introduction: Epidermolysis Bullosa (EB) belongs to an heterogeneous group of rare diseases of the skin, genetically determined, characterized by the tendency of the skin and mucous membranes to form blisters and lesions spontaneously or after minimal trauma. There are three subtypes: simplex EB (single blisters that heal without permanent scarring), junctional EB (formation of generalized blisters, extensive denudation) and dystrophic EB (the most severe, atrophy of the blisters areas, dystrophies of extremities and loss of nails, usually manifested in the neonatal period).
Case report: Newborn, female, 2nd child of a 34 years old woman, monitored pregnancy without complications. No relevant family history. Normal delivery at 39 weeks of gestation, Apgar score 9/10, birthweight 3675g. At birth were objectified extensive sores in the ankle and bullous lesions on the lower lip, third finger of the left hand, right inguinal region and axilla, and pustules throughout the posterior neck, anterior surface of the lower limbs and genital area. Was always hemodynamically stable and the rest of physical examination was normal. Analytically, without leukocytosis, with CRP <5mg/dl and negative blood cultures. Culture of the lesion exudate was negative. Under flucloxacillin IV 50mg/kg/day and ampicillin IV 100mg/kg/day (for 6 days). It was made daily nursing care preceded by the oral administration of paracetamol 15mg/Kg/dose and morphine 0.18 ug/dose. Discharged at 18th day with all cutaneous lesions under re-epithelialization. It was made molecular study that showed no mutations in the regions of the KRT5 and KRT14 genes. Histological examination of the lesions was compatible with dystrophic epidermolysis bullosa (DEB). At age of 3 years, showed a normal psychomotor and growth development. Rare appearance of skin lesions, without mucosal changes, tooth or nail.
Discussion: The DEB is a serious and rare disease, usually manifested in the neonatal period with the appearance of multiple bullous lesions. The absence of mucosal involvement, dental or nail, make a favorable prognosis for this child. The multidisciplinary approach is essential, avoiding the formation of new blisters, controling and treating secondary infections, caring of the areas of denudation of the skin and preventing the formation of scarring

and disability.

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PO103: Hepatitis B Immunization for Newborns in Phi Health Centre Negotino 2004-2011

Zagorka RAJCHANOVSKA, Snezhana JANCHEVSKA

Introduction: Viral hepatitis B is a serious global public health issue. Vaccination for hepatitis B is the first and, for now, single preventive measure. The aim of the article is to show the successful work of our preventive unit and the high percentage of newborns, from our maternity ward, vaccinated for hepatitis B during a 7-year period.
Methods: The data contained in the cards for newborns from November 2004 to December 2011 was analyzed and the analytical-statistical and descriptive methods were used.
Results: The results of the analysis are presented numerically, tabularly and graphically. The continual immunization for hepatitis B was established in Macedonia by legal acts in 2004. The immunization of the newborns is carried out with a three-dose genetically engineered vaccine in the first 24 hours after birth, the second, and the sixth month after birth. In the period 2004-2011, we had 1728 newborns of which 1600 (92.6%) were vaccinated in the first 24 hours of life. Immunization was delayed in 128 newborns (7.4%) for the following reasons: perinatal infection in 64 (3.7%), low birth weight in 42 (2.4%), and asphyxia in 22 (1.2%). By the end of the second month, all of them were vaccinated for hepatitis B, i.e., 1728 (100%) received the first dose. All of the 1728 newborns (100%) received the second and third dose for hepatitis B.
Conclusion: Hepatitis B vaccination in newborns is the single effective measure of prevention and control of this infection. It is the single measure that can prevent the occurrence of hepatocellular carcinoma and transmission of HBV and HDV. The percentage of vaccinated newborns in our maternity ward is high and satisfactory - 100%. The cooperation between the gynecologist and the pediatrician is necessary in order to deliver a healthy newborn ready to receive a vaccine for hepatitis B.

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PO104: Central Venous Lines in Neonates: Are They Safe?

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Introduction: Central venous catheters (CVC) provide secure vascular access and are essential element of neonatal care. Despite all precautionary measures, CVC are associated with serious complications which carry high risk of mortality and morbidity. They are often related to and aggravated by catheter tip malposition. Here, we report a series of CVC-related complications in 7 neonates and emphasizes the importance of a high index of suspicion for acute clinical deterioration in neonates with central lines.
Clinical cases: Case 1. Umbilical vein catheter (UVC) misplaced in the right atrium resulted in formation of giant floating polypoid mycotic right atrial thrombus (2x1 cm) in a 33-weeks GA infant with gastroschisis and apple-peel intestinal atresia. Candida dubliniensis septicemia was eventually eradicated by thrombectomy. Case 2. Acute respiratory distress as a result of peripherally inserted central catheter migration to the right pulmonary artery causing right-sided pulmonary opacification and hydrothorax. Thoracocentesis and withdrawal of the catheter resulted in a rapid and complete recovery. Case 3. Sudden cardiocirculatory deterioration in a neonate with meconium aspiration syndrome caused by UVC migration toward the left atrium resulting in a tamponade due to TPN diffusion into the pericardial space. Hemodynamic recovery was accomplished by emergent pericardiocentesis and repositioning of the central line. Case 4. Intraperitoneal extravasation of TPN infusate from an malpositioned UVC led to progressive abdominal distension, respiratory deterioration and prerenal azotemia in a 25 weeks GA infant. Paracentesis yielded 40 ml of parenteral fluid. Cases 5, 6 and 7 Extensive hepatic erosions by misplaced UVC in the portal vein. All neonates had abdominal distension and ascites. One patient died due to severe HIE, and one developed transient portal hypertension with cholestasis. After removal of the UVC, all surviving infants showed gradual clinical resolution of symptoms and sonographic improvement of the cystic lesions with complete hepatic function recovery.
Discussion: These cases underline the necessity for good skin fixation to prevent onward catheter movement and the importance of reassessment of the catheter position if any unexplained clinical deterioration occurs during parenteral nutrition. Prompt recognition of the problem and rapid treatment are essential and life saving.

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PO105: Clinical Determinants of Vaccinations in Preterm Neonates

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Introduction: In Poland the percentage of preterm neonates has remained unchanged at the level of 6.5-7% for years. The care of a premature baby is based at first on stabilization of its living functions but in further steps of neonate's maturation a proper stimulation of the immune system in the form of vaccinations according to the biological age should be introduced.
Methods: One performed retrospective analysis of premature neonates born in the Clinic of Neonatology and Intensive Care of Neonate, Medical University of Warsaw in 2011, in whom vaccination schedule started during their hospitalization. The group comprised 46 neonates born prematurely between 24 - 32 Hbd. Difficulties in starting the vaccination due to the complications associated with prematurity were analyzed. According to the Polish Programme of Vaccinations the vaccinations in premature neonates should take place as follows: against HBV – on the first day of life and in 6-8th week of life (w.o.l.); against tbc – after gaining > 2000g mass, against invasive pneumococcal disease – after 6th w.o.l. and against diphtheria, tetanus and pertussis (DTaP) in 6-8th w.o.l.
Results: Neonates vaccinated in the Department of Pathology of Neonate comprised 34% of all children born before 32 Hbd. There were 7 children born in 24 Hbd, 8 – 25 , 7 – 26, 5 – 27, 5 – 28, 4 – 29, 5 – 30, 4 – 31, and in 1 – 32, respectively. Mean body mass was 979,56 g (range 520-1600). Mechanical ventilation was used for 15 days on average, while CPAP – for 16 days. 27 out of 47 children (58.69%) were diagnosed with an infection of an early onset, while 24 (52.17%) with a secondary infection. 5 neonates (10.86%) developed NEC, while 10 (21.73%) retinopathy of neonates demanding laser therapy. In the studied group two neonates were not vaccinated against tbc due to the fact that they were referred to another department. The remaining patients were vaccinated on the 71st day of life on average (10th w.o.l.). In 32 neonates prophylaxis that combined both vaccination against pneumococci (on the 71st day of

life – 10 w.o.l.) and DtaP (78th day of life – 11 w.o.l.) was engaged.
Conclusions: 1. Neonates born prematurely have a significant delay in vaccination schedule of 2-3 weeks on average. 2. Complications of prematurity postpone the immunization

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PO106: Does 'Google Translate' Replace Translation Services in The NICU? A Tri-Lingual Comparison

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Background: Communication with family members with limited English proficiency is a daily challenge in the work on a neonatal intensive care unit (NICU). Professional interpreters are not always at hand whereas online translation tools, e.g. Google Translate (GT), appear to offer a feasible and easily accessible alternative. The objective of this study was to test the reliability of selected GT translations of standardized sentences of a neonatal doctor-patient-interview.
Methods: 20 sentences were taken from an English NICU parent information brochure and translated in to German and Portuguese using GT. After checking the translations with regards to grammar and content, in a second step and after simplification of all incorrect sentences, re-translation with GT was performed and again checked for correctness.
Results: 50% (*n* = 10) of the Portuguese translations and 60% (*n* = 12) German translations were incorrect in regards to content and grammar. Example: 'If it is believed that further treatment cannot help the baby, parents may be asked to consider removing life-supporting equipment.' Translation Portuguese: *Se acredita-se que o tratamento ainda não pode ajudar o bebê, os pais podem ser convidados a considerar a remoção de equipamentos de apoio à vida.* Translation German: *Wenn man glaubt, dass eine weitere Behandlung kann mir nicht helfen, das Baby, können die Eltern gebeten, die Streichung lebenserhaltenden Geräte werden.* Simplification led to correct content in only 10% of the Portuguese and 40% of the German sentences whereas the remainder stayed imprecise. Example: 'Sometimes further treatment cannot help the baby. Parents may be asked to consider removing life-supporting treatment.' Translation Portuguese: *Às vezes, o tratamento ainda não pode ajudar o bebê. Os pais podem ser convidados a considerar a remoção de apoio à vida tratamento.* Translation German: *Manchmal weitere Behandlung kann mir nicht helfen, das Baby. Die Eltern können aufgefordert werden, in Erwägung ziehen, lebenserhaltenden Behandlung werden*.
Discussion: Contextual and grammatical incorrect translations were very common when using GT. The design of GT as a statistical translation engine (SMT) might be an explanation.
Conclusion: The error-rate of translations with neonatal content with GT is high. Interpreter services will not be replaceable by online translation tools.

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PO107: Analysis of Acute Lower Respiratory Tract Infection Caused by Respiratory Syncytial Virus in Term and Preterm Infants Relating to Effectiveness of Palivizumab Prophylaxis

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Introduction: Respiratory syncytial virus (RSV) infection is the most common cause of lower respiratory infection and hospitalization, especially among the premature infants. However, palivizumab is a very expensive treatment and there needs to identify optimal high risk groups for cost-effectiveness. No study has been done in Korea for this purpose. The aim of this study is to identify the clinical characteristics of lower respiratory tract infection due to RSV in young children in Ilsan city and to provide information for an effective guideline for palivizumab administration in Korea.
Methods: Medical charts of 167 patients under 3 years of age who were hospitalized in Dongguk University Hospital for lower respiratory tract infection between January 2007 and February 2011 were reviewed. Diagnosis of the virus was made based on the multiplex real time polymerase reaction
Results: There were 113 patients who were infected by RSV and among them, 90 patients were term infants and 23 patients were preterm infants. No difference was shown between term and preterm infants except the days of admission which was 9.0 6.0 days and 12.6 21.0 days respectively. In the preterm group, their mean age at the time of admission was 5.21 4.9 months and the mean gestational age was 33.1 4.3 weeks, and the mean birth weight was 2,152 950g. Patients according to gestational age was 4 (< 28wks), 2 (28-32wks), 16 (> 32wks). Only 4 patients were born under 28 weeks gestational age and were candidates for palivizumab administration.
Conclusion: Most of the patients with severe RSV lower respiratory tract infection were term or near term infants who were not candidates for palivizumab prophylaxis administration. Total drug cost was more than total admission fee. A nationwide study is needed to make a new risk stratified guideline for RSV prophylaxis for our country.

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PO108: Congenital Myofibromatosis in a Neonate

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Introduction: Myofibromatosis is a rare mesenchymal disorder marked by the development of firm nodules in the skin, muscle, bone and/or subcutaneous tissues, whose etiology and mode of transmission is uncertain. Lesions may range in size from few millimeters to several centimeters and may number in hundreds. Three patterns are recognized, based on location and extent of lesions: solitary, multicentric with and without visceral involvement, with prognosis depending on the extent of disease.
Case report: We present the case of a male newborn born at term by vaginal delivery, after an uneventful pregnancy, with multiple firm nodular lesions adherent to deep planes, with variable dimensions, which were evident immediately after birth. These involved muscular groups of neck, trunk, abdomen and both extremities. Aspirative cytology and biopsy were compatible with myofibromatosis. Coagulopathy and thrombocytopenia justified multiple blood, platelet and fresh frozen plasma transfusions since birth. Skeleton x-ray, transfontanellar/renal ecography and echocardiogram had unremarkable findings. The myelogram performed was unsuccessful. Thoracic CT at 20 day of life (DOL) excluded parenquimatous lesions, evidencing multiple hipodense lesions affecting several

muscle groups in dorsal area and paravertebral gutters. Respiratory and hemodynamic instability was documented at 23 DOL, with increased need for supplemental oxygen, appearance of extensive heterogenous hipodense left pulmonar infiltrate and massive pulmonary hemorrhage. Bowel ischemia caused a markedly distended abdomen. On the same day, severe bradycardia refractory to cardiopulmonary reanimation causing death was verified. Parents refused autopsy.

Discussion: Clinicians should be aware of this rare but potentially life-threatening entity that must be considered in differential diagnosis of pediatric dermal and/or subcutaneous nodules. Clinical evolution and fatal outcome in this case suggests a case of congenital multicentric myofibromatosis complicated by the development of probable visceral lesion (pulmonary) leading to hemorrhage and major hemodynamic instability. Although solitary or multicentric disease without visceral involvement have excellent prognosis with spontaneous regression, visceral lesions are associated with significant morbidity and mortality, typically at birth or soon after and due to cardiopulmonary or gastrointestinal complications.

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PO109: HDR Syndrome: Neonatal Clinical Presentation

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Introduction: Hypoparathyroidism, sensorineural deafness and renal disease, also known as HDR syndrome, was first described by Barakat, *et al*. In 1977. Its frequency is unkown, but it is considered to be very rare. It is primarily caused by abnormalities in the GATA3 gene, which is contained on the short arm of chromosome 10. Inheritance is probably autosomal dominant. HDR syndrome has rarely been described in children.

Clinical Case: A female neonate, first child of a healthy mother with a previous spontaneous abortion, was delivered at 38+4 weeks´gestation**.** Left multicystic renal dysplasia was diagnosed prenatally. A cesarean section was performed due to intrauterine growth restriction; birth weight was 2250 grams and Apgar score was 9/10. Maternal serologies were negative as well as neonatal urine cytomegalovirus screening. Renal ultrasound performed on the 4th day of life confirmed the prenatal diagnosis of left dysplastic kidney; brain ultrasound on the second day showed images suggesting parenchymal calcifications and lenticulostriated vasculopathy. Neonatal hearing screening including otoemission and auditory evoked potentials were abnormal and sensorineural deafness was diagnosed during the 4th month of life. The infant evaluated with an impaired development and was studied genetically. Karyotype analysis showed terminal deletion of the short arm of chromosome 10. The child is now 2-years-old and presents significant developmental delay.

Discussion: HDR syndrome is a possible condition associated to renal disease and sensorineural deafness detected in the neonatal period and must be considered as a diagnostic hypothesis in this context. As far as we know, this is first report of cerebral calcifications related to HDR syndrome in a neonate; there are few reports of this association only in adolescents and adults.

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PO110: Neonatal Outcome in Patients With Congenital Diaphragmatic Hernia Associated with Additional Malformations in the One Center Material

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Introduction: Authors present outcome of patients with congenital diaphragmatic hernia (CDH) associated with other anomalies, admitted to the referral centre for neonates with congenital malformations.

Methods: It was a retrospective study of patients admitted to our unit between 2000 and 2011. We analyzed the impact of the associated anomalies on survival in neonates with CDH. Apart from the configuration of the congenital malformation we considered gestational age, birth weight, Apgar score, prenatal data and outcome in both groups.

Results: Between 2000-2011 we have treated 110 neonates with congenital diaphragmatic hernia, amongst them there were 83 patients with isolated CDH (75.5%) and 27 patients (24.5%) with additional anomalies. There were no differences in gestational age and mode of delivery. Differences in birth weight and Apgar score in both groups were not statistically significant. The percentage of babies diagnosed prenatally in group with isolated and non-isolated CDH was 86.7% and 77.8% respectively. The survival rate in patient with isolated CDH was higher than in patients with additional anomalies (51.8% vs. 37%). We also analyzed spectrum of additional anomalies in our patients with CDH and their outcome. The heart disease was the main factor worsening outcome – all our patients with CDH and heart defect died. There was no such a correlation found with other anomalies, and minor defects or more than one additional malformation were no associated with higher mortality rate.

Conclusions: The survival rate in infants with isolated congenital diaphragmatic hernia is higher than in group of patients with CDH and additional anomalies. In analyzed group of patients coexisting heart disease was the main risk factor of the poor outcome.

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PO111: Gentamicin Dose in Newborns: A Search for the Safer Dose

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Introduction: Gentamicin is an antibiotic widely used in the newborn. In view of its narrow therapeutic index, trough levels need to be measured to minimise toxicity. Though it is now widely accepted that it should be given once a day, debate exists as to the ideal initial dose. Whilst the Neonatal Formulary recommends a dose of 5 mg/kg/day, the British National Formulary for Children (BNFC) advocates 4-5 mg/kg/day. Controversy also exists on the safe cut-off level for the pre-dose 'trough' level. Though most units consider levels < 2mcg/mL as acceptable, BNFC recommends that levels should be less than 1mcg/mL for the once daily dose regimen. We performed this study to compare the Gentamicin dose of 4mg/kg once daily versus 5 mg/kg/day by analysing pre third dose trough levels. We also reviewed the literature to find out the best current evidence to arrive at a safe acceptable trough level.

Methods: We compared the incidence of high pre third dose trough

gentamicin levels (> 2 mcg/ml) between two populations of newborn babies > 32 weeks gestation receiving either 4 mg/kg or 5 mg/kg dose every 24 hours at two busy district general hospitals in the UK. We also reviewed the published literature via Medline and Embase databases (ovid interface) using keywords 'gentamicin' and 'toxicity'.
Results: The study compared trough gentamicin levels in 72 preterm neonates receiving 4mg/kg/day dose (Group 1) with 48 newborns receiving the 5mg/kg/day dosage (Group 2). 5 (7%) babies in Group 1 and 19 (39%) newborns in Group 2 were found to have high trough levels > 2 micrograms/ml. The literature search revealed that there was no study so far in newborn babies to suggest the ideal acceptable trough value.
Conclusions: We conclude that a Gentamicin dose of 4 mg/kg/day once a day is safer than 5mg/kg in term and preterm neonates more than 32 weeks gestation to avoid toxicity. In the absence of any data on reduced efficacy, we recommend the use of 4 mg/kg as the standard dose rather than the current recommendation of 5 mg/kg. Further randomised controlled studies may be required to make our practice more evidence based.

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PO112: Neonatal Pseudo Bartter Syndrome: A Case Report

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Introduction: Metabolic alkalosis is rare in newborns. It is usually caused due to rare congenital defects as in Bartter Syndrome or as a side effect of diuretic therapy. We report a near term newborn with significant metabolic alkalosis with partially corrected compensatory respiratory acidosis.
Clinical case: Baby B was born at 36+6 weeks of gestation with a birth weight of 2.15 kg. No resuscitation was required at birth. The neonatal team was asked to review him at 5 hours of age as he was having repeated apnoeic episodes. He was therefore admitted to the neonatal unit where he underwent investigations. His initial blood gas was unremarkable but subsequently revealed significant metabolic alkalosis. This was associated with significant hyponatremia, hypokalemia and hypochloridemia. His urinary chloride level was low as well. He was started on intravenous fluids, antibiotics and potassium supplements and worked up for the metabolic alkalosis. A perusal of the maternal history revealed her to be in the adult ICU with persistent vomiting and dehydration. She had significant metabolic alkalosis and impaired renal function which improved over the subsequent few days. The baby stabilised in the neonatal unit and his blood gases and electrolytes normalised over 5 days. He was discharged on day 6 of life.
Discussion: A literature search reveals that metabolic alkalosis in newborns is rare and is associated with congenital problems like Bartter syndrome or iatrogenic causes like use of diuretics. Pseudo-Bartter syndrome presents the same clinical and biological characteristics as Bartter syndrome but without primary renal tubule abnormalities. However, there are only five cases reported so far and we felt it important to highlight this rare but relatively innocuous condition.

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PO113: Associated Anomalies in Patients with Esophageal Atresia: Impact on Survival

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We reviewed 34 patients with esophageal atresia in a period from 2000 to 2012 to delineate congenital anomalies associated with VACTERL complex and non VACTERL type. Demographic data included gender, gestational age and birth weight. The breakdown of VACTERL complex anomalies were: congenital heart lesions 5, gastrointestinal atresia 2 (anal atresia with rectovaginal fistula and high intestinal atresia), vetrebral/costal deformity 1 and limb VACTERL associated deformity 1, found in 6 patients. Non VACTERL anomalies: hypoplastic lung 2, congenital cataract 1, microphtalmus 1, coloboma 1, CNS cyst 1, polidactily and choanal atresia 1 were diagnosed in 5 patients. Mortality rate was associated with gestation age, asphyxia, birth weight, but also with the number of associated anomalies and systemic infections.

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PO114: Universal Newborn Hearing Screening: Hospital do Espírito Santo de Évora Reality

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Background: Hearing loss haves a superior prevalence comparatively to other already screened pathologies at birth. The hearing is fundamental to speech development and oral language skills, so it becomes imperative to early identify all children with hearing loss through neonatal hearing screening programs. Hospital do Espirito Santo- Évora (HESE) began the universal neonatal hearing screening (UNHS) in September 2007.
Aim: Characterization of neonatal hearing screening process applied at HESE maternity.
Methods: Retrospective study of all newborns submitted to UNHS from 1st January 2008 to December 31th, 2011 at HESE.
Results: During the study period were screened 5327 newborns. In the first phase of screening, 4883 (92%) newborns passed in otoacoustic emissions (OAE) and 442 (8%) failed. The failure was unilateral in 6% of cases (*n* = 329) and bilateral in 2% (*n* = 113). 410 newborns returned for the second phase (retest). In the retest, 353 (80%) newborns passed in OAE and 57 (13%) failed in these ones the failure was bilateral in 5% (*n* = 20). Of the 57 newborns who failed the retest, 53 underwent brainstem evoked auditory potentials (BEAP). Of these, 25 newborns showed no changes in, 10 await the results of BEAP and in 18 were detected changes. The study confirmed six cases of deafness: one case of severe bilateral sensorineural deafness and five cases of conductive deafness. We identified risk factors for hearing loss (3 newborns weighing < 1500 g and with a craniofacial anomaly) in 4 of 6 newborns with confirmed diagnosis of deafness.
Conclusions: The screening compliance rate was about 96%, so the screening program implemented in our hospital is considered effective. The high rate of false positives obtained in the first screening phase by OAE stresses the need for repeat screening (retest) prior to the EAP. The rate of deafness detected by the hearing screening was 1:1000, similar to rates described in the literature. The knowledge of such programs results is essential to evaluate and optimize its implementation. To reach full success, the key is to continue the cooperation between EESH Pediatrics department, audiology and Otorhinolaryngology.

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PO115: Serum Level of Insulin Like Growth Factor-1 at the Beginning of the Retinopathy of Prematurity Phase 2

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Introduction: Retinophaty of prematurity (ROP), the most common cause of blindness in cildhood, is a serious vasoproliferative disorder of immature retina. Insulin-like growth factor - 1 (IGF-1) is a peptitde essential for prenatal and postnatal growth of the retinal vasculature. ROP occurs in two phases. The ischemic phase 1 begins after premature birth with delayed retinal vascular growth. The proliferative phase 2 occurs at the 33rd week postmenstrual. It begins with the increase of IGF-1 level and is followed by neovascular proliferation. The aim of our study was to measure the serum IGF-1 level at the beginning of the ROP phase 2 and to compare it with the IGF-1 level in the 33rd postmenstrual week in preterm infants without ROP.
Methods: The study included all premature infants (*n* = 74), gestational age of 33 weeks or less hospitalized in the Clinical Center of Montenegro, from April 2008 to July 2009. In every newborn quantitative value of serum IGF-1 level was performed by using immunochemical ELISA method.
Results: Average birth weight (BW) of newborns in primary cohort was 1698.2 ± 402.7g (range 990-2860g). The difference between average BW of newborns with ROP (1586.9 ± 417.9) and without ROP (1821.7 ± 369.6) was statistically significant. Newborns with ROP had lower BW. Average gestational age (GA) in primary cohort was 31.2 ± 1.9 (range 26-33) gestational weeks. The difference between average GA of newborns with ROP (30.6 ± 2.1) and without ROP (31.8 ± 1.4) was statistically significant. Newborns with ROP had shorter GA at birth. Average level of IGF-1 in newborns with ROP was 23.8 ± 6.7mcg/L, and in newborns without ROP was 23.7 ± 4.9mcg/L. Our results showed that in postmenstrual age of 33 weeks there is no significant difference in serum IGF-1 level in newborns with ROP (23.8 ± 6.7mcg/L) and without ROP (23.7 ± 4.9mcg/L).
Conclusion: In order to claim that restoration of IGF-1 level happens at the beginning of the ROP phase 2, in other words that low level of IGF-1 is the feature of only ROP phase 1, a bigger and controlled study with a repeated measurement of IGF-1 level in the neonatal period should be done.

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PO116: Monitoring Sound Levels in a IIID Neonatal Intensive Care Unit: The experience in a Portuguese NICU

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Introduction: Studies have shown that excessive noise levels have an impact on general human health. Increased heart and respiratory rates, higher blood pressure, noise-induced earning loss, sleep disorders and delayed growth and development of preterm infants have been scientifically verified. In Neonatal Intensive care Unit (NICU), noise levels are a major concern, not only to health professionals as also to the premature infants regarding the potential negative effects. Yearly, about 450 neonates are admitted to our NICU. The indispensable use of mechanical ventilators, multiple monitors and other technological equipments, telephones and alarms as well as the vast amount of health professionals and persons that work or visit the NICU contributes to the increase of noise levels. The risk to develop hearing loss resulting from this noise levels is increased in preterm infants as a consequence of medical drugs. The aim of this study was to monitor and evaluate the noise levels in a tertiary NICU and develop several recommendations so that noise is kept under safe levels.
Methods: Noise measurements were made with an SOLO PREMIUM 01 dB sound level meter, in June 2011 on 5 separate days (for a 24 hour period on each day) in 6 different areas inside the NICU and usual care was provided. The areas included the NICU entrance, both sides of nurse's station, close to the health professionals hand wash basin, near the waste room door and inside an incubator. The American Academy of Pediatrics (AAP) noise levels (45 dB (A)) were considered to compare our results.
Results: Inside the incubators and considering the AAP noise levels were exceeded in all assessments. The mean average noise level in $L_{Aeq,Tk}$ was 60.7 dB(A) with a mean range of 56.1 to 67.3 dB(A). Data analysis showed peak noises reaching from 83.7 to 122.1 dB(C). Regarding noise levels in the other areas, all exceeded the AAP recommendations with noise levels reaching from 39.5 dB(A)$L_{Aeq,Tk\ min}$ to 114.6 dB(A)$L_{Aeq,Tk\ max}$.
Conclusion: Several actions can be provided regarding NICU noise reduction. Modification of the structural and physical environment, reduction of alarms to a safe level, health professional's education and awareness. NICU noise levels can be reduced but it will require an effort from everyone involved in neonatal health care.

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PO117: Thyroid Disturbances in Very Preterm Newborns: Possible Implications to Neurodevelopment

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Introduction: Disturbances of thyroid function are observed in a large proportion of preterm infants. Transient hypothyroxinemia (low levels of FT4, FT3 and normal or low TSH) is the commonest thyroid dysfunction of premature infants. Many studies have found adverse associations with neurodevelopment. The aim of this study was to describe the association of thyroid disturbances of preterm babies with neurodevelopment at 1 and 2 yr corrected age.
Methods: We conducted a retrospective study, in two Greek Neonatal Intensive Care Units (NICUs) for a cohort of infants born from 2008-2011 at < 28 weeks gestation. Thyroid hormones and thyrotropin assessed at 2nd, 4th, 6th, 8th, 12th and 16th week of life were recorded. Postnatal characteristics along with major (cerebral palsy, deafness, blindness, or mental retardation) or minor findings (mild motor disorders, strabismus etc) at 1 or 2 years of follow up were recorded also. Mental development was assessed by Griffith test.
Results: Sample consisted of 75 preterm infants (boys/girls = 1.03). The mean gestational age was 26.2 weeks (SD = 1.2 weeks). At twelve months of follow up minor findings were recorded in 60.7% of infants and major findings in 37.5%, while at two years of follow up were found in 25.6% and 41% of infants, respectively. Borderline and serious mental retardation was found in 28.1% and 21.9% of cases, respectively. During the follow up period transient hypothyroxinemia was found in 12.3% of cases, transient primary hypothyroidism in 9.6%, transient neonatal hypothyroxinemia in 31.5% and non-thyroidal illness syndrome at 6.8%. At least one

of the aforementioned disturbances was found in 58.3% of infants at the first two weeks, while the correspondent proportion for a follow up of 16 weeks was 6%. The proportion of infants with major findings at twelve months was greater in those with transient hypothyroxinemia appeared at four weeks of life (66.7% vs.33.0%, $p = 0.038$). Furthermore, the proportion of infants with borderline or serious mental retardation was significantly greater in those with transient neonatal hyperthyrotropinemia during the follow up period (75.0% vs.36.8%, $p = 0.037$). The results were similar even after adjusting for intranventricular hemorrhage or periventricular leukomalacia.
Conclusion: Thyroid disturbances seem to play a significant role in neurodevelopmental delays of preterm at 1 and 2 years of corrected age.

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PO118: Necrotizing Enterocolitis in Very-Low-Birth Weight Infants: Ten Years' Experience

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Introduction: Necrotizing enterocolitis (NEC) remains an important cause of morbidity in newborns. Its incidence in very-low-birth weight (VLBW) infants is 7%.
Methods: Retrospective analysis of all VLBW infants admitted to our NICU, between January 1st 2002 and December 31st 2011, who had the final diagnosis of NEC. Variables analyzed: gestational age (GA), sex, weight, risk factors, clinical and analytic manifestations, treatment and follow-up.
Results: In this period 383 VLBW infants were admitted in NICU. A total of 16 infants (4.2%) developed NEC, 56.3% (9) were male. Mean birth weight was 1057.6 ± 250.4 g and GA median was 29 weeks [24 -34 weeks]. Nine infants (56.3%) had umbilical catheters. Fifteen (93.8%) had previously been treated with antibiotics and 12 (75%) with histamine 2 blockers. Main clinical manifestations were abdominal distention (100%); poor general condition (81.3%); apnea (75%) and bilious drainage from enteral feeding tubes (68.8%). Onset of symptoms had a mean time of 13.9 days [4-40 days]. The most common analytical changes were anemia (93.8%) and thrombocytopenia (62.5%). Abdominal radiography abnormalities found were dilated loops of bowel (100%), intestinal wall thickness (83%) and pneumatosis (37.5%). The most frequent modified Bell classification was NEC IIA (37.5%). The antibiotics used included vancomycin (100%); amikacin (68.8%) and cefotaxime (68.8%). Four infants needed surgery. Mean time of discontinuation of enteral intake and parenteral nutrition was 15.2 days [3-32 days] and 36.2 days [8-112 days], respectively. One case of short bowel síndrome occurred. Until now, 25% have failure to thrive and psychomotor delay. None of the infants died.
Conclusion: In our sample the incidence of NEC was lower than the incidence reported in literature. More than 1 risk factor was present, which may have contributed to the occurrence of NEC. Earlier diagnosis and aggressive treatment may explain the absence of deaths in our study and the long time morbidity. We emphasize the need to perform multicentric studies in order to find the best strategies in reducing the frequency and severity of NEC.

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PO119: Newborn Infant of a Mother with Gestational Herpes

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Herpes gestation is a rare autoimmune bullous dermatosis related to pregnancy, not linked with herpes virus group. Case: Female infant from the third poperly controlled pregnancy, vaginaly delivered. BW 2650 g, Ap 9/10, WG 39.3. In the second trimester of pregnancy on the skin of the pregnant woman in the areas of chest and abdomen, distally across extremities, on the back, palms, soles is present the rash: urticaria, papules, fluctuating vesicles, as well as taut bullas wich rupture leaving erosion covered with yellow and haemorrhagic crusts. Dermatologist consultation led to diagnosis: herpes gestationis. The clinical condition of the child at birth: Female infant, born at term, of marginal-hypotrophic aspect with clean skin without efforescent changes on the body, cardiorespiratory stable, with spontaneous motor activity and clear cry. From the beginning, the enteral intake is with mother's milk. The pregnant woman had not used corticosteroid therapy and there had been no fear of adrenal insufficiency in child. A control after a month indicated the gradual rehabilitation of the changes in the mother with good general condition of the child and adequate progress for age. Conclusion: The aim of case presentation was to pay attention on this perinatal problem as possible diagnostic dilemma or pitfall in diagnosis and therapy and need for consultative and team work in clinical status monitoring of pregnant woman - mother and of child too.

PO120: Nosocomial Infections Notified to Infection Control Comission in a Neonatal Unit

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Introduction: Nosocomial infections are frequent occurrences in the neonatal intensive care unit (NICU) and are responsible for the increase in morbidity and mortality of infants. Low birth weight premature infants have an increased risk of developing these infections. The aim of this study was to characterize nosocomial infections that occur in this Unit.
Methods: Retrospective study of nosocomial infections (NI) reported to the Infection Control Commission, between January 2009 and December 2010, through the analysis of the information contained in the notification sheet and clinical process. Were classified as NI all infectious episodes occurring after 72 hours of hospitalization.
Results: During this period, 936 infants were hospitalized and occurred 64 episodes of NI (61 sepsis, 3 necrotizing enterocolitis) in 59 patients, corresponding to an incidence of 6.3/100 patients (7.7% in 2009 and 4.9% in 2010) and an incidence density of 8.6 / 1000 days of hospitalization (10.9 in 2009 and 6.6 in 2010). Of infants weighing < 1500g, 37% had at least one infection. Central catheter (CC) utilization rate was 17.4% and endotracheal tube (ET) utilization rate was 1.5%. Central Catheter associated bloodstream infection rate was 1.6 / 1000 days of CC. All patients had a blood culture, 32.8% were sterile. Coagulase-negative *Staphylococcus* was the most isolated microorganism ($n = 37$) of which 73% were methicillin-resistant (MR). Other microorganisms isolated were *Staphylococcus aureus* ($n = 5$) which two were MR, and *Escherichia coli* ($n = 1$). The most common antibiotic combination used were cefotaxime and vancomycin ($n = 34$). The mortality rate was 1.6% ($n = 1$).
Conclusion: The incidence rates vary greatly from unit to unit, but the data are consistent with the literature. In our unit, professionals were alerted to reinforce infection control measures due the increase in the number of nosocomial infections in 2009. The decrease in the incidence of infections in 2010 confirms the success of the

implemented measures. This fact also reinforces the importance of monitoring infections and infection control measures.

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PO121: A Case of Poland Syndrome and Literature Review

Antonio JEREZ CALERO, Sylvia M MARTÍNEZ SERRANO, M Laura MORENO GARCÍA, Jose UBEROS FERNÁNDEZ, Eduardo NARBONA LÓPEZ

Introduction: Poland syndrome (PS) is a rare, congenital and sporadic anomaly, which is the most common cause pectoral muscle abnormalities. The incidence is 1:20,000-30,000 newborns, with a higher frequency among males. We report the case of a newborn with a left pectoralis major hypoplasia and ipsilateral type I braquisindactilia with no other abnormalities. We also present a review of the literature on this condition.
Case Summary: The SP is described as an absence or hypoplasia of the pectoral muscle associated with various abnormalities of the hemithorax and ipsilateral upper limb. The spectrum of thoracic defects include a wide range of abnormalities from a subtle hypoplasia to total aplasia nipple, breast, sternum, ribs, cartilage, no armpit hair... Upper limb malformations may be absent or very severe. Deformity includes classic hand syndactyly and a variable degree of brachydactyly with severe hypoplasia or aplasia of the middle phalanx. The etiology is unknown, the hypothesis being referred to a defect in the vascularization produced in the embryonic development, during the sixth week of pregnancy. It results in different degrees of severity depending on the length and intensity of the vascular interruption. Treatment is individualized depending on the severity and extent of anomalies. Sometimes surgery is indicated in order to restore function and aesthetics of the deformed structures. Our patient was detected at birth in a sindatilia skin of the left hand with brachydactyly. In further exploration, we found a hipodeveloped left upper extremity compared to the right, with agenesis of the pectoralis major depression visible thoracic and lower levels of subcutaneous fat at this level compared to the same right region. Given these findings, chest radiography and upper limbs is requested. Infant Traumatologist was consulted to continue study and evaluate possible treatments.
Conclusions: The SP has a low prevalence and, because of this, could be an underdiagnosed syndrome, mainly considering it clinical variability and less severe clinical presentations. So, at the daily clinical practice, we must examine more critically our newborn and perhaps this syndrome may be less rare and new cases could be diagnosed.

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PO122: Parents In The NCU: The Role Of Health Professionals

Elisa VEIGA

Background: Advances in medical technology made possible to save very low birth weight (VLBW) and extremely low birth weight (ELBW) premature babies. The long period of hospitalization represents a very stressful situation to parents with implications on parent–child relationship and family functioning.
Objectives and method: The aim of this study was to understand the role of health professionals in parent's experience and how they contribute to the parent's coping strategies. We conducted semi-structured interviews with 20 couples (40 interviews) whose babies were VLBW and ELBW, before discharge. The data analyses were inspired in the grounded theory principles.
Results: Health professionals are important mediators in decoding the baby signals, providing the mothers a sense of autonomy and control. The information offered by health professionals is crucial for the parent's baby's perception and to the process of construction of meaning. These are importance factors for parent's adaptation this circumstances.
Conclusion: We emphasize the importance of early intervention programs beginning in the NCU, demanding multidisciplinary teams.

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PO123: Neonatal Sepsis: Bacterial Isolates and Antibiotic Susceptibility Patterns in a Neonatal Intensive Care Unit

Cândida CANCELINHA, Cristina RESENDE, Dolores FARIA, Carlos LEMOS

Introduction: Neonatal sepsis is an important cause of morbidity and mortality. Knowledge of most frequent pathogens and their resistance patterns is important to adequate antibiotic use.
Aim: to analyze trends in causative microorganisms for neonatal sepsis and their antibiotic susceptibility.
Methods: Retrospective, descriptive analysis of medical records and microbiological data of all newborns with sepsis, defined by clinical signs/symptoms compatible with laboratory studies suggestive of infection (leukocyte count > 30.000/µL or < 5000/µL, platelet count < 100.000/µL, C-reactive protein > 2mg/dL with or without isolated organism) admitted to a neonatal intensive care unit from 1st January 2008 to 31st May 2012. Early onset neonatal sepsis (EOS) was defined if signs/symptoms were present in the first 72 hours of life and late onset neonatal sepsis (LOS) after that period.
Results: One hundred and twenty-five neonates presented with sepsis and 67 (54%) had positive blood cultures with a male:female ratio of 1:1. In the EOS group (n = 57) 18 (32%) had positive blood cultures: 10 (56%) were term babies with median birth weight 2.695kg. *Streptococcus agalactiae* caused infection in 10 cases (80% of which were term babies) followed by *Escherichia coli* in 4 (all preterm) and other pathogens in 4 cases. In cases of LOS (n = 68), positive blood cultures were identified in 49 (72%) newborns; 98% were preterm (median 28 weeks) and median birth weight was 1.053kg. Thirty cases were caused by coagulase-negative *staphylococci* (CONS) followed by *E. coli* in 6, *Candida spp* in 4 and other pathogens in 9 cases. Among major pathogens identified, CONS were resistant to oxacillin and gentamicin in 88% of cases; no resistance to vancomycin was identified. *S. agalactiae* showed no resistance to ampicillin as well as *E. coli* to gentamicin. Methicillin-resistant *Staphylococcus aureus* was isolated in just 1 case (4 *S. aureus* in total). Lethality occurred in 7 cases with positive blood cultures (10%): 2 EOS and 5 LOS, all preterm.
Conclusion: Gram-positive bacteria were the most frequent pathogens isolated. *In vitro* susceptibility test of isolates showed low levels of resistance to commonly used antibiotics. Continuous surveillance of antibiotic susceptibility is essential to rationalize antibiotic prescribing.

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PO124: Antimicrobial Resistance of Escherichia Coli Strains Causing Neonatal Sepsis in a Period of 14 Years

Cândida CANCELINHA, Cristina RESENDE, Dolores FARIA, Carlos LEMOS

Introduction: Although intrapartum antimicrobial prophylaxis has reduced the incidence of early group B *Streptococcus* sepsis, there are concerns that the increased use of antibiotics may raise the incidence of gram negative infections and cause changes in susceptibility patterns. In Maternidade Bissaya Barreto (MBB) ampicillin is routinely used in *intrapartum* prophylaxis since 2003.
Aim: to determine trends in the incidence and antimicrobial resistance of *Escherichia coli*-related early (EOS) and late-onset sepsis (LOS).
Methods: A retrospective review of data of all infants with *E. coli* sepsis admitted to MBB Neonatal Intensive Care Unit from 1st January 1998 to 31st December 2011 was performed. EOS was defined if signs/symptoms were present in the first 72 hours of life and LOS after that period.
Results: Incidence of sepsis was 0.25‰ from 1998 to 2002 and 0.64‰ from 2003 to 2011. Ten cases of *E. coli* EOS and 12 cases of *E. coli* LOS were identified over the period of study. In the EOS group, 9 (90%) were preterm babies, with median gestacional age of 31 weeks and median birth weight 1.698kg. Pneumonia and meningitis occurred in association with sepsis in 2 cases. Ampicillin and gentamicin were the antimicrobials most commonly used. Four infants died. In the group of LOS, 10 (83%) were preterm newborns with median age of 30 weeks and median birth weight 1.675kg. Meningitis occurred in 4 infants and necrotizing enterocolitis in 4, all cases in association with sepsis. Ceftazidime and vancomycin were more frequently used. Five infants died. Resistance to gentamicin and third-generation cephalosporins was identified in just 1 case (in 2004) and to ampicillin in 90%. No significant differences in resistance profiles were found between strains causing EOS and LOS.
Conclusion: We verified an increasing tendency of *E. coli* sepsis although resistance pattern is not changing, with adequate susceptibilities to gentamicin and third-generation cephalosporins. Continuous surveillance of potential consequences of intrapartum antibiotic exposure is needed to adequate antibiotic use.

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PO125: Clinic and Anatomopathological Findings Concordance: A Study in a Level III Neonatal Intensive Care Unit

Sónia PIMENTEL, Rosário FERNANDES, Teresa TOMÉ

Introduction and aims: Postmortem anatomopathological exam can provide information about mechanisms of disease, diagnostic accuracy and therapeutics adequacy. We aimed to determine the agreement rate between clinical and autopsy diagnoses in our neonatal intensive care unit (NICU).
Population and Methods: Clinical and pathological records of newborn who died in a level III referral NICU in Lisbon in 2011 were reviewed by a neonatal paediatrician and a fetal-neonatal pathologist. Wigglesworth classification of perinatal death was used and clinicopathologic concordance was rated according to the modified Goldman classification.
Results: Of the13179 newborns admitted to our NICU there were 29 deaths (NICU mortality rate 7.6%). Median gestational age of the patient who died was 27 weeks (range from 23 to 41 weeks) and median birth weight was 1030 grams (ranging from 500 to 4954 grams). Median age at death was two days (ranging from 0 to 33 days). According to the Wigglesworth classification there were nineteen cases of conditions associated with immaturity, five cases of asphyxial conditions developing in labour, three cases of congenital malformations and two other specific conditions. Nineteen autopsies (66%) were conducted. According to the Goldman classification of clinicopathologic concordance there were two cases (pneumonia, necrotizing enterocolitis) in which the cause of death was established by autopsy and would probably have had implication on therapeutics and prognostic; in three cases (coarctation of the aorta, disseminated intravascular coagulation, selective neuronal degeneration and necrosis) the cause of death was established by autopsy but wouldn't probably have had implication on therapeutics or prognostic; in six cases (e.g. pulmonary or central nervous system hemorrhage) the autopsy established a diagnosis that contributed to death; in one case (esophageal atresia with tracheoesophageal fistula) the autopsy diagnosed a condition not associated to death with prognostic implications and in six cases there was complete clinical and pathological diagnosis concordance.
Conclusions: This study corroborates the usefulness of the autopsy procedure to validate or clarify clinical diagnosis. Indeed, despite common clinical and pathologic concordance, the diagnosis was established or altered by autopsy in 4/19 cases (22%) and most notably the autopsy added significant findings in half of the cases.

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PO126: When Neonatal Autopsy Findings Enlighten Death Mechanisms: Case Reports

Rosário FERNANDES, Sónia PIMENTEL, Teresa TOMÉ

Introduction: Postmortem anatomopathological exam can provide information about mechanisms of disease, help establish cause of death and identify unsuspected associated findings. We illustrate anatomopathologic findings in six preterm newborn who died at a level III referral neonatal intensive care unit in Lisbon in 2011 in which the autopsy revealed significant findings concerning the cause of death.
Cases report: Case 1 – a 23 week newborn who died at six days of life in a context of hypovolemic shock with no suspicion of infection with postmortem findings of pneumonia. Case 2 – a 25 weeks gestation newborn who died at five days of life with *Escherichia coli* septic shock found to have a perforated necrotizing enteroco litis. Case 3 – a 28 weeks gestation newborn with prolonged amniotic membrane rupture found to have pulmonary hipoplasia and with placental signs of placental insufficiency and in utero severe hypoxia. Case 4 – a 26 weeks gestation newborn with prolonged amniotic membrane rupture found to have pulmonary hypoplasia, esophageal atresia and tracheoesophageal fistula. Case 5 – a 35 weeks gestation newborn with prenatal diagnosis of left heart fibroelastosis found to have a coarctation of the aorta.
Conclusions: In the cases presented autopsy helped clarifying clinical diagnosis and cause of death. Autopsy remains the gold standard exam for understanding physiopathology of death.

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PO127: Epidemic Adenoviral Keratoconjunctivitis Possibly Related to Ophthalmological Procedures in a Neonatal Intensive Care Unit: Lessons from an Outbreak

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Purpose: Epidemic adenoviral keratoconjunctivitis can spread rapidly among preterm infants who frequently undergo ophthalmological examination. Here we present our experience on a nosocomial outbreak that affected 8 nursery staff members and 26 premature infants. We focus on the presentation and progress of the outbreak, the diagnosis of the disease and the measures taken for its control.
Methods: Data were collected from patients' files and records of the infection control team. Conjunctival swabs were collected to perform direct fluorescent assay (DFA) and viral culture. Diagnosis was made according to clinical evidence and/or detection of the virus. Statistical analysis was performed by using SPSS 15.0 statistical program for Windows.
Results: Infection was introduced to our unit after laser photocoagulation procedure of a 28 weeks gestational infant and circulated rapidly within the unit due to direct transmission through contaminated medical equipment, fomites and hands of nursery staff members. Neither the patients, nor the nursery staff members developed systemic symptoms. While DFA test was positive in 7 infants, culture positivity could be demonstrated in 3 infants. Contact and droplet precautions were implemented with the recommendation of the infection control team. No recurrence occurred after definition of the last case on the 32nd day.
Conclusion: Ophthalmologic procedures continue to be a potential source of adenovirus outbreaks. However negligence of contact measures during routine daily nursing care seems to be a more important contributing factor for rapid spread. Strict adherence to appropriate aseptic procedures is required to prevent this potentially hazardous infection in preterm infants.

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PO128: Novel de Novo Chromosomal Translocation T(7;14)(Q36.3;Q11.2) in a Girl Infant with Dysmorphic Features

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Introduction: There are almost 1550 genes on chromosome 7 and 1200 genes on chromosome 14 that code for hundreds of different proteins with different functions. In some unbalanced translocation it is not possible to predict what abnormalities to expect and how severe they may be. In this report the authors aim to report a child with a novel chromosomal translocation involving chromosome 7 and 14 (45,XX,der(7)t(7;14)(q36.3;q11.2),-14).
Clinical case: We describe a 4-month-old girl with dysmorphic features and little spontaneous movement in the neonatal period. Prenatal ultrasound studies revealed a single umbilical artery. She was born at 38 weeks by caesarean delivery to a 35-year-old healthy gravid 2 para 2 mother. Her weight, height and head circumference were adequate for gestational age. Apgar scores were 8 at 1 and 5 minutes and 10 at 10 minutes after birth. Shortly after birth she presented transient tachypnea of the newborn and was admitted in neonatal intensive care unit. Physical examination showed low implantation of ears, hypertelorism, short neck, mild axial hypotonia and little spontaneous movement. Blood and cerebrospinal fluid cultures, thyroid function, metabolic studies and transfontanelar and abdominal ultrasounds were normal. Echocardiography showed patent foramen ovale and interventricular communication. The final karyotype could be defined as 45,XX,der (7)t(7;14)(q36.3;q11.2),-14dn.ish 7q36.3(VIJyRM2185 enh).mpla 7qsubtel(P036-E1,P070-B2)x3,14q11.2(P036-E1,P070-B2)x1. She was discharged for outpatient consultation at age of 13 days. Currently (4-month-old), she is being normally fed. Her weight is 5830g (25th centile), length is 64.5cm (75th to 90th centiles) and head circumference is 43cm (75th to 90th centiles). She is alert, visually tracks and has a social smile. She has normal head and trunk control and the neurologic examination is normal.
Discussion: The karyotype was described as 45,XX,der(7)t(7;14)(q36.3;q11.2),-14, which was reported for the first time here. Since the phenotypically normal parents showed normal karyotype, this abnormality was considered de novo. These case report suggested that the apparently unbalanced translocation could be associated with dysmorphic features, mild hypotonia in neonatal period and cardiac abnormalities.

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PO129: Risk Profile for Invasive Fungal Infection in a Medical-Surgical NICU. Preliminary Results

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Introduction: Identifying risk factors for invasive fungal infection (IFI) in a neonatal intensive care unit (NICU) is important to draw prevention guidelines. This study aims to assess risk profiles for IFI in the population of a medical-surgical NICU.
Methods: Patients admitted to a Level III NICU from 2002 to 2011 were studied. Prophylactic antimycotics were not used. IFI was defined as clinical disease and positive microbiological isolates or histologic identification. Cohorts were drawn according to the main clinical condition. Incidence rates and relative risks were determined.
Results: Thirteen episodes of IFI were identified in 13 patients (4.9 episodes/1000 admissions). Median (min-max) gestational age and birth weight were 33 wks (24–40) and 2070g (600–3660g). The median (min-max) age on diagnosis was 35 days (8-63). Eight NB had positive blood culture (one with isolate in liquor); four had only positive urine culture; one had histologic identification. Isolates were C. albicans (8), C. parapsilosis (4) and C. tropicalis (1). Case fatality rate was 23%. Immunodeficiency and extreme prematurity were associated conditions. Major surgery, central venous catheter, total parenteral nutrition and broad spectrum antibiotics were associated interventions. The incidence rates of IFI in extreme premature and term patients were 24.8‰ and 2.9‰; risk ratio 8.56 (IC 95%: 2.16–33.92). The incidence rates of IFI in surgical and in non-surgical patients were 12.5‰ and 2.5‰; risk ratio 4.74 (IC 95%:1.55–14.43). Other incidence rates were: bladder exstrophy 33.3%, posterior urethral valves 12.5%, NEC IIIB with enterostomy 4.05% and diaphragmatic hernia 2.4%. The cumulative incidence rate was 0.6 episodes/1000 days of central venous catheter.
Conclusion: Confirmed IFI was a relatively rare but lethal event in this NICU. Risk of IFI in surgical infants is significantly higher than in non-surgical patients but varies with each surgical condition. Bladder exstrophy was the condition identified as having the greatest risk. To develop customized prevention protocols, adapted to the NICU characteristics, a broader assessment of risk profiles for IFI in a paired case-control approach with multivariate logistic regression analysis is already going on.

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PO130: Oculo-Auriculo-Vertebral Spectrum: Three Illustrative Cases of the Wide Phenotype

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Introduction: Oculo-auriculo-vertebral spectrum (OAVS), also named Goldenhar syndrome constitute a heterogeneous condition characterized by defects involving first and second branchial arch derivatives. OAVS affect around 1 to 5600 live births. Most cases are sporadic without a known aetiology. OAVS ranges from isolated auricular or preauricular abnormality, to a more complex phenotype with ocular, skeletal, cardiac, renal, pulmonary, and central nervous system malformations.
Clinical case: Authors report on three children with a clinical diagnosis of OAVS. Case 1: A female born of a twin gestation presented with unilateral auricular tags and ipsilateral limbal dermoid. Correction of auricular tags was conducted. Parents refused surgical excision of the limbal dermoid. At 25 months she shows normal development and growth. Case 2: A female presented at birth with bilateral microtia grade III, left auricular tags and ipsilateral hypoplasic mandibula. Brainstem auditory evoked response was almost normal. She was conducted to pre-auricular tags removal and to a specialized deafness consulting. At 19 months the child uses auricular prosthesis and shows normal development. Case 3: A female born with right hemifacial microsomia, anophtalmia, auricular agenesy and three ipsilateral auricular tags. Vertebral x-ray showed four thoracic hemivertebrae. At 18 months this child shows normal growth, normal social interaction but language and motor skills delay. These three children showed in common a patent foramen ovale. They were delivered at term, parents were non-consanguineous, and there were no genetic familiar diseases, maternal drug intake, febrile illness or diabetes during pregnancy. Karyotype and chromosome 22 FISH were normal. Imaging studies showed no other defects.
Discussion: The study of these cases offered no clues on possible etiologic factors. Although vascular insult to the developing branchial arches is the most widely accepted explanation, the mechanism underlying OAVS is still uncertain. These cases illustrate the wide phenotypic range of OAVS, from the mildest form of microtia with preauricular tags, to an extremely rare presentation with complete anophtalmia.

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PO131: Cleft Lip and Palate: Prenatal Diagnosis and Postnatal Outcome

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Introduction: The most common craniofacial malformation identified in the newborn is the orofacial cleft (OC), which consists of cleft lip (CL) with or without cleft palate (CL/P) or isolated cleft palate (CP). Several controversies still exist regarding risk factors, prenatal diagnosis and optimum timing and surgical technique. The aim of this study is to review all cases of orofacial cleft prenatally diagnosed in our hospital.
Methods: This is an observational retrospective study of OC diagnosed prenatally by transabdominal ultrasound in the Hospital de Braga, since January 1, 2004 to March 31, 2012.
Results: OC was diagnosed in routine second-trimester prenatal ultrasound in 15 cases: 4 (26.7%) CL and 11 (73.3%) CL/P. No case of isolated CP was detected. Of these, 10 (66.7%) were unilateral and 5 (33.3%) were bilateral. The concordance of prenatal diagnosis and definitive diagnosis was of 86.7% for type of defect and for laterality. Forty seven per cent (7/15) had associated anomalies, with 2 cases of trisomy 18. All of these cases were found in the CL/P group. Mean maternal age at the diagnosis was 29.1 ± 4.1 years, with 13 white women and 3 of gypsy ethnicity. Mean maternal body mass index was 24.4 ± 3.6 Kg/m^2. Maternal medical history, use of drugs, alcohol and cigarette smoking during pregnancy were also analyzed. Only one case had a positive family history of orofacial clefts and no case of consanguinity was identified. Regarding outcomes, 6 (40%) pregnancies were medically terminated. With respect to the remaining cases, 3 newborns needed to be admitted to Neonatal Intensive Care Unit. One had polimalformative syndrome. All of them had a multidisciplinary team approach and were submitted to lip surgery repair at 2-3 months and palate repair around 1 year. Two of these cases shown an inaesthetism and repair surgery occurred around 5 years.
Conclusions: OC is a common malformation, however it is associated to several controversies. Management of children with OC presents many challenges and effective management involves a multidisciplinary team approach. Analysis of our casuistic is very important to increase our prenatal detection rate and to improve care quality of these children.

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PO132: Invasive Fungal Infection in Neonatal Intensive Care Units

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Introduction: The burden of invasive fungal infection (IFI) in Neonatal Intensive Care Units (NICUs) has increased significantly during the past years. Despite prompt and appropriate treatment, disseminated disease, long-term sequelae, prolongation of hospitalization and death still result from IFI. The aim of this study was to assess the epidemiology of fungal infection in Portuguese NICUs and to compare efficacy and safety of antifungal therapies.
Methods: An observational, multicenter retrospective study was carried out in the metropolitan area of Lisbon, Portugal. Four NICUs were enrolled. The period in analysis was January 2005- December 2010. An analysis of 75 variables was done including potential risk factors for IFI, causative pathogens, treatment characteristics and outcome. Specific side effects as well as serious adverse reactions related to the antifungal therapy were evaluated.
Results: During the study period, 44 infants were enrolled. The median gestational age was 26 weeks (Q1-Q3:25-31 weeks) and the median birth weight 751g (Q1-Q3:630-1290g). Twenty nine neonates had extreme low birth weigh (65.9%). The global incidence of IFI in ELBW patients was 4.1%. Surgical necrotizing enterocolitis was present in 9 (20.5%) patients. The presence of a central venous catheter was the most frequent potential risk factor to IFI (100%). Moreover, antibiotics, total parenteral nutrition and the use of endotracheal tube were also very common (95.5%, 95.5% and 61.4% respectively). The bloodstream infection was the most frequent IFI (75%) with *Candida albicans* and *Candida parapsilosis*

being the most frequent pathogens. Overall, 28 patients (63.8%) were treated with Ambisome® (L-AmB). Clinical side effects were not reported in any patient but some laboratorial side effects were found (serum alanine aminotransferase > 50U/L, serum creatinine level > 1.5mg/dl, serum magnesium < 1.5 mg/dl). Case fatality rate in all patients was 11.4%.
Conclusions: The results of this study outline the impact of IFI, especially in the extremely premature infants and in those with gastrointestinal disease. Our study results have been positive in demonstrating efficacy of antifungals: the majority of patients submitted to these therapies survived. Neonatal IFI continues to represent a challenge to the clinician. The knowledge of the local epidemiology helps to clarify the best prophylactic and treatment strategies.

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PO133: Dystrophic Epidermolysis Bullosa: A Good Clinical Course Associated to a Novel Mutation

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Introduction: Epidermolysis bullosa describes a heterogeneous group of congenital and hereditary blistering disorders. All are characterized by excessive epithelial fragility with induction of blisters in response to minimal frictional trauma. They are classified according to the level at which the separation occurs. Further distinctions are made according to mode of inheritance, extent of disease, associated features, and underlying genetic alterations. Autosomal recessive dystrophic epidermolysis bullosa is characterized by recurrent blistering at the level of the sublamina densa beneath the cutaneous basement membrane. The mechanism of the disorder is a mutation in the gene encoding collagen type VII, leading to defective anchoring fibrils and separation of the sub-basal lamina. It is an incapacitating form of epidermolysis bullosa, although the clinical spectrum is wide.
Clinical Case: The authors describe a case of a newborn girl, with an unremarkable pregnancy and family history, with a term eutocic delivery. At birth several cutaneous blisters in both arms, ankles and feet were stated. During the hospital admission new blisters appeared, in oral and anal mucosa and fingers. The hospital admission was complicated by anemia with blood transfusion need and *Staphylococcus Aureus* sepsis. The skin biopsy for immunofluorescence microscopy revealed a complete absence of expression of the collagen type VII and the level of cleavage were in favor of the diagnosis of dystrophic epidermolysis bullosa. The mutational analysis revealed the presence of two frameshift, heterozygotic mutations in the COL7A1: c.8100delA, at 103 exon and c.5132ins5, at the 57 exon. The first mutation was also present in the mother, but the second mutation is *de novo*, since it is not present in both her parents. This mutation hasn´t been previously published. Now she is one year old, with weight and height progression in the 5th percentile, an adequate psychomotor development, and only sporadic blisters formation.
Discussion: Dystrophic recessive epidermolysis bullosa has a variable clinical spectrum, although it is normally associated with poor prognosis. The authors describe a case with good clinical outcome, which may be associated to this previously unpublished mutation.

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PO134: Neonatal Marfan Syndrome: A Case Report

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Introduction: Marfan syndrome (MFS) is an inherited autosomal dominant disorder of fibrous connective tissue that mainly affects the skeletal, cardiovascular and ocular systems, with a wide range of clinical severity. The mutation is located in the fibrillin-1 gene (FBN1) on chromosome 15q21.1. Since it has an immense clinical variability, the diagnosis is not always simple and rarely done in the neonatal period or at young ages.
Clinical case: We describe a first female child of healthy young parents. It was a medically supervised and uneventful pregnancy with normal ultrasounds and negative serologies. She was born by caesarean delivery at term due to pelvic position, weighting 3130g and with an Apgar score of 6 and 8 at 1 and 5 minutes, respectively. At birth, some dysmorphic signs became evident, such as loose redundant skin, dolichocephaly, frontal bossing, deeply sunken eyes, micrognathia, contractures of the elbows, arachnodactyly and hip dysplasia. At 26 days of life, due to a cardiac murmur, she did an echocardiogram that revealed a long aortic arch and a mitral and tricuspid valve insufficiency. The first ophthalmological examination showed no lens dislocation. Based on these clinical and echocardiographic findings, the diagnosis of neonatal MFS was suspected. At 4 months of age, due to the progressive worsening of fatigue and dyspnoea with failure to thrive, she began losartan and furosemide. Nevertheless, there was a progressive aggravation of the mitral valve insufficiency and mitral prolapsed with dilation of the left atrium and ventricle that conditioned cardiothoracic surgery (mitral valvuloplasty). Nowadays, with 18 months, she has subluxation of the lens, pectus excavatum and severe dorsal-lumbar scoliosis. The genetics molecular study showed a *de novo* mutation on the FBN1 gene.
Conclusion: Early diagnosis of this severe form of the MFS allows a timely approach and a multidisciplinary follow-up. This way is possible to identify early complications with subsequent improvement of an ominous prognosis.

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PO135: Congenital Diaphragmatic Hernia: Experience of a Tertiary Center

Joana PIMENTA, Carla PINTO, Alexandra DINIS, Leonor CARVALHO, José Filipe NEVES

Introduction: congenital diaphragmatic hernia (CDH) is a rare and complex malformation with a high mortality rate, even in reference centers, thus being a therapeutical challenge. Prenatal diagnosis is essential in defining the optimal perinatal therapeutic strategy, particularly regarding delivery in a tertiary perinatal referral centre. During the last 30 years, all cases of CDH from Portugal's central region have been referred to PICU of Hospital Pediátrico de Coimbra. The aims were to determine the incidence of CDH in the central region of Portugal, to characterize the newborns admitted to PICU with CDH, to evaluate the mortality and its evolutionary pattern.
Methodology: a retrospective analysis made up of newborns of Portugal's central region with CDH was undertaken during a 17 year period (1995 to 2011). Variables related to the newborns' characteristics, therapeutic strategies, prognostic factors and mortality

were analyzed. Based on the admission' year, two groups were formed: group A (1995-2002) and group B (2003-2011), where the variables previously mentioned were compared. Statistic analysis was carried out with SPSSª 19.0.
Results: the mean annual incidence was 2.2 per 10.000 live-newborn. Of the 62 newborns admitted to PICU, 30 (48.4%) were prenatally diagnosed, 24 (38.7%) had associated malformations and 14 (22.6%) had a right-sided defect. Forty five (73%) were born in a perinatal tertiary referral centre. The global mortality was 14.5%. The mortality in group A (24%; $n = 29$) was significantly higher than in group B (6%; $n = 33$; $p = 0.048$). Prenatal diagnosis was made in 34% in the group A and 61% in the group B cases ($p = 0.04$). Endotraqueal entubation was performed in 55% of the group A vs 87% of the group B cases ($p = 0.02$). Regarding prognostic factors and underlying therapeutic strategies, no statistically significant differences were observed between the two study groups.
Conclusions: the incidence of CDH in Portugal's central region is similar to what is described in the medical literature. A significant decrease in mortality was observed throughout the study time, and that can be partially explained by prenatal diagnosis, which led to an in perinatal care.

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PO136: The Ceruloplasmine Value as Anti-Oxidative Defense Marker in Neonatal Asphyxia

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Aim: The ceruloplasmine (CP) is a metal binding protein with important role in the antioxidative defense. The aim of the study was to determine the ceruloplasmine value at term and preterm newborns with perinatal asphyxia.
Material and Methods: We conducted a prospective non-randomized study between January 2003 and June 2006. The study group was represented by fourty eight newborns, 11 term and 37 preterm newborns.They had different severity of asphyxia. The control was represented by 20 healthy term newborns. For each newborn in the study group we determined the CP in the first and third days, while only on day one of life for the control group.Ravin's spectrofotometric method was used to determine the CP value.We used venous blood sample.The statistical analysis was done using the Statistica program Ex- SPSS.
Results: The median values of CP were 24.26mg/dl at term newborns with ashyxia and 25.93mg/dl at preterms from the study group.There were no significant difference at correlation matrix between the two values. The CP values were significantly lower on day one of life then on day three at preterm newborns with asphyxia newborns ($p = 0.03$). In the study group CP was significantly higher at the term newborns then at preterms of the same group ($p = 0.031$). A significant difference was found at matrix corelation between the CP value of preterms on day three and the CP value of the control group ($p = 0.01$). There were no significant correlation between CP values at term newborns with asphyxia and CP values of term healthy newborns from the control group.
Conclusions: The CP value as marker of antioxidant defense is significantly lower at preterm newborns with asphyxia then on term newborns with the same pathology.The value of this marker is influenced by the gestational age and by association of the asphyxia .

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PO137: Acquired CMV Infection in the Neonatal Intensive Care Unit

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Introduction: (CMV) infected mothers may have viral reactivation during lactogenesis and excrete CMV in the milk. Breastfed preterm infants, without enough serum titers of antibodies, are more likely to have a symptomatic infection. In this infants, postnatal infection is difficult to diagnose because other pathologies related to prematurity may have similar signs and symptoms. Four cases of postnatal CMV infection are reported.
Clinical Cases: The median gestational age and birth weight were respectively 27 weeks (23w-34w) and 715g (580g-2500g). All infants were out born and transferred for surgical treatment; three newborn infants had been fed with human milk; all had received leukodepleted red cells. The median postnatal age at the beginning of the disease was 36 days (25d-40d). Three patients had thrombocytopenia, 2 anemia, 1 neutropenia, 3 hepatosplenomegaly, 3 hepatitis, 1 pneumonia, 1 sepsis and 1 atrioventricular block. Three patients had negative PCR for CMV in the Guthrie card. The other one had negative IgG and IgM at the beginning of the disease. Two mothers had positive IgG antibodies. The CMV DNA was detected in the breast milk of just one mother. The newborn with sepsis and pneumonia needed treatment with ganciclovir and immunoglobulin. At present, no CMV related complications were found. One infant had a non-related CMV infection death.
Discussion: Postnatal CMV infection may have a severe clinical course in preterm and very low birth weight infants. Mother's milk is likely to be the main source of infection so measures to inactivate the virus in the milk, should be considered.

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PO138 Pain Management in Neonatal Intensive Care Unit: Translating Research and Evidence Into Practice

Maria Dulce DAMAS CRUZ, Ananda Maria FERNANDES, Catarina RESENDE OLIVEIRA

Introduction: There is a consensus that a revolution in knowledge of neonate pain management has occurred, an increasing volume of scientific evidence to support the assessment and clinical guidelines. There are also different studies that indicate a gap between what is known and what occurs in practice. The goal of this study was known the models that contribute for applicability of the Evidence-Based Practice and explored the link between the evidence and the neonatal pain management.
Methods: A literature review including studies about factors influencing use of research in practice and presentation of models for the integration of evidence-based practice.
Results: Individual determinants, educational programs, promoting network and dissemination of evidence-based practice findings are important to increase professional care involvement. While we have growing evidence base, knowledge does not appear to be efficiently translated into practice, one reason may be that the implementation of evidence into practice is not from researcher to practitioner. Practice defined by regulatory, accreditation agencies, and professional standards if regulated by audits have more efficacy. Strategies involving interaction between healthcare professionals are consistent. Social learning theory contributes to theoretical understanding of pain, but also provides insight into the mechanisms of effective treatment. The positive organizational factors

and innovation are determinant for research use. A comprehensive knowledge base and familiarity with advanced research related to pain management are paramount, to help the clinician and nurses who care neonates in the neonatal intensive care units.
Conclusion: Effective knowledge translation strategies are required to advance the field and improve clinical outcomes. The role of the context is a potent mediator of the implementation of evidence into practice. There is a clear evidence of inter-correlations among factors that may influence research utilization. Organizational context is a central influence on the effective use of clinically relevant evidence by healthcare professionals in neonatal pain management.

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PO139: A Case of Fetal Hydrops

Tsz Kin LO, WL LAU, WC LEUNG, YY LAM, E LAU, MHY TANG

Introduction: Over the years, we have been using parental mean red cell volume (MCV) cut-off of 80fL for antenatal screening of thalassemia in our locality. In our experience, it is reliable and effective.
Clinical case: This was an unplanned pregnancy of a 29-year-old healthy mother. She attended regular antenatal visits since 12-weeks pregnancy. Routine prenatal thalassemia screening showed her MCV was low (65.3fL); husband's MCV normal (96fL). Thus, the fetus was not at risk to have thalassemia major. Ultrasound exam at 16 and 33 weeks were normal. She was admitted to our unit at 34 weeks for decreased fetal movement. Ultrasound examination showed fetal hydrops with severe anemia (middle cerebral artery peak systolic velocity > 1.5MoM). Emergency caesarean section was performed. Baby's hemoglobin was only 5.5g/dL. Despite resuscitation, baby was in critical condition. Hemoglobin pattern revealed this was a case of alpha thalassemia major. Other workups for fetal hydrops & fetal anemia were negative. Life support was withdrawn subsequently on the couple's request and the baby succumbed. The mother denied any other sexual partners even when interviewed in her husband's absence. DNA study confirmed that the baby was homozygous for alpha thalassemia major. The mother had hemoglobin H disease and her husband normal alpha genes. Non-paternity was disclosed by short-tandem repeat (STR) analysis. The result was disclosed to the mother alone. Recurrence risk being nil with her husband and 25% with the affected baby's biological father was explained to her.
Discussion: This case reminds us of the possibility of non-paternity in perinatal medicine, and therefore, the need for perinatologists to have an open mind. Significant ethical issues are involved. Number one, the condition does not endanger the husband, it follows that disclosure to him becomes voluntary at the woman's discretion. Number two, there is a question on the need to have husband's prior consent before paternity testing, and on his right to know about the results as his blood was involved in the test. Lastly, the right of parents to decide on withdrawal of life support for a critically-ill neonate has to be understood in in its social, cultural and moral context.

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PO140: Neonatal Palliative Care: Health Care Professional's Experience

Margarida DE CARVALHO, Ernestina SILVA

Introduction: Although anticipating death in newborns is a challenge in our society and culture, this is a fundamental demand. Being a subject little discussed, we believe we can bring something new to its reflection, having outlined the following goals: to recognize the care that the health professionals believe to be essential, to describe the feelings and hardships experienced in this context, to reflect about the most significant ethical aspects and to identify those more relevant to the improvement of palliative neonatal care.
Methods: We developed an exploratory-descriptive study of qualitative nature in an intentional sample of 20 health care professionals, of a neonatal unit of the centre region of the country. The analysis of the questionnaires was accomplished using content analysis according to Bardin (1977, 2009) and Amado (2000).
Results: We found difficulties in the relationship, communication and ethical issues experienced by the health care team in a context of interdisciplinary dialog deficit and in the absence of consensus/protocols. Negative feelings/emotions have emerged, implying the discomfort and the unpreparedness with which the heath team debates in this neonatal unit.
Conclusion: It was highlighted the appraisal of the importance of the care provided to the newborns and their families, contributing to the recognition of palliative neonatal care in our country. However we invoke the necessity to progress in a more effective way in this area of the care.

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PO141: Método Canguru: Uma Prática de Excelência

Madalena RAMOS, L. SILVA, C. CASTRO

Introdução: 'Método Canguru' é uma prática de excelência, que se traduz em inúmeros benefícios para o bebé/mãe, pai... a família, e uma das áreas de intervenção, privilegiadas pelo programa NIDCAP. No serviço de Neonatologia, do Centro Hospitalar São João, foram dados os primeiros passos nos anos 90, tornando-se prática corrente, a partir de 2005.Por definição, é uma forma de contato, pele com pele, entre a mãe/pai e o bebé prematuro (ou não: pode ser para qualquer bebé). O bebé é colocado, na posição vertical, só com uma fralda e um gorro, no peito da mãe/pai e aí permanece em contacto direto com a pele do progenitor, pelo tempo que ambos entenderem ser agradável e suficiente.
Métodos: Este trabalho pretende analisar as implicações desta prática, nos cuidados prestados ao recém-nascido internado na UCIN, através de um questionário aos pais e aos profissionais.
Resultados: Da análise dos resultados pretende-se perceber de que forma esta prática influência a qualidade dos cuidados prestados e o grau de importância que lhe é atribuída por cada um dos grupos estudados.
Conclusão: O Método Canguru – Uma prática de excelência… serviço de Neonatologia, advoga uma filosofia de cuidados centrados no desenvolvimento e na família e o Método canguru, é uma das intervenções que complementa e reforça este conceito. Espera-se que os resultados do estudo sustentem esta linha de orientação.

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PO142: What Is Helpfull to Develop a Good Functioning NICU in Eastern Europe

Peter KRCHO

Objective: The author would like to give an overview of the development of the neonatal intensive care unit in the Eastern Europe with the explanations of the most severe advantages and obstacles.
Methods: Retrospective analysis of the growing unit based on the principles of perinatal regionalization from 1996 till 2011.
Results: The number of addmistions to the tertial center started in 1996 with 120 newborn annually and growed up to 400 addmitions in 2012. The center is responsible for the region of 1,5 mil. inhabitants for the most severe complications of the praematurity and newborn period. The unit was able to decrease the incidence of nosocomial infections and especially was able to significantly decrease the incidence of gram negative nosocomial infetions. During the period of 16 years was able to implement several preventive and treatment prorocols as HFJV, iNO, HFO, Volume AC ventilation support, bedside ultrasonography and whole body cooling.
Conclusion: The development of the quickly growing unit must be based on the support from several resources, state, non governmental and privat. All this was successfully released under the excellent public relations based on media communication and with photographic expositions.

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PO143: Hypernatremia and Body Weight Loss in Exclusively Breast-Fed Neonates

Kentaro TAMURA, Noboru IGARASHI, Takeshi FUTATANI, Taketoshi YOSHIDA, Toshio MIYAWAKI

Introduction: Hypernatremic dehydration in exclusively breast-fed neonates has been reported. To promote the breast-feeding in safety, we researched the incidence and characteristics of breast-feeding associated hypernatremic dehydration.
Methods: We retrospectively reviewed medical records of 227 healthy term neonates between July and December 2008. Blood examinations were performed with 47 exclusively breast-fed neonates mainly because of their weight loss of more than 10%. We divided the neonates into two groups based on their serum sodium concentrations: hypernatremic (Na < 150) and normonatremic (Na < 150) groups. We analyzed the groups about gestational age, birth weight, body weight loss, type of delivery, blood examinations, and other characteristics.
Results: Eighteen of the 47 neonates had hypernatremia at 2-4 days of age. They had a significantly higher rate of weight loss than normonatremic group. Weight loss of more than 11% was correlated with higher morbidity of hypernatremia. On the other hand, there were some hypernatremic neonates with weight loss of less than 10%. There was no difference between two groups with other clinical characteristics, physical examinations and blood examinations for example blood glucose, lactate.
Conclusion: Hypernatremic dehydration may be common for breast-fed neonates with severe weight loss. Our results indicate that we need more careful assessment and intensive evaluation for more than approximately 10% weight loss neonates.

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PO144: Gene Expression Profiling in Umbilical Cord Blood from Small for Gestational Age Neonates Indicates Prediction of Adult Diseases

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Introduction: Fetal undernutrition has been reported to be associated with an increased incidence of adulthood diseases, such as cardiovascular diseases and diabetes mellitus type 2 (T2DM). Since its mechanism remains unclear, we investigated the gene expression profiling of umbilical cord blood in small for gestational age (SGA) neonates to address the results of fetal undernutrition.
Methods: We compared gene expression in umbilical cord blood cells between 10 SGA neonates and 10 AGA neonates using microarray analysis. A fold change value of greater than 2 (up-regulated) or less than 2 (down-regulated) was considered to be biologically important. We used IPA tools (Ingenuity systems) to investigate the gene characteristics, including biological processes, cellular components, molecular functions, genetic networks and toxicity functions of these up- and down-regulated genes of the SGA neonates. IPA analysis afforded an estimation of the diseases which may be affected in the SGA neonates.
Results: We identified 775 up-regulated probes and 936 down-regulated probes in SGA neonates, comparing with appropriate for gestational age (AGA) neonates. Most of these genes were concerned with T2DM, cardiovascular and neurological diseases. In brief, gene expression profiling of SGA umbilical cord blood identified genes which are closely related to adulthood diseases. Cardiac arteriopathy was particularly evident as an outcome of fetal undernutrition.
Conclusion: We found that fetal undernutrition modifies certain gene expression patterns in the fetal period that are associated with adult disease. Umbilical cord blood may be the useful source for identifing neonates at high risk for adulthood diseases. It is suggested that some of these differencially expressed genes in SGA umbilical cord blood will be useful as predictive biomarkers of long-term health sequelae.

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PO145: Free Carnitine and Carnitine Esters in Normal and Diabetic Pregnancies. Implications for Maternal and Fetal Intermediate Metabolism

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DIS, Ioannis PAPOULIDIS, Kosmas SARAFIDIS, Ioakim STERGIOUDAS, Sotirios VARLAMIS, Vasiliki DROSOU, Athanasios EVAGELIOU

Background: Decreased levels of free carnitine (FC) have been reported in normal pregnancies whereas a controversy exists regarding alterations of acyl-carnitines (AC). Several groups have speculated that low carnitine levels may occasionally lead to serious complications, especially for those pregnancies associated with metabolic stress, such as gestational diabetes. Moreover, some authors suggested that supplementation with L-carnitine may be beneficial, especially in risk pregnancies. However, little is known about alterations of carnitine shuttle system in gestational diabetes, whereas no information exists regarding carnitine status of infants of diabetic mothers (IDM). The aim of this study was to evaluate changes of FC and AC fractions in normal and diabetic pregnancies and their offspring in order to delineate their role in metabolic adaptation during pregnancy.
Methods: 55 pregnant women, 24 with gestational diabetes (diabetic mothers, DM) and 31 non-diabetic mothers (NDM), and their neonates were prospectively studied. 25 non-pregnant women served as controls. Anthropometry, serum biochemistry, and whole blood FC and AC fractions were assessed in mothers before labor and neonates at birth. FC and AC were measured on dried blood spots using Mass Spectroscopy.
Results: The anthropometric and most biochemical parameters did not differ between the two groups of mothers or neonates. Only two infants of diabetic mothers were macrosomic. The FC, AC, and AC/FC ratio did not differ between the DM and NDM nor between their offspring. Compared to non-pregnant controls, both groups of mothers had significantly lower FC and medium-chain AC and comparable short-chain AC, long-chain AC, and AC/FC ratio. Compared to their mothers, both groups of neonates had significantly higher FC, short-chain AC, long-chain AC, and total AC. Maternal levels of FC and most AC fractions were significantly correlated with the respective neonatal levels. No mother or neonate had any clinical evidence of carnitine insufficiency.
Conclusions: Well controlled gestational diabetes does not have any significant impact on carnitine-associated metabolism and consequently carnitine supplementation is not necessary. Our findings are indicative of active transplacental transfer of FC outlining the importance of lipid oxidation as a source of energy for the fetus in normal and diabetic pregnancies.

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PO146: The Influence of Enteral Nutrition on Retinopathy of Prematurity in Preterm Infants

Biljana DUNJIC, Natasa RISTOVSKI-JAKSIC, Momir DUNJIC, Mirjana STANKOVIC, Svetlana MILENKOVIC

Introduction: Retinopathy of prematurity (ROP) is a disease that affects immature vasculature of the retina of premature infants. They also have immature digestive system. Due to incomplete development of gastrointestinal tracts, enteral feeding in preterm infants in their first days and weeks is complicated and less readily tolerated. Implementation of full enteral nutrition often requires an extended timeframe. Pathophysiological correlation exist between poor postnatal nutritional supply, slow weight gain, prolonged retinal vascular endothelial growth factor overexpression, development of retinopathy, and reduced final visual outcome.
Aim: To explore whether a severe form of retionopathy of prematurity can be influenced by a poor postnatal enteral feeding in preterm infants.
Material and Method: A three year study was conducted at the Department of Neonatology, Ob/Gyn Clinic, Clinical Center of Serbia. Study Group was comprised of 69 preterm infants with severe active ROP stage 3 or more, which required surgical treatment-laser photocoagulation. Control Group was comprised of 69 children, born in the same period, with similar gestational maturity and weight and who have not had changes in blood vessels of the eye or had milder degrees of ROP (stages 1 and 2). The time required to reach a full enteral nutrition was observed.
Results: In Study Group, the middle value of a full enteral nutrition, indicated in days was 25, while in Control Group it was 16,16. The difference between the examined groups was statistically significantly high; t-test: $p < 0.001$.
Conclusion: Preterm infants who suffer from complications in enteral feeding and have an extended timeframe for implementation of full enteral nutrition are at risk of developing a severe form of retinopathy of prematuruty.

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PO147: Effect of Storage Container Type on Bactericidal Activity of Human Milk

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Aim: Storage of human milk in refrigerator has been recommended for short term storage. It has been shown that some nutritional, immunological, bioactive properties and bactericidal activity of human milk can alter by refrigeration. Pyrex bottles and polyethylene bags are the two common containers in the setting of storage of human milk. The aim of this study is to compare the effect of the type of storage container on bactericidal activity of human milk at different duration of refrigeration.
Methods: Forty four samples of human milk were collected from 22 lactating mother. Two samples of breast milk were obtained by manual expression from each mother. One was collected directly into sterile pyrex bottles and the other into polyethylene bags. One ml of human milk from each container was processed immediately after arrival to the laboratory. The remaining two ml of breast milk were kept at 4°C for 24 and 48 hours until they analyzed at 24 and 48 hours of storage. Bactericidal activity of each sample was studied. A strain of E.coli ATCC 25922 was used to determine the bactericidal effect of human milk.
Results: Bactericidal activity was significantly reduced in milk samples kept in polyethylene bags compared to the samples kept in pyrex bottles when milk samples stored at 4°C for 24 and 48 hours ($p < 0.05$).
Conclusion: Short term storage of human milk in pyrex bottles is more appropriate than polyethylene bags for prevention of decrease in bactericidal activity.

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PO148: Influence of Maternal Cigarette Smoking During Pregnancy on Neonatal Serum Folate Levels

Mehmet Yekta ONCEL, Ramazan OZDEMIR, Omer ERDEVE, Ugur DILMEN

Introduction: Folate is an essential micronutrient for fetal development because of its role in de novo synthesis of DNA. The aim of this study was to compare neonatal serum folate levels of babies born to smoking and non-smoking mothers.
Methods: Infants of consenting pregnant mothers presenting at ≥ 37 weeks of gestation were enrolled. Subjects were divided into two groups based on their mother's smoking habits. Blood samples were obtained at birth (from the umbilical cord) and one month after delivery for the determination of serum folate levels using a chemiluminescence method.
Results: Among 140 consenting subjects, 108 (77%) brought their newborns to their scheduled visit one month after delivery, 68 of whom were non-smokers and 40 were smokers. Babies born to smoking mothers had significantly lower serum folate levels compared to those born to non-smoking mothers, both at birth (17.2 ± 5 vs. 24.3 ± 4.9 ng/ml; $p < 0.01$) and one month after delivery (11 ± 4.1 vs. 17.5 ± 4.3 ng/ml; $p < 0.01$).
Conclusion: Our study is the first of its kind to demonstrate that smoking results in significant reductions in serum folate levels of newborns. These results suggest that folic acid supplementation may be required for expectant smoking mothers throughout pregnancy, not just during the first trimester. Similar supplementation may also be warranted for infants born to such mothers.

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PO149: Neonatal Hypoglycemia: Three Years' Experience in a Neonatal Unit

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Introduction: Hypoglycemia is a common condition in the neonatal period and, in most cases is transient and asymptomatic. In some situations, clinically significant episodes of hypoglycemia may occur and, in such cases, early therapeutic intervention is essential to prevent long term neurologic sequelae.
Methods: Retrospective and descriptive study of neonates (NN) admitted to our neonatal intensive care unit with clinical diagnosis of hypoglycemia between March 2009 – 2012. Hypoglycemia was considered the presence of a blood glucose level less than 40 mg/dL.
Results: Total of 34 NN with gestational age median: 37 weeks (34-40) and birth weight medium: 2740g ± 607. Risk factors were identified in 20 cases: 13 late preterm (PT) (4 of them had additional risk factors: 2 intrauterine growth restriction (IUGR), 1 maternal gestational diabetes and 1 was small for gestational age), 4 infants of diabetic mothers, 2 IUGR and 1 large for gestational age. The average age at the time of diagnosis was 1.4 days (± 0.7 days) and the average of the minimum blood glucose value was 28.2 mg/dL (± 6.2 mg/dL). Symptomatic hypoglycemia was observed in 28 NN. Regarding to the type of treatment provided: 20.6% reinforced the daily intake of exclusive enteral nutrition, 53.6% administered intravenous bolus of glucose and 73.5% received continuous intravenous infusion. In all cases the glycemic profile has normalized in an average time of 3.0 days ± 1.6. After discharge, 32 NN were referred to a neonatology consult of our hospital. Seven of them manifest alterations in psychomotor development: 4 with transient alterations and the others maintain physiotherapy treatment (2 PT and 1 NN with central neuropathy under investigation).
Conclusion: The diagnosis and management of neonatal hypoglycemia remains controversial, with no evidence supporting the correlation between the glycemic value and the clinic or neurological damage. The authors emphasize the difficulties inherent to this medical condition which still remains a clinical challenge in any neonatal unit.

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PO150: At The Heart of Breastfeeding

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Introduction: Breastfeeding is the best way of providing young infants with the nutrients they need for healthy growth and development. Exclusive breastfeeding is recommended up to 6 months of age with continued breastfeeding up to 2 years of age. The aim of this study was to calculate the breastfeeding prevalence in the 1st, 3rd and 6th month of age in a group of newborns and to investigate the influence of some factors on it.
Methods: Between the 15th of July and the 15th of August of 2010, mothers who had their child in the Obstetric Department of our hospital were interviewed. After discharge, they were contacted at the 1st, 3rd and 6th month and the survey was finished by phone.
Results: There were 135 mothers interviewed. Most of them were married (83%). More than half (52%) had the 9th grade or less as education. Fifty-three percent had a eutocic delivery and 37% had a caesarean. In day one of their child's life, all the mothers wanted to breastfeed their children and 92% thought they would be able to do it. Ninety-seven percent of the mothers had access to information regarding breastfeeding, mostly from health professionals (74%). In the end of the 1st month 91% of the children were breastfed (73% exclusively breastfed), in the 3rd 70% (64% exclusively breastfed) and in the 6th 50% (41% exclusively breastfed). The newborns who were breastfed in the first hour of life, the ones who didn't take formula in maternity and the ones who didn't need artificial nipples had a higher prevalence of breastfeeding.
Conclusion: The breastfeeding prevalence in the 1st, 3rd and 6th month was high. There are some factors that may influence its rate, as the results demonstrated. Potentially all mothers can breastfeed: the health care system, in close contact to the pregnant woman and to the mother can play a key role providing the accurate information and taking the most correct attitudes in the neonatal period.

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PO151: Breastfeeding in the First Year of Life: Prevalence, Protective and Dropout Factors

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Introduction: The development of intervention strategies for the promotion of breastfeeding is a Public Health aim. This requires the knowledge of the factors involved both in the adherence and in the abandonment.
Aim: Evaluate the prevalence of breastfeeding in the first year of life and identify protective and dropout factors.
Material/Methods: Prospective descriptive study involving 147 mothers with application of a questionnaire during the puerperium (October to December 2010) and subsequent telephone call at 1, 3, 6 and 12 M (months). The following parameters were obtained: socio-demographic data, surveillance of pregnancy, previous experience of breastfeeding, lifestyle, difficulties and type of feeding and knowledge of breastfeeding advantages. Statistic analyze with SPSS 19.0 and aplication of Chi-squared Test.
Results: The prevalence of breastfeeding was 98% at discharge, 95% at 1M, 76% at 3M, 56% at 6M and 31% at 12 M. Breastfeeding in the first hour was found in 90% of newborns, and correlated

significantly with exclusive breastfeeding at discharge. At least one advantage of breastfeeding was identified by 93.2% of the mothers, in 92% relative to the newborn and the mother 78%. The main difficulties in breastfeeding were: frequency (56%) and how to perform correctly the technique (60%). The motivation to breastfeed, the positive experience in the puerperium and do not use teat were identified as protectors factors of the breastfeeding at delivery and 3M. The same was found with the technical knowledge for continuing BF until 9M. Taking milk formula in maternity was identified as factor of abandonment at discharge and 3M, and the maternal employment at 12 M. The maternal notion of insufficient milk was the determining factor to dropout breastfeeding between delivery and the 3 M.

Conclusion: There was a high adherence to breastfeeding. The monitoring by health professionals from pre-birth to the first year of life is essential. Intervention strategies should focus on promotion of first feeding in the first hour of life, avoiding the administration of the formula milk and the use of teat; after discharge it should be demystified the notion of insufficient maternal milk and promote support during critical periods of abandonment of the breastfeeding

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PO152: A Case of an Unaffected Linear Growth in a Preterm with High Alkaline Phosphatase Levels

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Introduction*:* Approximately 50% of very low birth weight neonates develop osteopenia of prematurity. 10% of them may eventually lead to spontaneous or traumatic fractures. The clinical onset of osteopenia of prematurity (OOP) is usually between 6 - 12 weeks postnatally. There are several biochemical investigations, such as serum calcium, phosphate and alkaline phosphatase (ALP) that have been used to act as markers of bone mineralization and popular in screening for OOP.

Clinical case: A 26 year woman in her third pregnancy which complicated with GDM and PIH given birth to a premature infant at 27 weeks. A female infant, weighing 694g, was delivered by caesarean section. She was admitted to the neonatal unit with severe RDS. Surfactant was given and ventilated. Several courses of antibiotics given.ROP remained negative. Cranial USS was normal. Expressed breast milk was commenced on day 3. Fluid balance was managed with 10% Dextrose, electrolytes and calcium 2mmol/kg/d until day 12 when she was established on full feeds. Multivitamin drops which contained 400IU of vitamin D was added on day 10. ALP on day 21 -976 U/L and started on oral calcium and phosphate supplements. On day 78, she was noted to have right thigh swelling and decreased movements of it. X-ray and USS of right lower limb revealed metaphysial fractures of both ends of right femur. ALP increased to 2302U/L, Serum Calcium was low (1.9mml/L) Phosphate was also low (1.44mml/L).The dose of oral calcium was doubled. Fractures healed well without intervention. On day 112 ALP was 2181U/L, Serum Calcium was low (2.04mml/L) Phosphate was also low (1.48). She was discharged on day 120 fully breast fed on oral calcium, phosphate, iron supplements.

Discussion: There are so many studies that show OOP is strongly associated with impaired linear growth. At the time of writing this case report she is 1 year and 8 months and developmentally normal. She weighs 8kg and her height is 70cm. Mid parental height is 148.5cm. Target height range is 140cm to 157cm.Her height falls within the targeted height range.

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PO153: Retropharyngeal Abscess and Acute Dilatation of the Left Coronary Artery in Staph Sepsis of Neonate

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Introduction: Sepsis is the commonest cause of neonatal mortality and it is probably responsible for 30-50% of the total neonatal deaths each year in developing countries. Neonatal sepsis is a clinical syndrome of bacteremia characterized by systemic signs and symptoms of infection including septicemia, meningitis, pneumonia, arthritis, osteomyelitis and urinary tract infection of the newborn. Newborns are susceptible to staphylococcal sepsis and subtle nonspecific initial presentations. Abscess formation can lead to staphylococcal sepsis, but this is the first report of neonatal staphylococcal sepsis wich is complicated retropharyngeal abscesses and acute dilatation of the left coronary artery in our hospital.

Clinical case: This is report of female newborn of indonesian mother, wich had on the start of her life indirect hyperbilirubinaemia and asymptomatic colonisation nasopharynx with S. aureus. We hospitalized and start to treat this newborn with in 18 day of life with severe staphylococcal neonatal sepsis complicated by candidemia. Sepsis is followed byy retropharyngeal abscesses, mediastinal abscess and cellulitis of the upper part of thorax, pressed on cervical radix presented by hypotonia without any reflex and motor activity of the arms wich is seems as congenital neuromuscular disorder. Retropharyngeal abscesses are pressing on trachea, caused respiratory failure, disphagia and hypotrophy. Echocardiography was shown acute dilatation of the left coronary artery and suspect Kawasaki syndrome. Endocarditis, attached valve surface and forms a vegetation such as heart failure was present. This neonate had pneumonia with a pneumatocele become enlarge too. Serological investigation shown increased levels of Epstein-Barr, Parvovirus and Coxackie virus IgM antibodies. We treated this severe sepsis six weeks.

Discussion: This case shown newborn severe sepsis complicated by retropharyngeal abscesses, candidemia and hypotrophy caused by transient immunodeficiency during asymptomatic viral intrauterine infection. But we must investigate innate immunity. Motor activity of the arms is so poor all the time and it is necessary to investigate congenital neuromuscular disorder. Because these reasons we direct our patient to health care referral centre.

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PO154: Antioxidative Enzymes and Parameters of Prenatal Immune System Activation in Preterm Newborns

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Introduction: The various pathological factors in pregnancy, which cause a preterm labor, include systemic or local inflammation and oxidative stress and could have many implications in evolution of some pathological states of premature babies. Inflammation, followed by excessive free radicals production, is important for appearance and outcome of these pathological states, named with common name ‘oxygen-radicals diseases’. Enzymatic antioxidants play an important role at tissue protection against oxidative damage.

Methods: Study included 30 preterm newborns, from completed 30 to 35 gestational weeks, born from mothers whose pregnan-

cies were complicated with various pathological factors. Activities of superoxid-dismutase (SOD), glutation-peroxidase (GSH-Px) and catalase (CAT), total blood cells count and differential white cells formula, oxidative ability of phagocytes by NBT-test, activities of kreatin-phosphokinase (CPK) and lactate-dehydrogenase (LDH) and blood cultures, were determined in cord blood samples. C-reactive protein (CRP) was determined in third day of life. Control group consisted of 30 full therm, healthy newborns.
Results: More than 90% of pregnancies were complicated by pre-eclampsia, gestational diabetes, uro-genital, periodontal or systemic infections, PPROM, genital bleeding, or their combination, in preterm group. Significantly higher total number of leucocytes, phagocytes and thrombocytes, absolute number of spontaneously, and after PMA stimulation, positive NBT cells, were detected in preterm group. CRP was significantly elevated in preterm group, in third day of life. Activities of SOD and GSH-Px, CPK and LDH, were elevated in preterm newborn's cord blood, while CAT was not exchanged. All of preterm babies had negative cord blood cultures.
Conclusion: The most of detected pregnancy complications are followed by intravascular, systemic or local inflammation in mothers, and might cause disturbances in complex homeostasis in feto-placental unit, prenatal fetal immune system activation. Elevated counts of leucocytes, phagocytes and thrombocytes, CRP, and up-regulation of oxidative metabolism of phagocytes, are indirect parameters of stimulated pro-inflammatory response. Activities of SOD and GSH-Px, were elevated in order to protect tissues from following oxidative stress, while elevated activities of CPK and LDH, which indirectly indicate cell damage, indicate limited protective capacity of antioxidative enzymes in preterm newborns.

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PO155: Increased Proinflamatory Parameters and Down Regulation of Oxidative Metabolism in Newborns with Congenital Anomalies

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Introduction: Proinflanatory fetal response may affect the processes of organogenesis leading to the occurrence of congenital anomalies. Therefore to be expected elevated proinflamatory parameters in newborns with congenital anomalies. Due to reduced level of their antioxidant enzymes, it could be activated other protective mechanisms against immature tissues damages.
Methds: We have investigated 46 newborns with congenital anomalies and their mothers. The following laboratory parameters have been used: red and white blood cell count, hemoglobin and hematocrit level, peripheral blood smears, nitro-blue-tetrasolium test (NBT), serum immunoglobulin levels, serum nitric oxide level, creatin phosphocinase (CPK) activity, kariothype with G-banding. Moreover, ultrasound examination of central nervous system and heart, also clinical examination has been practiced.
Results: In examined newborns: increased parameters of proinflamatory response, an attempt to down regulation of oxidative metabolism, higher values of nitric oxide, increased activity of CPK, the parameters of anemia, were found. In their mothers: increased parameters of proinflamatory response, down regulation of oxidative metabolism, higher values of nitric oxide, reduced activity of CPK, were shown. Newborns with congenital anomalies in 98% had associated different neonatal problems.
Conclusions: Perinatal activation of the immune system in newborns could lead to increase mediators of proinflamatory response, resulting in tissues damages, and the occurrence of congenital anomalies. Down regulation of oxidative metabolism could be a control mechanism of the additional tissues damages.

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PO156: Nosocomial Infection in a Neonatal Intensive Care Unit: Result Analysis of Last 4 Years

Maria João VIEIRA, Maria Luisa MALHEIRO

Introduction: Nosocomial infection is an important issue in Neonatal Intensive Care Units (NICU), due to the immaturity of the immune function of the newborn and invasive procedures. Surveillance of this type of infection provides important information allowing guided interventions to reduce its frequency and adverse outcomes.
Methods: The Epidemiologic Nosocomial NICU Infections Surveillance Program (VE-UCIN), part of the National Epidemiologic Program for the Prevention and Control of Health associated Infections (PNCI) maintains since 2003 a prospective registry of all newborns diagnosed with Nosocomial Infection. The authors present the results of a level III NICU, and compare it to the national results. Definitions were according to the PNCI. Were included all newborns admitted in the NICU, whatever age and gestational age at admission, during the period 1/1/2008-31/12/2011.
Results: During a four years period were admitted 1515 newborn infants, 189 (12.5%) with birth weight under 1500g (VLBW). The median age at diagnosis was 37 weeks. The total of admission days was 17916; 568 days of invasive ventilation and 2266 days of central venous catheters (CVC). Ventilator utilization ratio and CVC utilization ratio were both 13. Thirty four neonates (2.2%) developed 44 infections: 6 pneumonia, 33 sepsis (23 associated to CVC), 2 necrotizing enterocolitis. Sepsis associated to CVC incidence was 10 cases/1000 CVC days, whereas ventilator related pneumonia incidence was 11 cases/1000 ventilator days. It was possible to isolate a pathogen in 26 cases, the most common isolates were *S.aureus* (8 cases) – 40% meticilin resistance and *S. epidermidis* (7 cases) – 100% meticilin resistance. During this period 3 patients died, accounting for a 0.2% mortality rate. By comparison with the national results, for VLBW neonates, Guimarães NICU presented lower ventilator utilization ratio (13 *vs* 27), CVC utilization ratio (24 *vs* 30) and sepsis associated to CVC incidence (12 cases/1000 CVC days *vs* 20 cases/1000 CVC days).
Conclusion: National nosocomial infections surveillance programs are powerful tools, allowing neonatologists to identify problems in their own units and develop strategies to reduce this complication. Interventions such as early removal of CVC, early institution of enteral feeding or judicious use of antibiotics might help to reduce the frequency of nosocomial infections.

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PO157: A Case Report of a Newborn with Persistent Active Congenital Cytomegalovirus Disease

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Introduction: The congenital Cytomegalovirus (CMV) infection has a wide spectrum of manifestations ranging from being completely asymptomatic to overwhelming multi-sytem failure and significant neurodevelopmental delay. Though most experts would recommend treating symptomatic congenital CMV, there is very little data as regards to its impact on the viral load and other signs

of continuing cyto-toxicity. We would like to report a newborn who continues to have a persistent active CMV disease even at the age of 6 months.

Clinical case: Baby A was born at 36+4 weeks of gestation. She was significantly symmetrically growth restricted below 0.2nd centile. At birth, she was also noted to have petechial spots, hepato-splenomegaly. Her investigations revealed thrombocytopenia, abnormal liver functions and periventricular calcification on cranial ultrasound scan. After confirming the diagnosis of congenital CMV infection with heavy viral load of 6.6x 10^5 DNA copies, she was started on six weeks course of IV Ganciclovir. During her neonatal stay she was noted to have persistent thrombocytopenia and obstructive jaundice. As even after six weeks of Ganciclovir, she continues to have deranged liver function tests and hence she was referred to liver team. There she developed chest infection. This was presumed to be due to continuing CMV infection in view of persistent high viral load. At this time she received another six weeks of IV Ganciclovir. She has been investigated for immunodeficiency and did not found any evidence for the same. She was investigated for Ganciclovir resistance. The UL97 gene did not show any mutation. In view of persistently raised blood CMV DNA levels, she is now commenced on Valganciclovir.. In addition to the deafness, altered liver functions, persistent thrombocytopenia, she has also started showing signs of spasticity, hence her prognosis remains guarded.

Discussion: The management of congenitally CMV infection continues to be hampered by limited options and lack of research into the benefits. This case highlights the dilemmas in managing a newborn with severe infection as regards to optimal drugs, dose, length of medications in addition to other complex issues like management of persistent thrombocytopenia in newborns with existing guidelines.

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PO158: Posnatal Complications In Anti-c Alloimmunization: A Case Report

Marília MARQUES, Vera BRITES, Ana ALEGRIA, Ana MARTINS, Teresa TOMÉ

Introduction: Anti-c is an important Rh antibody that causes haemolytic disease of the newborn. Postnatal complications include cholestatic liver disease and thrombocytopenia. Only few small studies on the pathogenesis, risk factors, neonatal management and outcome of these complications have been published. We present a case of anti-c alloimmunization leading to severe fetal anemia that required multiple intrauterine transfusions (IUT).

Clinical Case: A 35-year-old mother, BRh+, gravida 2 para 2 was referred at 26 weeks and 6 days because of isolated fetal ascites. Fetal blood type was BRh+CceeK- with a strong positive indirect Coombs test, with anti-c antibodies and JKa+. The fetus had severe anemia and required three IUT (at 26 weeks of gestation) with improvement, allowing term delivery. On admission newborn´s physical examination was normal, except for jaundice and hepatoesplenomegaly. Laboratory investigation showed moderate anemia (Hb = 9mg/dL), unconjugated hyperbilirrubinemia (serum total and indirect bilirubin levels of 32.4mg/dL and 27mg/dL, respectively), thrombocytopenia (20000/uL) and increased transaminases. He was treated with intravenous hyperimmune immunoglobulin, phototherapy (day 1 to day 6 of life), ursodeoxycholic acid (from day 4 of life), platelet transfusions (day 1 of life) because of the low platelet counts and also vitamin supplementation. He improved gradually and at the 10th postnatal day the lab work and abdominal ultrasound were normal; the patient was discharged in a healthy condition. He had a close follow-up observing a normal development at 15 month-old´s.

Discussion: Red blood cell minor group alloimunization is relatively uncommon however it can cause fetal anemia and hydropsis prompting urgent treatment. At birth some of these neonates present with severe cholestatic liver disease, which has been attributed to iron overload due to IUTs. Thrombocytopenia at birth may be due to IUT, decrease production, increased destruction and dilution. Little is known about incidence and morbidity of these complications wich deserve further scrutiny. Furthermore this report underlines the necessity of antenatal antibody screening testing in all pregnant women, even those who are Rh positive.

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PO159: Pilot Project of Total Cocooning Strategy in The Delivery Hospital to Protect Newborn Against Pertussis

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Introduction: Although there has been a vaccine available, pertussis remains a serious problem in many countries, including the Czech Republic. Pertussis can cause severe illness and even death - especially in infants not yet protected by vaccination. One of possible strategies of their protection is the cocooning strategy, vaccination against pertussis / booster dose of those in close contact with infants. The aim of the project was to develop, assess and optimize a know-how for the 'total' cocooning strategy in the delivery hospital including both the families and professionals optimize the information and vaccination of all caregivers as cocooning strategy in protection of newborns against pertussis.

Methods: The project was conducted in tertiary perinatal center. Phase I was focused at education and vaccination of HCWs in direct contact with newborns. In Phase II education and vaccination of families were conducted, before and after delivery. Various ways and times for information were tested (leaflets distributed during follow-up visits or antenatal assessment, questionnaires at CTG, consultation with midwives and nurses).

Results: 298 from 311 eligible professional caregivers were successfully educated and vaccinated. In total 86 family members (49 mothers, 33 fathers and 4 grandparents) were vaccinated during the Phase II (3 months). The number of vacinees significantly increased (35 persons to 51 persons during the same period, 6 weeks) after introducing informations during a CTG at antenatal assessment, where the mothers had time enough and were well focused at the protection of their baby. The time during the CTG shows to be the best one to approach mothers with education and vaccination planning.

Conclusion: The compliance of HCWs (nurses, midwives, doctors) was extremely high, over 95%. The vaccine uptake by families is more successful, when the information is given before delivery, optimally during antenatal assessment – CTG. Total cocooning in the delivery hospital should be promising strategy to avoid pertussis in early infancy.

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PO160: S100B Protein as a Reliable Indicator of a Brain Distress in Intrauterine Growth-Retarded (IUGR) Fetuses, as well as in Neonates Born With Neurological Deficit

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Background: S100B protein is an acidic calcium-binding protein of the EF-hand family concentrated in the nervous system, where it is located mainly in glial cells. Although many hypotheses have been formulated, its biological role is still debated, but its appearance in biological fluids has beeen shown to be a reliable index of brain distress. The aim of this study was to determined whether S100B, an acidic calcium-binding protein previously demonstrated as a reliable indicator of a brain lesion,could be helpful in detection of brain distress in intrauterine growth-retarded (IGUR) fetuses, as well as in neonates born with neurological deficit.
Methods: A total of 110 neonates were recruited from Neonatal Intensive Care Unit of the Pediatric Clinic. A serum blood sample was obtained from each patient at 24 after admission: 4th and 7th S100B levels were measured using ECLIA (electro-Chemi-Luminiscence Immuno Assay) method.
Results: The Friedman test value χ^2 (2; n = 13) is 3.46 ($p < 0.05$) not statisticaly significant and therefore the within-subject differences in all measurment time-points are not significant. The Friedman test value χ^2 (2; n = 6) is 0.67 ($p > 0.05$) not statisticaly significant and therefore the within-subject differences in all measurement time-points are not significant. The monitoring of the level of S100B protein on the 3rdand the 7th day and not elevating from the level measured the first day also represents that the damage was done prior to the delivery.
Conclusion: This study provides evidence that circulating S100B protein is increased in UGUR and the one with neurological defects fetuses and correlates with cerebral hemodynamics, suggesting that it may represent an index of cerebral cell damage in the perinatal period although is not statistically significant as in asphyxiated neonates where is a parameter of early brain damage

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PO161: Measurements of Serum Levels of S100B in Asphyxiated Full-Term Newborns as a Useful Tool for Early Detection of Postasphyxia Brain Damage

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Background: The purpose of this study was to inestigated whether measurement of serum levels of S100B inasphyated full-term newborns may be a useful toll for early detection of postasphyxia brain damage as already we know that S100B protein is inthe brain within the prenatal development and the early neurodevelopment follow up at 3-6 months.
Methods: All risk neonates with severe asphyxia, within the first hours after the admission of the delivery were eligible for inclusion in the study. One serum blood sample was obtained from each patient at the 24 h post-injury time-point. S100B levels were measured using Electro-Chemi-Luminiscence Immuno Assay_Elesys 2010 RocheDg. The results were correlated with the presence or absence of neurologic abnormalities at age 3-6 months.
Results: One hudred and nineteen neonates were recruited in neonatal intensive care unit. The avarage serun S100B levels for the control group (n = 48) was 0.12microgL (-1) (cut-off point). S100 B levels were significantly higher in asphyxiated term neonates n = 29; m = 0.64, premature neonates n = 30; m = 0.18, IGUR (intrauterine growth retardation) n = 9; m = 0.03 and neonates with neorological defect n = 3; m = 1.73.
Conclusion: The first 24 h after birth S100B protein interm neonates was significantly higher compared to all of the other groups, except the neonates with neurological defects, which showed higher leveles of s100b protein that showed no statistical significance. S100B is good indicator of brain damage in term neonates especially in the first 24 after birth. Longitudinal s100B protein measurements in serum soon after birth are useful tool to identify which asphyxiated infants are at risk of long-term neurologic sequelae

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PO162: Basics of Brain Ultrasond for Neonatal Intensive Care Unit and Neonatologists

Filip DUMA, Aspazija SOFIJANOVA

Introduction: Brain ultrasound is a helpful tool in assessing the neonatal CNS (central nervous systems).For a lot's of NICU's and neonatal units a pediatric radiologist is not on a 24 hours schedule, and a lot's of times the exam is needed on urgent basis.
Material amd methods: Recently a training was organized for 20 NICU doctors in perform brain (US). The doctors in the training group where with (5) and withouth (21) previous experience.Since there where only 2 US machines the participants were divided in four small groups of five students each, so that not more than 3 of them where on one US at the same time.
Results: In module 1: Participants where trained in US equipment basics, the necessary adjustments for good imaging and proper probe placing for valid readings. In module 2: the skills where attained in probe positioning and brain imaging of the CNS milestones in frontal, axial, and sagittal view. In module 3: The accent was on the most common pathology seen by brain US: Brain hemorrhage, ischemic events. In module 4: Teaching and practise on diagnosing of the congenital malformations, braintumors, hydrocephalus, TSC, determining the gestational age. In module 5: a 20 min assessment for each of the participants with: performing the US examination on a random patient, explaining the normal structures and pathology if there was any.
Conclusions: During the five modules of brain US traning, the participants where able to learn the basic knowledge for performing the test or interpreting the results.the training in brain US is definitely going to improve theil skill in faster diagnosis and better treatment of their patient.

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PO163: Congenital Malformations of the Central Nervous System

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Introduction: Congenital malformations of the central nervous system (CNS) represent important factor of morbidity and moratlity in children. The aim of this study eas to determine the incidence, type and clinical features of CNS malformations.
Methods: The study included children who were admitted at the Neonatal Department and Neurology Department of Pediatric Clinic, Clinical Center University of Sarajevo, from January 1st, 2008 to december 31st, 2010. The diagnose was established clinically and/or radiologically.
Results: There were total of 14,044 admissions at the Pediatric Clinic over the studied period. CNS malformations were found in 99 children (0.07%). The total number of various CNS malformations was 135. Lethal outcome was in 2/99 (2.02%). The most frequent

malformation was hydrocephalus 36/135 (26.66%), microcephalus 23/135 (17.03%), neural tube defects 22/135 (16.29%), agenesis of corporis callosum 12/135 (8.88%), ventriculomegaly 9/135 (6.66%), other rare CNS malformations were in 33/135 (24.44%).
Conclusion: Due to significant number of CNS malformations in children, it is essential to impruve primary prevention by preconceptional use of folic acid for all women of child bearing age. The quality of prenatal diagnosis CNS malformations is still low, so it is essential to provide adequate education in order to improve early prenatal detection and intervention in severe malformations.

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PO164: Severe Germinal Matrix-Intraventricular Hemorrhage in Very Low Birth Weight Infants: A Five Year Experience in a Neonatal Unit

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Introduction: The improved survival of extremely premature infants has resulted in a greater number of infants with significant neurological morbidity. Germinal matrix-intraventricular hemorrhage (GM-IVH) is one of the most common neurological complications in very low birth weight (VLBW) infants during neonatal period. GM-IVH-III is responsible for significant motor and cognitive sequels. The aim of this study was to determine the incidence of GM-IVH-III in a population of VLBW preterms, associated risk factors and comorbidities.
Methods: A retrospective cohort of infants born ≤ 32weeks of gestational age (GA), birth-weight (BW) < 1500g, or a twin with the previous conditions, admitted to a level 3B neonatal unit, between 1st January 2007 and 31th December 2011 was considered. Were consulted National VLBW Database and clinical charts. BW, GA, Apgar score and comorbidities were studied. From infants with severe GM-IVH (grade III-Volpe), diagnosed by cranial ultrasound, the presence of active hydrocephalus (AH) (Levene > p97) and periventricular hemorrhagic infarction (PHI) was evaluated. Logistic regression model was used to obtain odds ratios (OR) and corresponding confidence intervals (CI). To determine the BW cut-off point for severity, minimum p-value approach was applied. A significance level of 5% was considered.
Results: From 405 neonates, 346 were studied, 50.6% were male; mean GA 29.3 weeks (± 2.8). Overall mortality rate 15.6%; 43.2% weighted < 800g, 33.3% < 28 weeks GA, 11.1% Apgar < 7 at 5th minute. Incidence of IVH reached 34.1%; the distribution according to severity was 10.7%, 10.1% and 13.3% for grades I, II, III. The incidence rates of GM-IVH-III in each year were 5.0%, 12.7%, 20.0%, 14.0%, 12.0%, respectively. An evidence of protection against GM-IVH-III was found in small for GA infants (percentile < 10) (OR = 0.4; IC : 0.2-1.1; p = 0.089). Regarding GM-IVH infants (n = 118), this tendency was not found (p = 0.385). Considering GM-IVH infants, GA and BW were able to discriminate between GM-IVH-III and remaining grades. Infants with GA < 28weeks have a 5-fold odds (OR = 5.4; 95%; CI : 1.5-19.1) and those with BW < 800g have a 3-fold odds (OR = 3.0; 95%; CI : 1.2-7.7) for developing GM-IVH-III. Among these, 15.6% and 45.7% developed AH and PHI, respectively; mortality rate was 60.9%.
Conclusion: GA and BW proved to be independent risk factors for developing GM-IVH-III. Among these infants, no trend was detected in the incidence along the study period; a high mortality was found.

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PO165: Neonatal Seizures: Etiology and Outcome in Eight Years of Experience

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Introduction: Seizures occur in about 0.1 to 0.5% of newborns and can be a marker of brain injury. Diagnosis is essential for providing adequate treatment to the underlying condition. Prognosis and neurodevelopmental outcome are major concerns. Our objective was to study the clinical features, diagnosis, therapeutics and outcome of a population of newborns with seizures and compare the results with a previous study.
Methods: Retrospective study using a sample of newborns with seizures admitted in our NICU between 2004 and 2011. Data was collected from the clinical file and, after discharge, from medical records in follow up appointments, accessed in Alert®. Statistical analysis was performed by using SPSS® version 16.0.
Results: We included 46 newborns (2.8% of total admissions); 67.4% males. Most were delivered in the Hospital (93.5%), in 53.5% by cesarean section. 75% were term newborns_and 75% were appropriate for gestational age. Seizures started in the first day of life in 65.9%, mostly clonic (47.7%). Electroencephalogram was performed in 23 newborns, 39.1% with paroxysmal activity and 30.4% with abnormal background activity. Hypoxic-ischemic encephalopathy remained the main diagnosis (50%) and it was related to seizures in the first day of life (p = 0.012). Cerebrovascular infarction was the second cause (8.7%). Phenobarbital was the first line drug and only three cases needed additional therapy. Six newborn died (13%), four with hypoxic-ischemic encephalopathy, all before 2009. Mortality decreased by 11% in relation to previous study. Outcome was known in 20 cases: 45% had normal development, 15% delayed psychomotor development, 25% cerebral palsy and 25% epilepsy. Small gestational age and lower birth weight were related to adverse outcomes and death (p = 0.036 and p = 0.046, respectively).
Conclusion: Hypoxic-ischemic encephalopathy and cerebrovascular infarction remain the major causes for seizures, in accordance with other studies. Mortality seems to be decreasing. Prospective long-term studies are needed to elucidate outcome and prognostic predictors.

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PO166: Septo-Optic Dysplasia - Case Report

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Introduction: Ventral induction occurs between the 5th and 10th week of gestation. Negative factors can cause disorders such as septo-optic dysplasia. Objective: to point out that modern ultrasound machines enable a quick identification of normal brain structures, as well as anomalies in the cental nervous system.
Materials and method: diagnosing a CNS anomaly includes ultrasound diagnostics and its confirmation by means of MRI examination.
Results: case report: a female infant from the first controlled pregnancy, completed by surgery in the 33rd week of gestation, body mass at birth 2,200 grams, length 44cm, head circumference 33cm, As 8/9. The infant is admitted to Paedriatric Intensive Care, where

its cardiorespiratory condition is stabilised and is given antibiotics. The first ultrasound of CNS is conducted on the tenth day of life. Gray matter thickness parietally 20.7mm. No septum pellucidum is detected. The corpus callosum is visible. The plexus choroides are wide, hyperechogenic, with uneven edges. The lateral ventricules are enlarged (6.7mm frontally to the left, 6 mmatrially, 30.7 mm occipitally, 3.6mm frontally to the right, 6.5 mm atrially, 27.5mm occipitally). The III and IV chambers are within the physiological limits. The flow of liquor is normal. On both sides in the periventricular area zones of prominent echogenicity. The infant was discharged with the recommendation to be taken to the competent neurologist for an MRI.

Conclusion: Ultasound of CNS has a limited possibilites in the neonatal period, in answering parental demands for an early prediction of consequences. As a result, future achievements in diagnostics and answers to questions regrding disordersn are to be sought in its combination with MRI. Ultasound images of an infant with septo-optic dysplasia. As regards the patient we are presenting, the septum pellucidum is missings, the ventricules resemble boxes, and low-positioned thalamocaudate gap is visible.

M.R., J.K., L.A., T.J., M.H., S.K., K.D.: Perinatal Medicine

PO167: Perinatal Stroke and Corticosteroids: Unfortunate Coincidence?

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Introduction: Perinatal stroke is defined as an acute neurologic syndrome with chronic sequelae due to cerebrovascular events occurring between 20 weeks of fetal life and 28 postnatal days. Cerebral sinovenous thrombosis (CSVT) accounts for 10% of acute symptomatic strokes. The major clinical manifestations include seizures and altered consciousness. There are known predisposing factors that include perinatal complications or prothrombotic disorders however there are no published data about its relation with the use of corticosteroids during pregnancy.

Clinical Case: 34 weeks gestation, female preterm. Mother with nonclassic congenital adrenal hyperplasia due to 21-hydroxylase deficiency medicated since 8weeks gestation with dexamethasone (20mcg/kg). Gestational diabetes treated with insulin and cholestasis of pregnancy. Delivery by caesarean section. Apgar score 1'9/5'10. Clinically stable until day 10. Irritability and bulging fontanelle on day 11. On day 12 started clonic movements of the arms, sucking and 'pedalling' movements, with hypertonia and hyperreflexia, treated with phenobarbital and phenytoin. Transfontanelar ultrasound (TU): left intraventricular and parenchyma hemorrhage. Electroencephalography (EEG) showed epileptiform activity. Cerebral MRI: extended CSVT. Need for mechanical ventilation and inotropic support. Post hemorrhagic hydrocephalus control with head circumference measurements and TU. Control MRI: communicating supratentorial hydrocephalus. Need for lumbar puncture on day 31. Favorable outcome since day 27. Negative study for prothrombotic or endocrinological disorders. Parents study for prothrombotic disorders was negative. Hospital discharge on day 51. Follow-up on Neonatology, Physical medicine, Pediatric Neurology and Pediatric Endocrinology consultations. Genetic testing for 21-hydroxilase deficiency: heterozygote carrier. Currently she is 6 months old, presents with good growth and practically normal motor and cognitive development despite some motor incoordination. Maintains epilepsy treated with phenobarbital.

Discussion: Although glucocorticoid therapy is generally safe in pregnant women, it warrants close follow-up to monitor the disease process and the possible complications of therapy because a small amount of the steroids in the maternal circulation reach the fetal compartment. Several reports have shown that prenatal treatment with dexamethasone is safe for the mother and the fetus, however with this case authors wish to draw attention for the possibility of the association between dexamethasone therapy and perinatal stroke.

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PO168: Epidural Hematoma Due to Cephal Hematoma in Neonates: Report of Two Cases

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Introduction: Epidural hematomas are rare in neonates. Herein, we report two cases of epidural hematoma that was diagnosed in neonates with cephal hematoma.

Case Reports: Two cases that had a history of prolonged normal vaginal delivery were diagnosed cephal hematoma after birth. As these infants had poor sucking and decreased activity that were noticed by their mothers, the infants were consulted with a neurosurgean. Their physical examination revealed cephal hematoma both at left parieto-occipital region. Their cranial ultrasonography was found to be normal. The cranial computed tomography (CT) showed epidural hematoma next to cephal hematoma. Both infants did not undergo surgery and they were followed-up during hospitalization. The control CT that was performed one week later showed tthe resobstion of the epidural hematoma. As the infants did not have any neurological abnormality, they were discharged from the hospital. They have been followed up from the departments of Neurosurgery and Pediatric Neurology.

Conclusion: Epidural hematoma due to cephal hematoma are very rare. CT must be considered in cases with cephal hematoma who also had suspectible and abnormal neurological findings.

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PO169: Myelomeningocele: Assessment, Treatment and Early Results

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Introduction: Myelomeningocele (MMC) is a severe congenital neurological malformation that requires multidisciplinary care and long-term follow-up.

Methods: Retrospective clinical review including neonates with MMC admitted in a level III neonatal intensive care unit between January 2002 to June 2012 (10.5 years). Demographic data, time of surgical intervention, complications and outcome in the neonatal period were analyzed.

Results: The study population included 31 neonates: 19 (61%) were female and 3 (9.7%) were preterm. The median birth weight was 2990 g (785-5230) and 5 (16%) were small for gestational age. There was prenatal diagnosis in 14 (45%). Associated abnormalities were present in 25 (80.6%) being the most frequent the Chiari II malformation (64.5%) and *equinovarus* foot deformity (29%). The location of MMC was lumbosacral in 28 (90%) and thoracolum-

bar in 3 (10%). Nearly half (48%) neonates had open or leaking sacs before surgery. Antibiotic prophylaxis was administered in 29 (93.5%) and was started on the first 24 hours of life in 89.7%. Early surgery (£48 hours of life) was performed in 25 (83.3%). Postoperative complications occurred in 8 (26.7%): ventriculitis in 3 (10%), surgical site infection in 1 (3.3%), suture dehiscence in 1 (3.3%), cerebrospinal fluid fistula in 1 (3.3%) and sepsis in 2 (6.7%). There was no significant association between time of surgery and the development of complications. Hydrocephalus developed in 24 (77%) and was present at birth in 9 (29%). Surgical treatment was necessary in 21 (87.5%) and the initial approach was an external ventricular drainage in 52.4% and a ventriculoperitoneal shunt in 47.6%. Half the patients (52.4%) required a new surgical intervention for hydrocephalus. Comorbidities were present in 6 (19.4%) neonates during hospitalization. The mean age of discharge from the hospital was 11 days. There was no mortality in the neonatal period.
Conclusions: A significant incidence of postoperative complications in our series was found, although surgery was performed early in most cases. Hydrocephalus early diagnosed, proper shunt function and complexity of associated abnormalities were important morbidity determinants in this period.

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PO170: Neonatal Meningitis: Unexpected Outcome

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Introduction: Neonatal meningitis is associated with a high mortality rate and neurodevelopmental sequelae in survivors. Intracranial abscesses are a rare and ominous possible complication.
Clinical case: The authors report a case of a female term infant, without known perinatal infectious risk factors, that presented with fever and irritability on day (D) 4 of life. Laboratory tests revealed elevated CRP and lumbar tap was unsuccessfully tried. Empirical antibiotic treatment in meningeal doses was initiated. Ventriculitis was diagnosed on D6 with cranial ultrasound (US) and acyclovir therapy was added. Worsening hydrocephaly was documented in repeated cerebral US, which was treated with an external ventricular drainage (EVD). Blood and CSF culture revealed positive for *E.coli*. Tonic seizures occurred in D11 and were successfully treated with phenobarbital. EEG-video monitoring (13 hours) didn´t record electrical or clinical seizures. Head CT on D16 showed bilateral retro-cerebellar abscesses and craniectomy with EVD replacement was performed. Abscess fluid culture was positive for *E.coli*. CT was repeated on D20 for suspected EVD obstruction, with significant abscess reduction and diffuse cerebral oedema. On D23 EVD was replaced by a ventriculoperitoneal shunt. Antibiotic treatment was continued for 21 days after CSF cultures were negative. Neurologic examination on discharge (D50) reported irritability periods, lower limbs hypertonia, poor eye contact and adducted thumbs. At 6 months of age, neurological examination is normal except for a slight left upper limb paresis. Neurodevelopment hallmarks were acquired at the expected timings.
Discussion: The authors present this case to highlight the unpredictable possible favourable outcome of neonatal meningitis despite the occurrence of severe acute complications that are usually associated with significant sequelae.

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PO171: Case Report: A Neonate with Haddad Syndrome

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Introduction: Congenital central hypoventilation syndrome (Haddad syndrome) is a distinct genetic disorder of respiratory control associated with Hirschsprung's disease and tumors of neural crest origin. In more than 90% of cases it results from polyalanine repeat expansion mutations in the paired-like homeobox (PHOX) 2B gene and in the remaining cases from alternative (PHOX) 2B mutations. We report on such a rare case of a female infant with Haddad syndrome.
Clinical case: A female infant born at term by caesarian section, due to polyhydramnios and gestational diabetes, was intubated soon after birth because of cyanosis. Clinical examination revealed hypotonia, cleft palate, choanal atresia and supraglottic laryngeal malformation. A tracheostomy was performed for continuous need of respiratory support as several attempts at extubation failed. Ventilator dependency raised suspicion of central hypoventilation syndrome. CT and MRI scans of the central nervous system presented dilated subarachnoid spaces, hypoplastic vermis, thickened cerebral cortex and reduced periventricular white matter. Because of feeding difficulties and recurring abdominal distension, a barium enema was performed. It showed a distal narrowed, possibly aganglionic segment, leading to a dilated proximal segment, which rectal biopsy confirmed as Hirschsprung's disease. An irregular abdominal mass extending from the left costal margin into the lower abdomen, first visualized by ultrasonography was diagnosed by abdominal CT scan to be a congenital neuroblastoma. The triad of central hypoventilation, Hirschsprung's disease and neuroblastoma pointed towards Haddad syndrome. Molecular genetic analysis verified mutation of the (PHOX) 2B gene and confirmed the diagnosis. Our patient died at 6 months of age.
Discussion: We emphasize the importance of screening patients with congenital central hypoventilation for associated illnesses such as neural crest tumors and aganglionic megacolon.

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PO172: Coronal Ventricular Area Is a Better Discriminator of Differences in Ventricular Size than Linear Measurements in Very Preterm Infants

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Introduction: Despite being described more than 20 years ago (Saliba 1990), coronal ventricular area (CVA) measured from cerebral ultrasound (cUS) has not been adopted as a practical tool for defining ventricular dimensions in preterm infants. As a two-dimensional tool, it should describe ventricular size better than traditional linear (one-dimensional) measurements currently in use. Lateral ventricular asymmetry is a common observation (usually left larger than right) but linear measurements often fail to show a clear difference in ventricular size. The aim of our study is to verify the ability of CVA as a discriminator of anterior lateral ventricular size.
Methods: We assessed prospectively sequential cUS scans up to term equivalent age (TEA), from a cohort of preterm infants < 32 weeks gestational age, avoiding the first 3 postnatal days. Infants

with scan abnormality were excluded. We compared CVA and 2 linear measurements in the same coronal plane – the Levene ventricular index (LVI) and the anterior horn width (AHW) between the right and left ventricle. Comparisons were performed using a paired t-test or Wilkoxon test as appropriate. Inter and intra-observer reliability was tested using Intraclass Correlation Coefficient (ICC).
Results: 218 cUS scans from 75 preterm infants were analyzed. CVA and AHW showed significant differences between right and left ventricles ($p < 0.001$), not shown by LVI. The same findings emerged from a subset analysis at 3 different postnatal ages (~10, 40, 75 days) and at 3 different post-menstrual ages (27-31 weeks, 32-36 weeks, TEA). ICCs were good or very good for intra and inter-observer agreement.
Conclusions: Although both CVA and AHW discriminated well between left and right ventricles, finding the exact points of reference for the AHW measurement can be difficult when ventricles are larger or irregular. Due to its 2 dimensional nature, we propose that CVA is a better tool for assessing dilation. Its ability to discriminate small differences in size between the left and right lateral ventricle not shown using LVI enhances its potential sensibility for early ventricular dilation. Technical limitations to CVA use are now overcome by standard software incorporated in modern scanners and workstations, allowing wider clinical application.

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PO173: Post-Haemorrhagic Ventricular Dilatation: Are Traditional Ultrasound Measurements the Ideal Tools for Deciding Surgery?

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Introduction: Despite the limitations attributed to Levene ventricular index (LVI) for evaluating post-hemorrhagic ventricular dilatation (PHVD), it is still the most widely used method to assess ventricular dimensions and to determine the indication for CSF drainage (Brouwer 2012). Other linear measurements of the lateral ventricles have been suggested (anterior horn width – AHW, thalamo-occipittal distance – TOD), but are not used routinely. Coronal ventricular area (CVA), despite being easily measured with modern scanners or workstations and having published reference ranges (Saliba 1990), is not a popular tool. The aim of this study is to evaluate the role of less frequently used measurements for evaluating PHVD patients undergoing surgery.
Methods: We assessed prospectively a healthy cohort of very preterm infants < 32 weeks gestational age during their neonatal stay and at term equivalent age, excluding infants with neurological problems or scan abnormality. LVI, AHW, TOD and CVA were measured every four weeks until term-equivalent age to assess normal values for each post-menstrual week. Also, we assessed digitally stored images obtained during the week before surgery (reservoir or ventriculo-peritoneal shunt placement) from a group of infants with severe PHVD. Average values for each bilateral measurement were used for analysis. Absolute and relative deviations from the upper limit of normality for each patient were recorded.
Results: Mean (range) absolute deviations above upper limit of normal used for surgery decision were: LVI 7.8mm (2.1-12.1); AHW 13.8mm (9.1-21.3); CVA 271mm^2 (104-504); TOD 17.3mm (5.2-26.7). Mean (range) ratio between value used for surgery decision and upper limit of normal were: LVI 1.7 (1.2-2.2); AHW 7.2 (4.5-10.0); CVA 16.5 (4.6-32.8); TOD 1.9 (1.3-2.6).
Conclusions: AHW and CVA show better discriminatory power in severe PHVD, since their absolute deviations and ratios over upper limit of normal are much larger than the ones found for LVI and TOD. Most patients were treated above the conservative limit of LVI 95th centile+4mm. The importance of using better discriminators of ventricular size is enhanced recently due to a tendency for adopting earlier surgical strategies in PHVD (Brouwer 2012).

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PO174: A Birthmark To Worry About

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Introduction: Most birthmarks are benign lesions of little concern. On rare occasions, though, congenital cutaneous lesions may indicate an underlying disorder.
Clinical case: We report the case of a boy, first child of healthy non-consanguineous caucasian parents. Maternal serum screening tests for toxoplasmosis, syphilis, rubella, hepatitis B, cytomegalovirus, and human immunodeficiency virus were negative. First trimester screening result was positive so an amniocentesis was carried out and excluded Down´s Syndrome. Prenatal ultrasound examinations had shown normal fetal growth and development. Review of the mother's medical records suggested compliance with routine prenatal care and vitamins. He was born at 38 weeks' gestation by eutocic delivery, with a birth weight of 2900 g, length 46.5 cm, and Apgar scores of 8 and 9 at 1 and 5 minutes respectively. The physical examination was remarkable for a reddish-purplish discoloration of the skin involving the lombosacral area, the left lower limb, and the genitalia. There was also a lumbosacral tumefaction and a left lower limb and scrotum atrophy. CNS examination revealed spontaneous mobility at both legs but absence of left plantar reflex. The reflexes were normal on the right lower limb. There were no other congenital abnormalities. On postnatal day 4, magnetic resonance imaging of the spine was performed and confirmed the diagnosis of lipomyelomeningocele and tethered cord progressing into a terminal lipoma. Echocardiogram and ultrasound of the kidneys were normal. The patient underwent surgical exploration. He is now 6 months-old and so far he has reached normal development milestones but he requires close follow-up evaluation.
Conclusion: Most open neural tube defects are diagnosed prenatally with ultrasonography and serum marker concentrations. Antenatal identification of an occult spinal dysraphism, on the other hand, may be less obvious, particularly if spinal dysraphism is limited to a few vertebral segments in the sacral area. The cutaneous stigma along with the neurologic and orthopedic anomalies presenting at birth gave rise to the suspiction of the diagnosis. The prompt radiographic evaluation and surgical referral is crucial and is believed to prevent or halt progression of neurologic deficits due to spinal cord tethering.

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PO175: Neurodevelopmental Outcome of Intraventricular Hemorrhage with Cerebral Parenchymal Injury

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Introduction: Intraventricular hemorrhage (IVH) is an important cause of brain injury in premature infants. It remains a significant

problem, since improved survival of extremely premature infants has resulted in a greater number of survivors with this injury. IVH occurs most frequently in infants born before 32 weeks gestation or less than 1500 g birth weight. The diagnosis of IVH is made by cranial ultrasonography. The grading of the severity is based upon the location and extent of the IVH. It is now more widely accepted to refer to grade IV hemorrhage as periventricular hemorrhagic infarction (PVHI). The aim of our study is to describe the neurodevelopmental outcome of a cohort of premature newborn with PVHI.
Methods: Retrospective chart and image review of all PVHI newborns admitted to Neonatal Intensive Care Unit between January 2008 and December 2010. A standardized neurodevelopmental examination was performed.
Results: Four cases with PVHI; one case of gemelar pregnancy; Delivery: 2 c-section, 2 vaginal; median gestational age (GA): 28.9 weeks (range 25.4-33); median birth weight : 1342g (range 920-2535) - all cases appropriate for gestational age; PVHI occurred within the first postnatal week; All were reanimated at the delivery room (Apgar score range 3-6); 2 with neonatal seizures; Ventricular-peritoneal (VP) drain insert in one case associated with spastic tetraparesis and microcephaly. Normal neurodevelopmental outcome in the newborn with the lowest GA; 2 with expressive language delay.
Conclusion: PVHI is an important cause of brain injury in premature newborns. The need of VP shunt placement was associated with severe developmental delay. No mortality was observed. In the current era, periventricular hemorrhagic infarction survivors seems to develop cognitive and/or motor abnormalities.

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PO176: Vein of Galen Aneurysmal Malformation: A Rare Cause of Heart Murmur in the Newborn

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Introduction: Vein of Galen aneurysmal malformations (VGAM) are rare congenital vascular malformations characterized by shunting of arterial flow into an enlarged cerebral vein dorsal to the tectum. Most of these malformations present in early childhood, often causing congestive heart failure in the neonate. It can also present with a cranial bruit, and marked carotid pulses, developmental delay, hydrocephalus, and seizures.With the advent of endovascular neurointerventional techniques, the prospects for successful treatment of these lesions, once dismal, are now much improved.
Clinical case: A two-day-old, full term infant with a heart murmur and tachypnea was admitted to our unit. He was normal vaginal delivery and Apgar scores were 9 and 10 at 1 and 5 minutes respectively. Group B streptococcal cervical culture was negative. Physical examination findings were normal except for a heart murmur. On the 2nd day of life he develops respiratory distress. He had a normal chest radiograph and complete blood count except for a mild thrombocytopenia. Ampicillin and gentamicin was initiated. Congenital heart disease was suspect. Two dimensional echocardiography with color Doppler detected dilation of the right chambers, pulmonary hypertension and retrograde diastolic flow in preductal aortic arch. Diuretic therapy was started. Serial echocardiographic examinations ruled out coarctation but persistent pulmonary hypertension was shown. A cranial ultrasound detected dilated aneurysm of the vein of Galen, without cranial bruit. MRI showed aneurysmal enlargement of the vein of Galen but the cerebral parenchyma was otherwise normal. Over the next days his symptoms of congestive heart failure became well controlled and he is waiting for endovascular therapy.
Conclusion: Abnormal echocardiographic findings should raise the suspicion of cerebral malformation. The prognosis ultimately depends on the degree of cerebral involvement.

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PO177: Cerebral Blood Flow in Preterm Newborns with Invasive and Noninvasive Ventilation

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Introduction: Cerebral blood flow and its autoregulation is particularly fragile in brain of premature neonate. Breathing support could influence on blood flow in cerebral arteries.
Methods: The aim of this study was to estimate values of Doppler flow indices: 1) resistance index (RI) and 2) pulsatility index (PI) in the anterior and middle cerebral arteries in newborns born before 33 weeks gestation. Those infants were diagnosed with respiratory insufficiency and required mechanical invasive ventilation - IMV or noninvasive nCPAP. The study population included 28 newborns. The first group consisted of newborns who were treated with IMV (n = 18), the second group consisted of newborns who required noninvasive method of ventilation - nCPAP (n = 10). Doppler blood flow in ACA and MCA was assessed 3 times: 1) between 12 and 24 hours of life; 2) at 4th day of breathing support and 3) 3 days after cessation of treatment.
Results: No significant differences were found between the groups in the quality of blood flow in both arteries at 1st day of life. In the neonates ventilated by the conventional method the significantly higher RI in ACA (0.79 vs 0.75 p = 0.038) and MCA (0.79 vs 0.74 p = 0.045) at 4th day of life was found, in comparison to the newborns from group 2. The value of PI in ACA and MCA in group 1 was significantly higher than in group 2 at 4th day of life (1.68 vs 1.48 p = 0.038; 1.66 vs 1.45 p = 0.036). There were no significant differences between the value of RI and PI in ACA and MCA at 3rd day after cessation of treatment.
Conclusion: The results of this study indicated that invasive mechanical ventilation has greater impact on cerebral blood flow than noninvasive nCPAP.

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PO178: Heritability of Sleep Spectral Composition During First Three Months of Life

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Introduction: Although it has been known for a long time that genetic factors affect sleep quantity and quality, the genetic foundation of the sleep microarchitecture in infants has not yet been investigated. Genetic analysis of sleep during the first three months of life was performed with the assumption that spectral characteristics of sleep can serve as endophenotypes of brain electrical activity. We investigated the genetic effect and proportion of genetic influence on different EEG frequency ranges during sleep in classical twin study of monozygotic (MZ) and dizygotic (DZ) twin pairs.
Methods: Polysomnographic recordings were performed on 10 pairs of MZ and 20 pairs of DZ twins in three time periods. First recordings were obtained at the 37th (range 36–38) week of postmenstrual age (PMA), second at the 44th PMA (range 44–46)

and third at the 52th PMA. EEG power spectra was calculated on the basis of fast Fourier transformation combined with previous visual sleep analysis according to standardized criteria.
Results: We tested correlations of the sleep measures and found that MZ and also DZ twins showed high within pair concordance (r > 0.85) for λ (0.5-3.5 Hz) spectral power at the most electrode positions in 37th, 46th and 52nd PMA, so that heritability was not determined. MZ twins showed within pair concordance in spectral power of θ (4-7.5 Hz), α (8-12.5 Hz) and β (13-20 Hz) frequencies that was significantly higher than that of DZ twins. Heritability for these frequency bands was determined at different electrode positions during three points of measurements. Heritability for α frequency band at the right frontocentral electrode (h2 = 66%, 24%, 52%), and for β frequency band at the right centrooccipital electrode (h2 = 82%, 76%, 100%) showed stability over three measurements during NREM (non rapid eye movement sleep).
Conclusion: The results support the suitability of the spectral composition of QS/NREM sleep for defining endophenotype. Our findings are in accordance with the sleep heritability studies in adults and suggest that the heritability of sleep structure is expressed already in newborns.

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PO179: Development at Three to Five Years of Age in Preterm Infants Born with Gestational Age Less than 32 Weeks and/or Birth Weight Less than 1500 Grams

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Introduction: Advances in perinatal care have led to increased survival of premature infants, and consequent increase in surviving children with neurological sequelae and developmental delays.
Objectives: To analyze the global development and identify areas most affected in a cohort of infants followed in the Torrado da Silva Child Development Center. It was also aim identify possible perinatal risk factors for development delays or neurological sequelae.
Methods: Prospective cohort study to assess development of infants under 32 weeks and/or birth weight less than 1500g, born between January 2006 and June 2008 using Griffiths Mental Development Scale-Revised (GMDS-R).
Results: There were born 238 infants that met the inclusion criteria. Twenty-three (9.7%) died, 103 (43%) were transferred to other hospitals, 24 (10%) were assessed with GMDS-not revised and 42 (17.6%) for several reasons, missed follow up. Thus, the sample was composed of 50 children (50/215 -21.5% of survivors) with median gestational age at birth of 30 weeks (24-36 weeks) and median birthweight 1265g (610-1935g). Fifteen (30%) weighed less than 1000 g and seven (14%) were born before 28 weeks. Eight (16%) had III/IV intraventricular hemorrhage and six (12%) were oxygen dependent at 36 week. The assessment was carried out between 3 and 5 years (median = 41.8 months). Twenty-three children (46%) had results below the expected for their age. The mean percentile was 21. The most affected areas were the gross motor skills, autonomy, performance and practical reasoning. There was an association between the mean percentile and gestational age, male sex, oxygen dependency at 36 weeks corrected age and maternal education. There was no association between mean percentiles and the remaining variables (birth weight, intrauterine growth restriction, twin pregnancy, cesarean birth, necrotizing enterocolitis, maternal age).
Conclusions: About half of children born weighing less than 1500 grams or less than 32 weeks, assessed at 3-5 years, had a developmental delay. The gestational age, male sex, oxygen dependency at 36 weeks and the mother's educational level are associated with worse outcomes.

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PO180: The Newborn Without Pain

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Introduction: The myths that newborns and infants do not feel pain in the same way as adults, is something wrong that is scientifically prove. Health professional must be trained to assess and recognize the pain in these patients. Despite of having more of 40 methods of pain assessment in neonates, pain management in preterm still remains to be one of the most common problems in our diary clinical practice in the Neonatal Intensive Care Units. Major pain assessment scales in this age are Susan Given the scale and Bells Neonatal / Infant Pain Scale (NIPS). The preparation of this study aimed to: a description of the main methods of pain assessment in infants and the different ways to treat non-pharmacological pain; knowing and comparing the different measures applied by the medical personnel of neonatal units of three hospitals in Principado de Asturias (Spain) regarding pain assessment and nonpharmacologic handling.
Methods: This prospective study was conducted through a questionnaire based on the HERA project, realized by, from April to May of 2011, the population of nurses, nursing assistants and doctors currently working in neonatal units in Asturias´s hospitals.
Results: Over 90% of staff working in the units recognized not use pain assessment scales, of which 62.1% responded that in their hospital, have protocolized measures for the prevention of pain. The 89% use saccharose before aggressive procediments and manipulations being 0.2 cc of 20% solution, 2 minutes before the manipulations applied dose. When was asked what other measures used to handling and aggressive maneuvers, the most commonly used in these cases are containment and anesthetic cream.
Conclusion: In recent years, the assessment and management of pain in preterm infants has undergone a deep development and evolution, despite all, health professionals still have a deficit in this area.

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PO181: Does General Anesthesia Exposure Effect Adverse Neurodevelopmental Outcomes in Very Preterm Infants?

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Introduction: General anesthetics may produce neurotoxicity and enduring cognitive impairment in animal models, but the issue has not been adequately studied in humans. We want to demonstrate the association of poor neurodevelopmental outcome in preterm neonates who underwent anesthesia during their neonatal period.
Methods: Total of 60 infants in infants born very preterm (≤ 32 weeks) with very low birthweight (< 1500 g) were enrolled in a retrospective randomized controlled trial classed into two groups. Group 1 (n = 30) underwent general anesthesia for any surgical state on follow-up and group 2 (n = 30) was no given anesthesia. Both of groups were compared in terms of clinical demographic data. Sur-

gical etiology, time interval of given anesthesia, drugs and dosages given before and after surgery were recorded. Cognitive and neuromotor development were assessed by using the Bayley Scales of Infant Development II. Sensory and neurological performance was evaluated by standard techniques. The primary outcome was neurodevelopmental impairment at 18 to 24 months' corrected age.
Results: No statistical difference between demographic data. The mental developmental index (MDI) and physical developmental index scores were 76.73 ± 23.88; 76.26 ± 20.22 in group 1 and 96.6 ± 12.87; 89.1 ± 16.75 in group 2, respectively. There was significant difference in growth and neurodevelopmental outcomes between the two groups (MDI: p = 0.001; PDI: p = 0.01). There was no independent risk factor, which can affect none of the MDI and PDI scores in the multinomial logistic regression analysis.
Conclusion: One of the most important problem of prematurity is poor neurodevelopmental outcome. Sedatives and anesthetics which widely used in animal studies, showed widespread structural damage after exposure to the newborn period and lasting neurocognitive abnormalities in brain development. Anesthetics exposure in preterm infants among surgery is an independent increased risk factor for poor neurodevelopment.

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PO182: Neurodevelopmental and Sensory Outcome at 2 Years of Age in Very Low Birth Weight Infants

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Introduction,: Preterm birth rates appear to be rising in all developed countries. Advances in perinatal care have led to an increase in survival rates and therefore an increase of neurodevelopment disabilities in very low birth weight infants.
Aims: To analyze the neurodevelopment and sensory disabilities at 2 years of age in premature infants.
Methods: Retrospective study of clinical and neurological follow-up of premature infants without major malformations or congenital syndromes that were admitted in our neonatal intensive care unit in two consecutive years (May 2008 to April 2010). Clinical data were collected from National Very Low Birth Weight Network where all infants with less than 32 weeks or very low birth weight and their twins are registered.
Results: There were a total of 103 infants, with a mean gestational age of 29 weeks, 22.1% were extremely low birth weight infants. Only 61.4% (n = 62) had follow-up at 2 years. 96.7% of them were included in the Newborn Individualized Developmental Care and Assessment Program. Looking for sequels: 6.45% had cerebral palsy; 4.92% had neurological impairment (microcephaly, cerebral atrophy), 0% epilepsy. We found development delay in 16.3% of infants. Regarding sensorial impairment: no blindness, 9.2% with visual impairment; 6.5% of children had severe or profound deafness that require hearing aids. Special needs were found in 29% children, most frequently physiotherapy, speech and language therapy.
Conclusions: Our results are similar to the literature regarding cerebral palsy, development delay and sensorial impairment. However the 38.6% of missing subjects can be a bias factor.

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PO183: Oral L-Arginine Supplementation for Bronchopulmonary Dysplasia in Very Low Birth Weight Neonates

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Introducion: Bronchopulmonary dysplasia (BPD) affects about 20-30% of very low birth weight (VLBW, < 1500g birth weight) infants and is the major cause of morbidity and mortality in this vulnerable population. BPD is the consequence of unresolved or abnormally repaired lung damage and is characterized by arrested lung development and abnormalities in the pulmonary vascular bed. An important regulator of vascular perfusion is endothelial nitric oxide (NO). NO is synthesized from the amino acid L-arginine by NO synthases. Arginine is an essential aminoacid in very low birth weight (VLBW) infants. A relative arginine deficiency or immaturity of NOS activity in premature infants may lead to deficient tissue NO levels, vasoconstriction and ischemia reperfusion injury and may predispose to BPD. In this study, we aim to investigate the effect of arginine supplementation on the incidence of BPD and on the survival without BPD in VLBW infants.
Methods: This study enrolled 74 VLBW neonates with birth weight ≤ 1,500gr and gestational age ≤ 32 weeks born in 'Alexandra' Hospital, Greece. 32 neonates were prospectively randomly assigned to receive a daily oral L-arginine supplement of 1.5 mmol/kg/day (261mg/kg) with oral feeds, between 3rd and 28th day of life, while 42 neonates received placebo (control group). Demographics and clinical data for all enrolled infants were recorded. Infants who continued to require oxygen support or died by 28th day of life were considered to have BPD (NHLBI Workshop 2001).
Results: No adverse effects of oral arginine supplementation were noted. No significant differences in birth weight, gestational age, Apgar scores, mode of delivery and antenatal steroid administration were noted between arginine and control group. 11 out of 32 (34.4%) neonates had BPD in the arginine group whereas 21 out of 42 (50.0%) neonates had BPD in the control group, but this difference was not statistically significant (p = 0.139). The survival without BPD was significantly higher in the arginine as compared to the control group (66% *vs* 43%, χ^2 = 3.78, df = 1, p = 0.052).
Conclusion: Oral L-arginine supplementation is safe and easy to administer and is likely to improve the survival without BPD in VLBW infants. More studies are needed to prove its efficiency.

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PO184: Acidosis As a Risk Faktor for Respiratory Distress in Term Newborn Infants

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Introduction: Perinatal asphyxia is associated with different newborn complications. The aim of our study was to determine the significance of pH from arteria radialis in realation to neonatal respiratory distress in term newborn infants with perinatal asphyxia.
Methods: This prospective study included 71 term newborn infants with 1-minute Apgar score ≤ 5 and 5 –minute Apgar score ≤ 7 and they required a positive pressure ventilation > 1-minute. Value of pH from arteria radialis was determined n the first hour after birth. We had two study groups. One with pH ≤ 7.10 (n = 21) and second with pH ≥ 7.10 (n = 50). Differences in incidence and severity of respiratory distress were investigated between two groups.
Results: Neonates with pH ≤ 7.10 from arteria radialis versus neo-

nates with pH > 7.10 show significant diffrences in incidence of respiratory distress (76.0% vs 64.0%). Also there were diffrences in the severity of respiratory distress bettween the groups pH ≤ 7.10 versus pH > 7.10: minor (19.0 % vs 56.9%), moderate (19.0% vs 8.0%) and severe respiratory disress (38.01% vs 0%).
Conclusions: Perinatal asphyxia with pH ≤ 7.10 determined from arteria radialis in the first our after birth in term newborn infants is the risk factor for incidence and severity of respiratory distress.

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PO185: Biochemical and Biophysical Investigation of Surfactant in Samples of Gastric Aspirates From Newborn Infants

Nelly JEKOVA

Background: The optimal approach to detection of surfactant deficiency in the premature infants at birth remains unclear and the decision to apply exogenous surfactant is based mainly on development of clinical and radiological signs of neonatal respiratory distress syndrome (NRDS).
Objective: We studied the biochemical and biophysical properties of gastric aspirates (GA) from prematurely born infants with NRDS and healthy full term infants aiming to find an approachable method for assessment of surfactant maturity at birth.
Material and methods: Forty-seven newborn infants divided into two groups were enrolled in the study. The first group comprised 34 healthy infants born at term (after 37 weeks of gestation). The second group included 13 premature infants (aged 26 to 32 weeks of gestation) developing clinical signs of NRDS for which they received assisted ventilation and intubation in the delivery room. A biochemical analysis of the protein and lipid content of GA collected at birth was performed. The fatty acid composition of the GA samples was determined by Gas Chromatography-Mass Selective Detector (GS-MSD) analysis. The surface characteristics (equilibrium, maximal and minimal surface tension values) of the GA samples were measured by using the pending drop method.
Results: The mean phospholipids' concentration (μg/ml) in GA of the premature infants was lower (295.7 vs. 374.5) than in the term infants and the mean protein content was less in GA of the preemies than the term infants (574.5 vs. 641.5). The measurement of dynamic surface characteristics of GA showed significantly higher mean values of the minimal surface tension (γ_{min}) in the premature infants – 20.5 m/Nm compared to the term babies - 12.3 mN/m ($p < 0.01$). There was no difference between the equilibrium surface tensions (γ_{eq}, mN/m) of both groups (38 vs. 38.1).
Conclusion: The dynamic surface characteristics of GA show significant differences between premature and term infants, the minimal surface tension being the most important parameter for evaluation of surfactant maturity. It may be used as a fast surfactant' assessment test in the clinical practice.

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PO186: Spontaneous Pneumomediastinum in a Newborn: Case Report

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Introduction: Pneumomediastinum (PM) is defined as an air leak into the mediastinum. The PM in a full-term newborns (NB) is associated with meconium aspiration, pneumonia, hyaline membrane disease, mechanical ventilation or trauma related to childbirth. Spontaneous PM in NB without mechanical ventilation or undergoing lung disease is a rare entity.
Clinical Case: NB, 1st child of a 23 years old woman, monitored pregnancy without complications, with 3 normal ultrasound and no infectious risk factors. Vacuum birth at gestational age of 38 weeks, with good adaptation to extrauterine life, Apgar score 9/10, birthweight-3300g. Objectified at day 1 of life, subcutaneous emphysema in the anterosuperior thorax, without respiratory distress associated. Thorax radiography showed signs of subcutaneous emphysema and a hypertransparency on the right lung field requiring further clarification by computerized tomography. With this test it was possible to identify 'images that seemed to match an extensive subcutaneous emphysema and pneumomediastinum with mild septation, without changes of the lung parenchyma.' The NB was always hemodynamically stable, however showing signs of fatigue in breastfeeding, breathing difficulties and mild stridor. Under oxygen from day 2 to day 7, showed a good clinical outcome without stridor or signs of subcutaneous emphysema from day 6, hoarse cry persisting with gradual improvement. Radiological surveillance on day 7 showed no signs of subcutaneous emphysema or pneumomediastinum.
Discussion: Spontaneous PM in full-term newborns, in which risk factors are excluded, is very rare. The septed form can simulate other diseases, so the execution of chest computerized tomography was essential to establish the diagnosis. Spontaneous PM, isolated, usually resolves spontaneously without requiring specific treatment. In full-term newborns, a high concentration of inspired oxygen is associated with resorption of extra-alveolar air, which was the therapeutic option.

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PO187: Early Detection of Bronchial Obstruction in Infants with Atopy

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Aim: to reveal early signs of bronchial obstruction in infants with atopy.
Material and Methods: 119 infants under 1 year without signs of atopy (group A) and with skin symptoms of food allergy or atopic dermatitis SCORAD score 9 - 45 points (group B) were examined. Exclusion criteria were congenital anomalies respiratory system and facial area, acute respiratory infections, and severe general condition. All children were divided into subgroups according to age: I - 0 to 3 mo (IA = 22, IB = 23), II - 4 to 6 (IIA = 8, IIB = 25), III - 7-9 (IIIA = 10, IIIB = 15) and IV 10-12 mo (IVA = 8, IVB = 8). No significant differences within the subgroups, among girls and boys were found (t-and U-test, $p < 0.05$). The method of survey for all infants was using the tidal-breathing technique of MasterScreen (VIASYS, Germany) in quiet sleep.
Results: analysis of the results suggests a weak negative relationship between: skin allergy symptoms and tPTEF% tE ($n = 89$), $r = -0.32$, $p < 0.01$; as well as the presence of skin allergy symptoms and VPEF% VE ($n = 89$), $r = -0.25$, $p < 0.05$ among children of group IIIB. In subgroup III in infants 7-9 month indices (median and interquartile range) tI / tE 0.59 (0.52-0.70), tPTEF 0.21 (0.19-0.23), tPTEF% tE 17.6 (13.2-20.0), VPEF% VE 22.7 (19.9-23.9) were significantly lower in children with atopy than in children without allergy: 0.72 (0.66-0.77); 0.25 (0.2-0.34), 24.4 (20.2-29.0), 27.1 (24.2-30.0), respectively, $p < 0.05$. There are differences in the graphic pattern of breathing: 'concave' curve type of expiration are dominated in children of B group.
Conclusion: in children 7-9 mo skin signs of atopy escorted with

a decline of respiratory function: tPTEF% tE < 20, as well as tPTEF and VPEF% VE. The identified changes can be considered as markers of obstructions of the lower respiratory tract. The changes are functional, hidden, and coincide in time with the introduction of complementary foods.

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PO188: Outcome Improvement After Changes of Perinatal Respiratory Practices Over the Last 15 Years

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Introduction: Perinatal care for the very low birth weight infants have been changing over the last two decades. The aims of our study were to assess: (1) changes in resuscitation practices; (2) the association between the use of early nasal continuous positive airway pressure (NCPAP) and exogenous surfactant need; and (3) changes in the prevalence of bronchopulmonary dysplasia (BPD), over the last 15 years, at our center.
Methods: Retrospective study, from 1997 to 2011. Clinical records were reviewed. Exogenous surfactant need and the prevalence of BPD were evaluated using a comparative analysis of two periods, before and after the introduction of early NCPAP in 2005. Statistical analysis was performed using SPSS® program v.19.
Results: 395 clinical records were assessed, 198 (50.1%) females, gestational age 29.1 weeks (22-36), birth weight 1130g (360-1500), 95 (24.1%) small for gestational age. Endotracheal intubation in the delivery room was performed in 229 (58%) newborns (NB), early NCPAP in 56 (14.2%), and 110 (27.8%) stayed in spontaneous ventilation. Respiratory Distress Syndrome was diagnosed in 247 (62.5%) NB and exogenous surfactant was administered to 217 (54.9%). Ninety one (23%) of the NB deceased. BPD rate was 8.4% (n = 33). Comparing both epochs (1997-2004 and 2005-2011), with the introduction of early NCPAP, the need of endotracheal intubation decreased from 75% to 40.5% (p < 0.0001), the prevalence of Respiratory Distress Syndrome decreased from 66% to 59% (p = 0.15), the need of 1 dose of surfactant increased from 27.7% to 48.6%, the need of 2 doses decreased from 59.8% to 40% (p = 0.001). The need for mechanical ventilation (p < 0.0001) and oxygen therapy (p = 0.002) decreased, along with a significant improvement of outcomes: less BPD (p = 0.022) and mortality (p < 0.0001).
Conclusion: Changes in perinatal care with the use of early NCPAP were associated to a reduction of the prevalence of Respiratory Distress Syndrome, exogenous surfactant need, use of invasive mechanical ventilation, oxygen therapy and BPD.

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PO189: Changes in the Etiology of Ards in Two Periods of Time

Vesna MILAS, Josip MILAS, Hana DOBRIC

Introduction: With the improvement of the perinatal care (which includes team working of many medical experts) perinatal mortality in Croatia has been lowered. Incidence of primary RDS is lowered because of prophylactic giving of corticosteroids to mothers when the premature labour is expected. It is not the point with secondary RDS. The incidence of it always remains the same. Only causes of illness have been changed.
Methods: Main causes of ARDS in NICU have been analyzed in two periods of time (year 2006 and 2010).
Results: In the year 2006, 50% of ARDS have been caused by perinatal infections. Gestational diabetes caused the next 18% of cases, multiple pregnancies 18% and perinatal asphyxia 14%. In the year 2010, perinatal infection caused only 27% of ARDS. Gestational diabetes and multiple pregnancies 23%, but perinatal asphyxia 27%. 23% of ARDS have been caused by mother's thrombophilia.
Conclusion: Better perinatal care results in the lower number of perinatal infections but point out new causes of ARDS such as mother's trombophylia and connected problems in Newborns. Some of them were born with life-threatening complications: anaphylactic shock, secondary apnoea or spontaneous pneumothorax. Mother's illness often results by ARDS. We must wait for the results of further investigations in that field. Yet remains unclear are the ARDS in these children connected with haematological problems, or with threatening the illness with low molecular heparins. Maybe same genes in mother and child act both (haematological problem in mother and dysfunction of surfactant in the child).

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PO190: Mild Systemic Hypothermia after Neonatal Encephalopathy: Three Years of Experience

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Indroduction: Neonatal hypoxic-ischemic encephalopathy (HIE) occurs in 3-4‰ live full-term births. The diagnostic criteria of moderate to severe hypoxic-ischemic insult include: a ten minute Apgar score ≤ 5, resuscitation with positive pressure ventilation for a time ≥ 10 minutes, metabolic acidosis with a cord pH of < 7 or a base deficit ≥ 16mmol/l, clinical signs of moderate or severe encephalopathy and abnormal amplitude integrated electroencephalogram. Hypothermia (HT) is the current treatment of brain injury that occurs with hypoxia ischemia. HT is started as soon as possible using a water-filled HT mattress, the body temperature is maintained at 33.0-34.0°C for 72 h, followed by a rewarming period. HT in newborn infants with HIE reduce the risk of death and neurological impairment at 18 months.
Methods: We collect data on newborn infants treated according to a regional protocol (NeoNATI project, Neonatal Neuroprotection of Asphyxiated Tuscan Infants) at neonatal III level units in Tuscany (Pisa, Firenze and Siena) from April 2009 to April 2012.
Results: A total of 71 infants were treated with HT: 47% presented in Sarnat stage II and 53% in Sarnat stage III. A 10' Apgar score ≤ 5 and metabolic acidosis were reported just 69% and 70% of newborns respectively.The mean time from birth to enrollment was 4 hours and the time to achieve target temperature of 33.5°C ranged from 1.3 hours to 6 hours (14.7% of infants arrived in NICU with a body temperature ≥ 35.5°C).Only 8,9% presented adverse effects of hypothermia (1 patient had thrombocytopenia, 2 patients had bradycardia and 3 patients had cold skin lesions). 7.3% died during neonatal period. Only those children with at least 18 months of neurological follow-up were included for data analysis: 18% had a normal outcome, 23% survived with one or more neurodevelopmental impairments (cerebral palsy, global developmental delay or epilepsy).
Conclusion: Many questions still remained about the optimal use of hypothermia (age at starting of hypothermia, gestational age limit, duration of cooling, use of drugs for neuroprotection) so the formation of regional or national HIE registries is raccomended to

the scientific progress in this field.

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PO191: Neonatal Chylothorax

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Introduction: Chylothorax (CTX) is an abnormal accumulation of lymphatic fluid in the pleural space. Is it a rare condition in neonates and may cause serious metabolic, immunologic and nutritional complications.
Methods: Retrospective review including all newborns with CTX in a level III neonatal intensive care unit, for the period from 1997 to 2012 (16 years). Three groups were considered: congenital CTX, post-surgical CTX and non traumatic CTX.
Results: Seventeen newborns were included. 1) Congenital CTX *n* = 4 (23%): 2 (50%) male; birth weight 3125g (2020-3600); gestational age 35 weeks (32-37); non-immune *hydrops fetalis* in 3 (75%); no associated congenital malformations or chromosomal anomalies; thoracic tube was placed in 2 (50%) and octreotide was administered in 1 (25%); mean duration of hospitalization 23.5 days (6-48); mortality rate 25% (*n* = 1) with postmortem diagnosis of congenital pulmonary lymphangiectasia. 2) Post-surgical CTX *n* = 12 (76%): 10 (83%) male; birth weight 1870g (840-3350); gestational age 36 weeks (26-40); associated congenital malformations in 4 (33%); partial monossomy of chromosome 15 in 1 (8%). CTX occurred after surgery for esophageal atresia in 5 (42%), cardiothoracic surgery in 4 (33%) and congenital diaphragmatic hernia in 3 (25%); mean interval from surgery to diagnosis was 15.9 days; thoracic tube was placed in 10 (83%) and octreotide was administered in 6 (50%); one neonate (6%) required surgical treatment twice for ligation of the thoracic duct and pleurodesis, both unsuccessful; mean duration of hospitalization 42 (16-129) days; mortality rate 33% (*n* = 4). 3) Non traumatic CTX *n* = 1 (6%): male; birth weight 1650 g; gestational age 32 weeks; prenatal diagnosis of cervical mass; no associated congenital malformations; CTX secondary to a cervical teratoma treated with thoracentesis and surgical removal of the teratoma.
Conclusions: The most frequent cause of CTX in this series was trauma post-surgery. There are numerous therapeutic approaches for neonatal CTX. Although conservative treatment is effective in most patients, surgery must be considered in refractory cases. Etiology is an important determinant of mortality. Randomized controlled trials are necessary to establish the efficacy and safety of the different medical and surgical treatments available.

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PO192: The Effect of Asphyxia on the Development of the Respiratory Distress Syndrome in Premature Infants

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Introduction: The respiratory distress syndrome (RDS) is an acute primary lung condition in infants which occurs as a result of surfractant deficiency. Perinatal asphyxia leads to a series of disorders, affecting almost all vital organ systems.
Aim: The effect of asphyxia on the occurrence of RDS in premature infants (with body masses at birth ranging from 1500 gr to 2500 gr), as well as the investigation of their interrelations.
Materials and methods: This research was conducted during 2005 by means of a prospective analysis of premature infants born in the Gynecological - Obstetric Clinic "Narodni Front' in Belgrade, who were treated for the diagnose of RDS and perinatal asphyxia. The RDS was diagnosed by clinical presentation, X-ray findings and laboratory analyses of infants within the first hour of birth (pH, base deficit and the concentration of serum lactates). We also analyzed the way of finishing the delivery, the gender, vitality at birth, gestational age and the body mass of the infants.
Result: The deliveries were completed by surgery in 67.85%. Over one half of the newborns required resuscitation measureas at birth. The average rectal temperature at birth was to 36.0 ± 0.4. More than 50% of the newborns were male. The average gestational age of the newborns in the analyzed group was 33.2 ± 1.3, while the average Apgar score value within 5 minutes amounted to 7.03 ± 1.16. The average body mass at birth was 1872.58 ± 204. Hypoglycemia was registrated in 33.03% of the infants, and hyperglicemia in 4.46%. The average value of ph was 7.22 ± 0.66, and of lactates 2.8 ± 1.7. In terms of the number of days, the need for oxygenation amounted on average to 6.6 ± 2.78. Of all the infants diagnosed with RDS, 99.11% were discharged from hospital in a good general condition, while one child (0.89%) was transferred to another institution for administering mechanical ventilation.
Conclusion: Perinatal asphyxia and RDS are the commonest pathological factors of early neonatal morbidity. Perinatal asphyxia increases the risik of developing RDS.

M.R., J.K., L.A., T.J., M.H., S.K., K.D.: Perinatal Medicine

PO193: STAT3 and STAT6 Overexpression During Lung Development in Nitrofen-Induced Congenital Diaphragmatic Hernia Rat Model

Paulina Piairo, Cristina NOGUEIRA-SILVA, Maria João BAPTISTA, Rute MOURA, Jorge CORREIA-PINTO

Introduction The signal transducers and activators of transcription (STAT) are best characterized as downstream mediators of cytokine signaling. Along with cytokines, STATs have been implicated in the signal transduction of other major instructive pathways of fetal lung development including growth factors such as FGF, VEGF, PDGF. Further evidence has implicated STAT proteins in the pathogenesis of allergic airway diseases but also in lung inflammation and repair. Although improved understanding of normal and abnormal lung development may unveil new therapeutic targets to rescue impaired lung growth, common to broad spectrum of human diseases, such as congenital diaphragmatic hernia (CDH) STATs involvement in normal and abnormal fetal lung development remains largely underexplored.
Methods Immunohistochemistry was performed to evaluate the expression of STAT protein family (STAT1-6) during normal lung development. CDH was induced by maternal administration of a single dose of nitrofen on day 9.5 of gestation (term, 21.5 days). Cesarean section was performed and fetuses were harvested on days 15.5 through 21.5. Compared characterization of gestational expression levels of STAT protein family (STAT1-6) in normal rat lung and in CDH lung, between days 15.5 and 21.5, was performed by western blot analysis.

Results STAT protein family members are constitutively expressed in pulmonary tissues during fetal lung development. STAT1, STAT4 and STAT5 display increased pulmonary expression at the latest gestational stage, day 21.5, in both normal and CDH lungs. Whereas STAT3 and STAT6 display increased pulmonary expression in CDH cases significantly different from control lungs from day 17.5 onwards.
Conclusions The present study provides evidence of the presence of STAT protein family in fetal lung development. Furthermore our data point towards a disease-induced STAT3 and STAT6 overexpression, which is suggestive of a role for STATs in the poorly understood pathogenetic events in CDH.

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PO194: Sedation and Analgesia in Newborn Infants of Very Low Birth Weight Is a Risk Factor for Bronchopulmonary Dysplasia

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Introduction: Preterm infants of very low birth weight admitted to an neonatal intensive care unit (NICU) are often subjected to stressful procedures such as venous conduits or endotracheal intubation that may require regular analgesia. Multiple lines of evidence suggest that repeated and prolonged exposure alters their subsequent pain processing, long-term development, and behaviour.
Methods: We conducted a retrospective observational study of infants less than 1500 g admitted to our NICU during the period 2008-2011. We analyzed data on oxygen dependency at 28 days of life and classifies newborns grades of BPD (Jobe & Bancalari). We performed a multinomial logistic regression analysis between the degree of DBP (dependent variable) and the use or nonuse of sedation and / or analgesia in the newborn (independent variable), adjusting for days of oxygen and high FiO_2 received.
Results: During this period, admission to our NICU 141 newborns, only valid data are available in 115, of which 85 were not sedated and / or analgesia, 25 received midazolam and fentanyl in 26 patients, 2 patients received only midazolam and 2 cases were fentanyl. Patients receiving sedation and / or analgesia receiving mechanical ventilation for 17 days more than half (95% CI 10.4 - 24.3). According to our data for patients receiving sedative drug developed severe BPD more frequently (OR = 3.8, 95% CI 1.7 - 8.4), moderate BPD OR = 1.6, 95% CI 1.01 - 2.6) and mild BPD OR = 1.6 (CI95% 1.1 - 2.3).
Conclusions: We observed a higher risk of BPD in patients receiving sedation or analgesia during their stay in NICU.

J.U., P.T.P, A.R.L., M.L.F., M.M.O., A.M.H.: Servicio de Pediatria. Hospital Clínico San Cecilio. Granada. Spain.

PO195: A Novel Mutation in Foxf1 Gene Associated to Capillary Alveolar Dysplasia, Intestinal Malrotation and Annular Pancreas

Joana OLIVEIRA MIRANDA, Gustavo ROCHA, Paulo SOARES, Helder MORGADO, Maria João BAPTISTA, Inês AZEVEDO, Susana FERNANDES, P SEN, Hercília GUIMARÃES

Introduction: Capillary alveolar dysplasia (CAD) is a rare pulmonary fatal disease that usually presents in the newborn with severe hypoxemia and persistent pulmonary hypertension unresponsive to treatment. Mutations in *FOXF1* gene have been described in patients with CAD associated to multiple congenital anomalies.
Clinical case: The authors report the clinical case of a neonate with persistent pulmonary hypertension of the newborn, associated to duodenal stenosis secondary to annular pancreas and intestinal malrotation. Supportive treatment, inhaled nitric oxide, oral sildenafil and nebulized iloprost were used without clinical improvement. The neonate presented an overwhelming course, with hypoxemia refractory to treatment, and died on day 15 of life. The autopsy confirmed lung histology compatible with CAD. DNA sequence analysis revealed a *de novo* nonsense mutation p.S180X, in the first exon of *FOXF1* gene.
Discussion: In CAD, persistent pulmonary hypertension is not responsive to medical treatment and a fulminant course is usually observed, with most patients dying of respiratory failure within the first month of life. High index of suspicion and diagnostic lung biopsy are required to avoid the use of more invasive and futile treatments. *FOXF1* have been described as crucial in human lung morphogenesis and intrinsic pulmonary vascular development, as well as involved in gastrointestinal tract development. At least four different heterozygous mutations in *FOXF1* gene in patients with sporadic CAD and associated malformation have been identified. Here we describe a new mutation in *FOXF1* gene, never reported in the literature, in a clinical case of CAD with annular pancreas and intestinal malrotation.

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PO196: Efficacy and Safety of Intratracheal and Inhaled Recombinant Human Deoxyribonuclease Therapy in Neonates with Persistent Atelectasis

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Purpose: Atelectasis due to mucus-plugging and abundant thickened pulmonary secretions increase the risk of secondary pulmonary infections and prolonged artificial ventilation and therefore requires early and aggressive treatment in newborns cared in neonatal intensive care units (NICUs). Current treatment of atelectasis in pediatric cases consists of increasing ventilation parameters, regular physiotherapy, positioning, secretolysis, inhaled bronchodilators, antibiotic treatment if necessary, intermittent tracheal lavage with saline or secretolytics and fiberoptic bronchoscopy. However there is still no evidence-based 'gold standard' treatment. The use of recombinant human deoxyribonuclease (rhDNase) for the treatment of persistent atelectasis is a new concept in NICUs. In this study, we aimed to compare and evaluate the clinical and radiological changes in infants who received nebulized and intratracheal rhDNase for persistent atelectasis unresponsive to conventional treatment options.
Methods: This study was conducted between January 2007–November 2008 in the NICU of Dr. Behcet Uz Children's Hospital in 23 full-term and preterm patients with atelectasis on chest x-ray and unresponsive to conventional treatment options. In intubated

patients 1.25 mg rhDNase (Pulmozyme) mixed with 1:1 0.9% saline was infused slowly in the endotracheal tube (ETT) via a feeding tube. In non-intubated patients 1.25 mg Pulmozyme mixed with 1:1 0.9% saline was placed in a chamber and applied via a mask through jet nebulizer. The same procedure was repeated 4 hours after the initial dose. Chest physiotherapy and standard tracheal aspiration was performed 1 hour after the second drug doses in both treatment routes. The same treatment protocol was repeated on the second day. Treatment response was evaluated separately as 'clinical' and 'radiological' response.
Results: The radiological and clinical response to rhDNase and recurrence of atelectasis in term and preterm infants were detected to be 78.3%, 56.3%, 16.7% respectively. Nebulized route in non-ventilated patients was more successful than intratracheal (IT) treatment which was used only in patients on mechanical ventilation. Response to rhDNase was better in CRP-positive cases with possible pneumonia and in cases with atelectasis sites at upper lobes.
Conclusion: Nebulized or IT rhDNase application is safe and effective for treatment of atelectasis especially in neonates with viscous secretions and pneumonia having upper lobe atelectasis. Both the presence of mechanical ventilation and IT administration might have affected poorer radiological rhDNase response when compared to nebulized treatment in our study group.

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PO197: Congenital Diaphragmatic Hernia with Associated Anomalies

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Introduction: The association of congenital diaphragmatic hernia (CDH) and other anomalies has important implications, because of the associated poorer prognosis. The aim of our study was to assess the congenital and chromosomal anomalies in patients with CDH and their influence in outcome.
Methods: A retrospective review of patients with CDH treated in our neonatal unit, between 1997 and May 2012. Clinical data and survival rate of patients with congenital anomalies and chromosomopathies were analyzed.
Results: Eighty five cases of CHD were identified, 72 (84.7%) left side hernia, 1 (1.2%) bilateral side and 15 (17.6%) with malformations. Three (3.5%) had a chromosomopathy: one trisomy 18, one 46,X0 (Turner) and one 47,XX,+i(9). There were two cases of sexual ambiguity. A congenital heart defect was present in five (5.9%), one associated to cleft palate. Two cases were diagnosed with fetal hydrops. Other malformations/syndromes diagnosed were Jarcho-Levin syndrome, cystic hygroma, ureterohydronephrosis with vesicourethral reflux and tracheal compression by anomalous pulmonary artery branch. In the group with associated malformations, the median birth weight was 2080 g, with a median gestational age of 37 weeks; compared to a median gestational age of 38 weeks and median birth weight of 2800g in the non additional malformations group. The neonatal survival rate in CDH with and without malformations was 26.7% vs 52.9% respectively (p = .065). In both groups the left side was the most frequent localization of the hernia.
Conclusions: There are multiple malformations that can be associated to CDH. In our series the most common were chromosomal and congenital heart defects, according to the literature. It is known the worse prognosis of CDH patients with other associated congenital anomalies.

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PO198: Neonatal Pneumomediastinum, a Peculiar Presentation

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Introduction: Incidence of pneumomediastinum has been reported to occur in 4-25 of 10,000 live births, but this value may be underestimated because pneumomediastinum is often asymptomatic and may go undetected. Neonatal pneumomediastinum is usually associated with assisted ventilation, meconium aspiration or trauma during childbirth. Spontaneous pneumomediastinum is very rare in the newborn.
Clinical case: A male newborn was born at vaginal delivery with suction cups at 39 weeks gestation. The Apgar score was 5, 8 and 10 at 1, 5 and 10 minutes, respectively. Resuscitation with positive pressure ventilation with self-Inflating manual resuscitator was required for about 1 minute. After birth, the newborn was admitted to the neonatology unit because presenting mild respiratory distress. Few hours after admission did not presented respiratory distress. Never required supplemental oxygen and remained in spontaneous ventilation. At third day of life during the physical examination detected decreased heart sounds with normal pulmonary auscultation. Antero-posterior chest radiograph showed hyperlucency in the left cardiac edge; lateral chest radiograph demonstrated retrosternal hyperlucency suggestive of anterior pneumomediastinum. At seventh day of life, chest radiograph was repeated, the previous image was maintained, and therefore chest tomography computerized was performed. It identified a suggestive image of locula ted anterior pneumomediastinum. The newborn was in hospital for monitoring until D12 of life. Remained without signs of respiratory distress and hemodynamically stable. Radiograph of the chest was repeated at 20 days of life, it showed partial reabsorption of the pneumomediastinum. At 2 months of life, chest radiography confirmed complete resolution of the pneumomediastinum.
Discussion: Neonatal pneumomediastinum prognosis is usually good because recovery is spontaneous in most cases. In isolated pneumomediastinum is necessary to maintain surveillance because it can progress to pneumothorax. In our case the diagnosis was made after the detection of decreased heart sounds and in some cases may be the only clinical manifestation of pneumomediastinum, which reinforces the importance of performing a careful physical examination in the postnatal period.

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PO199: Congenital Diaphragmatic Hernia and Tracheal Malformation: A Rare Association

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Introduction: Congenital diaphragmatic hernia (CDH), a severe congenital anomaly occurring in approximately one in 3000 live births, remains a life-threatening condition. The prognosis is worse when associated to anatomic anomalies of the tracheobronchial tree. We report on a clinical case of CDH associated to congenital tracheal stenosis and pulmonary artery sling which conditioned the prognosis.
Clinical case: Female newborn with right side CDH, with pre-natal

diagnosis at 31 weeks. She was the first child of healthy unrelated parents, vaginal delivery at 39 weeks, birth weight 2900 g. Conventional mechanical ventilation was electively initiated, switched to high-frequency oscillatory ventilation (HFOV) with nitric oxide, and then to extracorporeal membrane oxygenation (ECMO). The newborn was submitted to surgical repair of the CDH, on ECMO, at day 4. Significant improvement of native cardiopulmonary function allowed successful wean from ECMO support on day 7. However there was a recurrence of severe respiratory failure accompanied by resistance in progression of the endotracheal tube. A tracheoscopy revealed a severe reduction of the tracheal lumen and the thoracic CTscan showed a distal focal stenosis of the trachea. At this point, the newborn had severe metabolic and lactic acidosis due to prolonged hypoxemia. The dead occurred at day 9. Autopsy revealed a pulmonary artery sling associated to tracheal stenosis.
Discussion: Neonates with CDH have other malformations that contribute to a poor prognosis. In this case a tracheal stenosis and pulmonary artery sling were main determinants to the final outcome.

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PO200: Ventilation of Very Low Birth Weight Infants and/or Extreme Premature Infants in a Neonatal Intensive Care Unit: 10 Years of Experience

Susana NOBRE, Cândida CANCELINHA, Cristina RESENDE, Carlos LEMOS

Introduction: Respiratory problems are a major cause of morbidity and mortality in very low birth weight (VLBW) infants. Assisted ventilation has allowed increasing survival of these infants.
Aim: 1) evaluate the experience of a level III maternity, during the last 10 years (2001-2010), regarding to ventilated infants - VLBW and/or extreme premature [gestational age (GA) < 32 weeks (w)]; 2) determine eventual differences between the first and the last 5 years.
Methods: Analytic and retrospective study of VLBW infants and/or GA < 32w, admitted in a Neonatal Intensive Care Unit, who were ventilated, submitted to non-invasive ventilation (NIV) and/or mechanical ventilation (MV). Studied period: 1st January 2001 to 31st December 2010. Sample was divided in two groups: Group 1: 2001-2005; Group 2: 2006- 2010. Both groups were compared according to GA, birth weight (BW), use of antenatal corticosteroids, initial ventilation method, duration of ventilation and mortality. Statistic analysis was performed using SPSS v17.0® (statistical significance: $p < 0.05$).
Results: During the last 10 years, 665 VLBW and/or <32w infants were admitted (Group 1: $n = 360$, Group 2: $n = 305$). Of these, 393 (59%) were ventilated (Group 1: 58%; Group 2: 60%). Group 1 ($n = 209$): median BW was 1110g and median GA was 29w; 153 (73%) received antenatal steroids; initial ventilation method was MV in 68% and NIV in 32%; 22% were re-intubated; median ventilation duration was 6 days; 34.3% started NIV and later changed to MV; 2.1% had pulmonary dysplasia; 23 infants died (11%). Group 2 ($n = 184$): median BW was 1110g and median GA was 28w; 151 (83%) received antenatal steroids; initial ventilation method was MV in 58.5% and NIV in 41.5%; 28 infants were re-intubated; median ventilation duration was 7 days; 30.3% started NIV and later changed to MV; 4% had pulmonary dysplasia; 9 infants died (5%).
Conclusion: Both groups had similar GA and BW and similar proportion of ventilated infants as well as similar ventilation duration ($p > 0.05$). On the last five years (Group 2), the use of prenatal corticosteroids was higher, more infants were initially ventilated with NIV, NIV success rate was higher and mortality rate was lower ($p < 0.05$).

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PO201: Type-H Tracheoesophageal Fistula Successfully Diagnosed in a Newborn with Feeding Problems

Vassiliki SIDERI, Thomas PAPALEXANDRIS, Eleni KAPSABELI, Efi TSEKOURA, Anna DASKALAKI, Panagioula MEXI-BOURNA, Konstantinos PRIFTIS, Andreas FRETZAYAS, Polyxeni NIKOLAIDOU-KARPATHIOU

Introduction: Tracheoseophageal fistula (TEF), associated with esophageal atresia or not, is a congenital abnormal communication between the upper respiratory and digestive tract. It is related shortly after birth with feeding problems of the newborn, especially chocking and cyanosis.
Clinical Case: 20 days old offspring is admitted to our NICU due to chocking and cyanosis after bottle or syringe milk feeding. We placed a nasogastric tube through which the baby was fed and the symptoms disappeared. An esophagography by injecting an iodine contrast media through the nasogastric tube was done, placing the baby in anti-Trendelenburg position. Extracting gradually the nasogastric tube and injecting the contrast media a type-H TEF has appeared showing an upward direction. The newborn continued being fed by the nasogastric tube and shortly after undergo surgical correction with excellent outcome.
Discussion: Type-H TEF is a rare abnormal communication between upper respiratory and digestive tracts. It is mostly associated with feeding difficulties of the newborn. Special concern has to be taken upon diagnosis, based on esophagography.

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PO202: Review of Early-Onset Pneumonia in Júlio Dinis Maternity' Neonatal Intensive Care Unit

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Introduction: Pneumonia is an important cause of neonatal infection, with an estimated incidence closer to 10% among ill infants. Neonatal pneumonia can have early (within 3 days of birth) or late-onset and bacteria are the principle pathogens. Diagnosis is often difficult by lack of objective criteria and non-specific clinical manifestations.
Objectives: Evaluate diagnosis accuracy and characterize early-onset pneumonia (EOP) in infants with gestational age above 31 completed weeks over a period of 5 years (2006-2011).
Patients and Methods: This retrospective cohort study set in a III level neonatal intensive care unit, include the newborns discharged with EOP diagnosis. Maternal/perinatal risk factors, clinical, laboratory, radiological and follow-up data were collected and analyzed.
Results: Among 77 EOP discharge diagnosis, 66 fulfilled criteria of EOP. There was a predominance of term newborns (57.6%) with an average weight of 2899 grams. At least one risk factor was identified in 72.7% newborns: Streptococcus agalactie positive/unknown without antibiotic prophylaxis (30.3%), prolonged rupture of membranes (18.7%), chorioamnionitis (14.5%), amniotic meco-

nium fluid (16.6%), fetal tachycardia (16.6%), maternal intrapartum fever (8.3%). One third of newborns needed resuscitation at delivery. Symptoms began within the first 24 hours of life in 98,5% and all showed signs of respiratory distress. Other manifestations included: lethargy/hypotonia (24.2%), poor perfusion (16.6%), food refusal (7.6%) and temperature instability (3%). Radiological alterations were found in 100% of cases. Oxygen was required in 98.5%, invasive ventilation in 45.5% and exclusive non-invasive ventilation in 37.8%. Antibiotics were performed in all cases, although only eleven patients (16.6%) had associated sepsis. Blood cultures, performed in all, as well as bacteriological secretions examinations (in 10.6% of patients) were all negative (maternal antibiotic treatment in 20%). Complications were detected in 42.4% with a 6.8 days average duration of intensive care. There were no deaths.
Conclusion: We found that 14.3% of EOP discharge diagnosis didn´t fulfilled diagnosis. The majority of cases had at least one risk factor and almost every patients presented with respiratory distress in the first hours of life. Etiology wasn´t achieved in any case but all made antibiotics. Global prognosis was good in short term.

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PO203: Prevalence of Cardiac Disorders on the Neonatal Intensive Care Unit

Marcos CRISTOVAM, João CÂMARA, Ana Cláudia PLEWKA, Henrique SEKI, Fernando KONRAD, Lara CIUPAK, Adriana BRESOLIN, Juliana PAVESI, Érika BRUNERI

Introduction: Eight in 1000 infants are born with a congenital heart defect**.** Advances in medical and surgical care allow more than 90% of such children to enter adulthood. Most congenital defects lead either to decreased pulmonary blood flow or increased pulmonary blood flow with associated pulmonary congestion. Patent ductus arteriosus (PDA) is the persistence of the fetal vessel joining the pulmonary artery to the aorta. It closes spontaneously in normal-term at 3-5 days of age. PDA accounts for 10% of all congenital heart disease, however in preterm infants weighing less than 1500g ranges from 20% to 60%. If a murmur is present at birth, it should be considered a valvular problem until proved otherwise. This study had as objective to investigate the prevalence of cardiac disorders of newborns admitted at the Neonatal Intensive Care Unit (NICU) of Bom Jesus Hospital-Toledo-PR-Brasil.
Methods: a retrospective observational hospital-based study with newborns admitted between 2000/april and 2010/august. It was analyzed birth weight, gestational age by Capurro's method and presence of cardiac disorders as main diagnosis or as co-morbidity. Diagnosis was based on clinical finding, chest radiograph, electrocardiography and echocardiography.
Results: 1,551 newborn were admitted during the studied period, of which 112 (7.22%) presented cardiac disorders and 184 (11.8%) presented murmur. Gestational age ranged from 25 to 42 weeks (mean: 36.92 weeks) and the birth weight ranged from 590g to 4,800g (mean: 2,696g). The cardiac disorders most common were: PDA with 36 (32.1%)cases; ventricular septal defect: with seven cases (6.2%); PDA associated with atrial septal defect: seven cases (6.2%); cyanotic congenital heart disease: six cases (5.3%); atrial septal defect of the ostium secundum variety: six neonates (5.3%); atrial septal defect associated with valvular pulmonary stenosis: four cases (3.5%); coarctation of the aorta: two cases (1.7%) and hypertrophic cardiomyopathy: two cases (1.7%). Another causes of cardiac disorders: 42 cases (37.5%). 184 newborns presented murmur, which were to ambulatory investigation after delivery. 23 neonates died (7.77%) due to cardiac disease or another causes.
Conclusion: cardiac disorders are frequent in the neonatal period. The most frequent cardiac disorder was PDA. Heart murmur were common in the first days of life in this study, however this not usually signify structural heart problems.

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PO204: Low Platelet Count Is Associated with Ductus Arteriosus Patency in Preterm Newborns

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Aim: To determine whether there is an association between platelet counts and patent ductus arteriosus (PDA) incidence and/or closure in preterm newborns.
Material and Methods: Premature infants with hemodynamically significant PDA (n = 154) and a control group without PDA (n = 207) who were hospitalized in the NICU were retrospectively evaluated. Platelet counts and other platelet indices including mean platelet volume (MPV) and platelet distribution width (PDW) of the infants in both groups during the first 3 days of life were recorded. Ibuprofen was started in infants with hemodynamically significant PDA and echocardiography was repeated 48 hours thereafter to assess the closure of ductus.
Results: Median gestational age and birth weight of the infants with PDA were 28 (range 26-29) weeks and 1060 (range 892-1250) gr respectively. Platelet counts were significantly lower in the patient group than in the control group (p < 0.001). Multivariate analysis including gestational age, presence of RDS, presence of thrombocytopenia and PDW showed that hemodynamically significant PDA was independently associated with platelet count < 150000 (OR = 2.13, 95% CI 1.26-3.61; p = 0.005), high PDW (> 17) (OR = 2.68, 95% CI 1.41-5.09; p = 0.003) and the presence of RDS (OR = 2.25, 95% CI 1.41-3.59; p = 0.001). Baseline platelet counts of the infants in whom ductus closed or persisted after ibuprofen treatment were similar.
Conclusions: PDA was associated with low platelet count and high PDW but not with other platelet indices in preterm infants. We could not show an association between platelet counts and persistence or closure after medical treatment.

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PO205: Implementation of Pulse Oximetry Screening for Critical Congenital Heart Defects in Asymptomatic Newborns

Maja ŠTIMAC, Vesna MILAS, Sanja DORNER, Silvija PUŠELJIĆ, Damir ŠTIMAC

Introduction: Critical congenital heart defects affects 2.5-3 newborns per every 1,000 live birth. Neonate with potentially fatal cardiovascular malformation may be asymptomatic in the early days of its life and discharged from nursery without recognising the malformation. Pulse oximetry is usefull screening tool for detection of critical congenital heart defects in asymptomatic newborns. The aim of this study is to evaluate implementation of pulse oximetry screening for critical congenital heart defects in well baby nursery.
Methods: In March 2012 we started pulse oximetry screening for critical congenital heart defects on the Department of Pediatrics, University Hospital Centre Osijek. Every newborn from 24 to 48 hours of life is having the pulse oximetry measured on its right hand

and right foot. The test is negative if pulse oximetry saturation is 95% in either extremity with ≤ 3% absolute difference in oximetry saturation between the upper and lower extremity. A screen result is positive if: 1. any oxygen saturation is < 90%; 2. oxygen saturation is < 95% in both extremities on three measurement and 3. in cases where absolute difference in oxygen saturation between the extremities of three measurements, each separted by one hour, is higher than three. In cases with positive screen test further cardiological evaluation is needed.
Results: In our well baby nursery with 2,500 birth per year we expect 5-6 newborns with critical congenital heart defects per year and 3 false positive cases. In 3 months of screening we have had 586 births and we didn't find any critical congenital heart defects, neither we have had false positive or false negative results.
Conslusion: Pulse oximetry as a screening method for critical congenital heart defects is useful method and can be implemented in daily routine care in well baby nursery.

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PO206: Patent Ductus Arteriosus in Premature Newborns: Experience of a Neonatal Intensive Care Unit

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Introduction: Persistent patency of ductus arteriosus in preterm newborn is associated with numerous morbidities and increased mortality, although its management remains controversial.
Purpose: Evaluate the incidence of patent ductus arteriosus (PDA) in premature newborns admitted to a neonatal intensive care unit (NICU), as well as the clinical features, treatment prescribed and associated morbidity and mortality.
Material/methods: Retrospective medical chart review of preterm newborns admitted to a NICU between January 2009 and December 2011 with PDA diagnosis. Risk factors, clinical evolution, therapeutic options and associated morbidity and mortality were assessed.
Results: PDA was reported in 33 premature newborns. Median gestational age (GA) was 28 weeks and birth weight (BW) 1005 grams. Risk factors identified included gestational diabetes (3 cases), multiple pregnancy (8 cases), maternal use of magnesium sulphate (3 cases), peripartum hemorrhage (6 cases) and absence of prenatal corticosteroids (19 cases). Diagnosis of PDA was established, at the median age of second day of life. 19 newborns had criteria for ductal closure (13 had ecographic criteria of hemodynamic significance and in the remaining was verified symptomatic PDA) and were those who had lower GA and BW. All performed pharmacologic therapy, 13 with ibuprofen and 6 with indometacin. A success rate of 89.5% was verified; surgical ligation was subsequently necessary in one case. Associated comorbidities included hyaline membrane disease, bronchopulmonar dysplasia, pulmonary and intraventricular hemorrhage and necrotizing enterocolitis. Four newborns died (with median GA of 26 weeks).
Conclusion: The results obtained are in agreement with literature, with PDA affecting newborns with lower GA and BW. Therapeutic approach was successful in a high percentage of cases, highlighting importance of early screening with echocardiogram for 'silent' PDA in low birth weight neonates.

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PO207: Persistent Pulmonary Hypertension of the Newborn: Inhaled Nitric Oxide Treatment

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Introduction: Persistent pulmonary hypertension of the newborn (PPHN) is associated with cardiopulmonary disorders. Inhaled nitric oxide (iNO) improves oxygenation in neonates with PPHN, both term and preterm; in preterm, treatment is more controversial. The overall survival rate is superior to 70-75%, but there is a marked difference according to its cause; very low birthweigt infants with severe respiratory distress syndrome (RDS) have a much higher rate of mortality.
Methods: Retrospective descriptive study of neonates admitted in the Neonatal Intensive Care Unit (NICU) with the diagnosis of PPHN and treated with iNO between 2007 and 2012. Distribution of the neonates in two groups, according to gestational age (GA): 1 – GA ≥ 34 weeks, 2 – GA < 34 weeks.
Results: Twenty-nine neonates were admitted to the NICU in the study period, 14 included in group 1, 15 in group 2. Cesarean was the most frequent delivery type. The main risk factor in group 1 was meconium aspiration (5/14) and chorioamnionitis in group 2 (6/15). Endotracheal intubation was needed in reanimation of 50% in group 1 and in every neonates in group 2, and surfactant was used in the same proportion of patients. Most frequent associated diagnosis in group 1 were pneumothorax (6/14), hypotension (8/14) and sepsis (10/14) and, in group 2, hypotension (8/15), patent ductus arteriosus (8/15), sepsis (13/15) and RDS (14/15). iNO treatment in group 1 was started between 1-5 days of life (average 2.4 days, median 3 days), with 12/14 responders; in group 2, treatment was started between 1-29 days of life (average 5.9 days, median 19.5 days) with 4/15 responders, 4/15 non-responders and 7/15 intermittent responders. There was a fatal outcome in 3/14 in group 1, and 11/15 in group 2.
Conclusion: PPHN is almost always a serious condition, affecting ill neonates, with multiple risk factors and comorbilities. iNO is a proven beneficial therapeutical agent, mainly in term neonates, with a good outcome. In preterm neonates, the severity of clinical status, and the poor response to iNO therapy may be responsible for the worse outcome.

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PO208: Cardiac Output Monitoring in a Neonatal Patient: Ultrasound Dilution Technology

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Introduction: The ultrasound dilution technology is the first minimally invasive method of measuring cardiac output for routine use in neonatal patients. The fundamental principle of this system is the decrease blood ultrasound velocity produced by the injection of isotonic saline in an arteriovenous (AV) loop, producing dilution curves. It can be used with any age or size patient and does not require insertion of a dedicated catheter because the AV loop connects to existing arterial and central venous catheter lines at any location.
Clinical case: We report a newborn with postnatal diagnosis of transposition of the great arteries, required a balloon atrial septostomy in the first hours of life. During the days before corrective surgery (arterial switch) the patient remained hemodynamically

stable without clinical signs of low cardiac output. Cardiac output monitoring showed values within normal limits [cardiac output (CI) 2.51 l/min/m^2; systemic vascular resistance (SVRI) 800 dy/s/cm/m^2; active circulation volume (ACVI) 63 ml/kg] and the presence of a bidirectional shunt. In the immediate postoperative period, despite maintaining constant normal with adequate urine output and blood lactate values below 3 mmol/l, the monitoring showed decrease in cardiac output to about half (CI 1.50 l/min/m^2) compared to the values obtained in previous days. The measurement also showed a significant increase of SVRI (2660 dy/s/cm/m2) and decrease of ACVI (38 ml/kg). According to the results, it was attempted to optimize the treatment by administration of volume and the use of vasodilators (nitroprusside), in order to increasing the preload and afterload reducing. These changes improved the hemodynamic situation confirming an increase in the values for cardiac output and active circulation volume and decrease for systemic vascular resistance [CI 1.75 l/min/m^2; SVRI 1920 dy/s/cm/m^2; ACVI 51 ml/kg]
Discussion: The measurement of cardiac output by ultrasound dilution technology is useful for monitoring hemodynamic status of critically ill neonatal patients. It also provides information on vascular resistance and preload status and identifies the presence of shunts. The knowledge of these parameters helps in making clinical decisions at the bedside and support changes in the therapeutic approach at an early stage.

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PO209: Can Low Perfusion Index Predict the Treatment Need in Premature Infants with Patent Ductus Arteriosus?

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Background and aims: Perfusion index (PI) shows real time changes in peripheric blood flow. Among critically ill infants, it predicts poor peripheral perfusion and the severity of the disease. Early diagnosis and treatment of PDA is important to prevent complications due hemodynamically significant patent ductus arteriosus (PDA). In this study, we aimed to compare the PI values of premature infants with and without hemodynamically significant PDA.
Methods: Forty one premature infants were evaluated with echocardiography at the postnatal days 0 and 3. Patients were grouped as: Group 1 (n = 19): no – PDA; Group 2 (n = 10) hemodynamically nonsignificant PDA; Group 3 (n = 12) hemodynamically significant PDA. PI was measured during a quiet state at the postnatal days 0, 1, 2 and 3 by Masimo pulse oximeter. Clinical characteristics of the infants were recorded prospectively.
Results: All the study groups were similar with regard to birth weight (1473 ± 51 grams) and gestational age (30 ± 2.9 weeks). Group 3 had significantly lower day 0 PI values compared to Group 1 and 2 (p = 0.008). PI values of Group 3 increased after ibuprofen treatment and became similar to Group 1 and 2 after PDA closure on the postnatal days 2 and 3.
Conclusion: PI values of infants with hemodynamically significant PDA were lower at postnatal day 0 and with ibuprofen treatment; PI values increased to levels of infants without significant PDA. Our data show that PI is an early and noninvasive parameter predicting poor perfusion and may be helpful in decision making for PDA closure.

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PO210: Screening for Congenital Heart Defects Using Pulse Oximetry

Gabriela MIMOSO, Sofia MORAIS

Introduction: Congenital heart defects are the most common group of congenital malformations in the newborn. For the subgroup of critical congenital heart defects such as ductus dependent and cyanotic lesions, early diagnosis is a special challenge. Pulse oximetry has been assessed as a screening method for congenital heart defects in newborn babies in many studies.
Methods: Population based study including all asymptomatic live born infants with gestational age > 34 weeks. Posductal (foot) arterial oxygen saturation (SpO2) was measured in apparently healthy newborns at 48 hours of life. SpO2 < 95% was used as cut-off point. If SpO2 < 90%, an echocardiography was done. If SpO2 90-95% in an asymptomatic baby, the infant was retested 1 hour later. Study period was between February and September of 2012.
Results: Until now, all infants had SpO2 > 95% and none had the diagnosis of critical congenital heart defects after discharge.
Conclusion: Pulse oximetry screening provides early in-hospital detection of critical congenital heart defects reducing the number of infants missed and diagnosed after discharge.

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PO211: Congenital Septal Heart Defect, Cataracts and Hypothyroidism Associated to Xp21 Chromosome Anomaly: A New Neonatal Syndrome?

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Introduction: The authors report the clinical case of a neonate with congenital heart defect, congenital cataracts and hypothyroidism, associated to Xp21 chromosomal anomaly.
Clinical report: A full term female newborn was referred to our NICU in the third day of life due to a congenital heart defect suspicion. She was the first daughter of a healthy young unrelated couple, born after an uneventful pregnancy, with Apgar score of 9/10. The echocardiogram confirmed the existence of an Atrial Septal Defect (ASD), a large perimembranous Ventricular Septal Defect (VSD), dilated right heart chambers, patent ductus arteriosus and severe pulmonary hypertension. In second week of life she was started on anticongestive therapy with furosemide, espironolactone and captopril due to heart failure and pericardial effusion. In day 15 of life an elevation on TSH levels was observed, not present on Guthrie screening test. Thyroid ultrasound was normal, as well as plasma levels of anti-thyroid antibodies, testosterone and DHEA-S. Levothyroxine treatment was started. Additionally, bilateral nuclear cataracts were diagnosed and phacoemulsification and aspiration of cataracts were preformed. In second month of life she underwent cardiac surgery with correction of VSD and ASD and closure of ductus arteriosus. Currently, the patient is 4 month of age. She is clinically stable, maintains a residual VSD and has no pulmonary hypertension. The infectious work-out was negative, including Rubeola RNA by PCR assay, and metabolic study was normal. To investigate the aetiology of phenotype, whole genomic high-resolution array comparative genomic hybridization analysis was carried out, revealing Xp21.2-p11.4 (31,428,834-40,214,999) x 1. This chromosomal anomaly results in hemizigotic deletion of 29 genes involved in known diseases and it is not described in any available copy number variation database, so we believe that it is likely to be involved in the pathogenesis of the disease.

Discussion: The reported clinical findings did not match any previously described syndromes in literature, despite our extensive research. Additionally, the identified chromosomal anomaly on Xp21 is likely to be the candidate anomaly for phenotype of our patient. Thus, the authors propose a possible new syndrome characterized by congenital heart septal defect, congenital cataracts and hypothyroidism, associated with Xp21 chromosomal anomaly.

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PO212: The Influence of Probiotics in the Gastrointestinal System of Term Neonates

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Introduction: The concept of manipulating the gut microbiota through the administration of formula milk containing probiotics during early life in order to reduce the risk of and prevent or treat gut diseases is appealing, but still controversial. The aim of present study was to investigate the development and functioning of the gastrointestinal system of term neonates fed with milk containing probiotics (group A) as compared to neonates fed with common milk (group B) during the first 6 months of life.
Methods: In the present study were enrolled 120 term infants; 72 received exclusively formula milk with probiotics (*Bifidus, Infantis, Breve* and *Longum,* Frezylac) and 48 received exclusively common formula milk. Growth (weight, length, head circumference, triceps skin fold, scapula and humerus circumference) and bowel function (number of stools, fecal composition, vomiting, colic, regurgitation, constipation / diarrhea, fecal pH measurement) were measured on the third day of life, and also at the end of the 1st, 2nd, 4th and 6th months of life. *T-test* was used for statistical analysis.
Results: Neonates of group A had significantly increased body weight as compared with group B at the 2nd, 4th and 6th month of life (5,424g, 6,426g and 7,035g vs 5,386g, 5,981g and 6,686g, respectively), were taller and had larger head circumference (38.8cm, 40.0cm and 40.6cm vs 37.44cm, 37.9cm and 38.6cm, respectively). In group A were observed statistically significant less colic, constipation and vomiting and lower incidence of infantile eczema. Lower fecal pH in the 2nd and 4th month in group A than group B (6.9 and 7.2 vs 7.2 and 7.4 respectively).
Conclusions: Breast milk contains probiotics that provide better health of the newborn. Diet with milk containing probiotics appears to provide better physical development and also to avoid digestive problems.

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PO213: Congenital Heart Disease Screening in Beja´s Hospital

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Introduction: The heart disease is the most common congenital disorder in newborns (NB), most diagnosed only after birth. This study highlights the importance of a detailed physical examination and echocardiography, timely and locally held in Nurseries and Neonatology Units by a pediatrician trained in carrying out the examination, subsequently confirmed by Pediatric Cardiology. Thus, it is intended to decrease the morbidity and costs related to a late diagnosis.
Methods: In the study, the authors did a retrospective analysis of medical records and echocardiogram's reports of NB with suspected heart disease in the Nursery (postpartum) and Neonatal Intermediate Care Unit, born in the Hospital José Joaquim Fernandes (HJJF), Beja (a Perinatal Support Hospital), during the period between 1 January 2009 and 31 May 2012, to characterize NB with suspected congenital heart disease.
Results: In the aforesaid period, from a total of 4203 NB, 126 (3%) had a congenital heart disease suspicion. Of these, 58.7% were male; 13.5% were premature, with an average gestational age of 34 weeks. 96% were asymptomatic, being the most frequent presentation murmur in cardiac auscultation (77.8%). The NB with suggestive symptoms underwent transthoracic echocardiography, with a median of achievement on the 3rd day of life. In 90 NB (71.4%) the presence of congenital heart disease was confirmed. The most frequent diagnosis was Inter-Ventricular Communication (33.3%), Inter-Auricular Communication/ Patent *Foramen Ovale* (20%) and Patent *Ductus Arteriosus* (20%). A congenital heart disease requiring referral to specialized centers was diagnosed in 10 (11.1%): Pulmonary Valvular Stenosis (1), Tetralogy of Fallot (4), Patent *Ductus Arteriosus* with Pulmonary Hypertension (1), Coarctation of the Aorta (1), Complete Atrioventricular Septal Defect (1), Hypoplastic Left Heart Syndrome (1), Total *Situs Inversus* (1).
Conclusion: The echocardiography performed locally during the postpartum period allowed the identification of minor congenital heart disease, likely to await further clinical reassessment (avoiding transfers for diagnosis), and the identification of major congenital heart disease in need of immediate transfer to a specialized center. This practice has improved the quality of immediate care to newborns on Beja's district.

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PO214: Atypical Clinical Manifestation of a Vascular Ring in a Premature Baby

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Introduction: A vascular ring is a rare congenital anomaly in which the anomalous aortic arch and/or associated vessels form a ring around the trachea and esophagus. Most common types of complete vascular rings are double aortic arch and right aortic arch with left ligamentum arteriosum comprising 85-95% of all cases. The symptoms produced are largely those of airway or esophageal compression.
Clinical case: We present a case of a female preterm infant delivered by an elective CS due to observed growth lag in 28 GW with BW of 1050. She was treated at the ICU for 2.5 months for respiratory distress with difficulty in weaning from respirator, also for manifestations of a perinatal infection, reinfections and their complications. Afterwards the child manifested feeding difficulties and failure to thrive; she was mainly fed through a NG tube due to poor coordination of sucking and swallowing. Problems were ascribed to perinatal events and prematurity. However, child did not experience difficulties in breathing and had no respiratory infections. At the age of 5 months she was admitted to the Department of Neonatology for a complete evaluation and management of feeding problems. Many investigations were conducted such as brain ultrasound, EEG, and a CT scan. Also performed were systemic ultrasound screening, karyotype and viruosology. Obstacles in establishing oral feeding and a disturbed act of swallowing were indications for performing gastroduodenography and thoracic CT; a vascular ring with double

aortic arch was found. The esophagus was compressed at the level of Th4 and the trachea proximally to this. Swallowing was disturbed due to spasm in the above mentioned region. She was transferred to a cardio surgery center for management of the anomaly, surgical outcome was favorable.

Discussion: Here described is a case of a vascular ring and a double aortic in a premature baby that presented with swallowing dysfunction only. Symptoms observed were ascribed to problems of prematurity and did not immediately suggest a vascular anomaly. Surgical management is urgently indicated in all symptomatic patients, especially in patients with symptoms of airway compromise to avoid serious complications such as sudden death or significant organ damage.

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PO215: Steroid-Induced Hypertrophic Cardiomyopathy in a Newborn with Kasabach-Merrit Syndrome

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Introduction: The Kasabach-Merrit is a rare phenomenon and it´s characterized by microangiopathic hemolytic anemia, thrombocytopenia and consumption coagulopathy. Is associated with rare vascular tumors, a fast-growing and a locally aggressive behavior. The steroids are the first line treatment but they can have several secondary effects such as hypertrophic cardiomyopathy that is a well-known complication in premature infants and less common in full-term infants and children, developing usually after two weeks of treatment.

Clinical Case: Thirty nine week male infant, with irrelevant prenatal history, was delivered as caesarean section. Immediatly after birth, a voluminous and erythematous lesion in the entire right lower limb, with an exuberant vascular congestion was detected. At twelve hours of life, tumor size enlargement was noticed, associated with petechial rash (back, buttocks and perianal region) and edema of the foot and thigh. He presented anemia, thrombocytopenia and severe bleeding disorders. Cardiovascular evaluation in the first day of life was normal. The biopsy showed that it was an angioblastoma (or tufted angioma). He began treatment with high doses of prednisolone and aspirin. At day six of life, persistent arterial hypertension developed, starting captopril and propranolol, which suspended three days later due to congestive heart failure. The echocardiogram revealed severe biventricular systolic dysfunction with dilatation of the heart, starting diuretics and inotropic support, with progressive improvement. At day thirteen of life, new clinical deterioration associated with hypertensive peaks was noticed. The echocardiogram revealed concentric left ventricular hypertrophy. He restarted captopril and propranolol, suspended steroids and started ticlopidine and vincristine. At discharge, he was normotensive, under propranolol, and the echocardiogram was normal.

Discussion: Steroid-induced hypertrophic cardiomyopathy is characterized by concentric thickening of the interventricular septum and free walls of the ventricles, with or without left ventricular outflow obstruction. It´s due to an increased protein synthesis in myocites, and such changes are transient after discontinuation of the treatment. Faced with a prolonged course of steroids, cardiologic evaluation and serial echocardiographic monitoring should be undertaken to detect and treat this complication.

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PO216: Intraoperative Transesophageal Echocardiogram Using a Intracardiac Ultrasound Catheter in Congenital Heart Surgery

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Intraoperative transesophageal echocardiography (TEE) is a fundamental tool during congenital heart surgery. It provides complementary definition of cardiac anatomy before the surgery and, sometimes, identifies additional cardiac lesions, not previously described with standard transthoracic echocardiography. After cardiopulmonary bypass it shows critical information concerning the ventricular function, surgical results and non expected complications. The use of TEE is limited in neonatal cardiac surgery, since the standard probes can only be used safely in patients weighing more than 5 kilograms. Recently, a monoplane intravascular ultrasound catheter (Acunav, Acuson-Siemens corp., Mountain View, CA), designed initially to perform intracardiac echocardiography (ICE), has been used to perform TEE during cardiac surgery in small infants. We therefore describe our experience with using an ICE probe during a neonatal congenital heart surgery of a total anomalous pulmonary venous drainage, and two cases of severe tetralogy of fallot.

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PO217: Contribution of Fetal Echocardiography in the Diagnosis of Congenital Heart Disease

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Introduction: Congenital heart disease (CHD) is the most common congenital disorder, with an incidence of 6-21:1000 live births. Echocardiography is a valuable diagnostic method for the assessment of fetal cardiovascular system and, therefore, is useful in guiding the obstetrical and perinatal management of potential anomalies. Our aim is to assess the incidence of CHD in newborns subjected to echocardiography in MJD-CHP, referred due to prenatal findings, and to evaluate the diagnostic accuracy of echocardiography in prenatal detection of CHD.

Mehtods: We conducted a 2-year retrospective analysis of files concerning newborns subjected to echocardiography, referred due to prenatal echographic findings.

Results: The incidence of CHD in MJD-CHP in this 2-year period was 17,2:1000 live births. Ventricular septal defect was the most frequent diagnosis (72.7%). In 75.4% the diagnosis of CHD was postnatal. Of these, 10.8% (9 cases) had normal prenatal echocardiography. In the same period, 1222 pregnant women were subjected to fetal echocardiography, of which 128 were oriented echocardiography postnatal. The reason for referral was suspected prenatal detection of CHD in 34 cases (26.6%), technical limitations in the prenatal exam in 37 cases (28.9%) and minor equivocal echographic findings in 57 cases (44.5%). In those with suspected CHD, the diagnosis was confirmed in 27 cases. The sensitivity and specificity of prenatal echocardiography were respectively 75.0% and 99.2%, with positive predictive value of 79.4% and negative

predictive value of 99.2%.
Conclusion: Fetal echocardiography showed a high specificity in the diagnosis of CHD, although with lower sensitivity - the latter being affected by the significant number of false negatives (corresponding to simple CHD). Nevertheless, fetal echocardiography remains a reliable diagnostic method for CHD, contributing to adequate prenatal counseling and management of affected newborns. However, the high postnatal detection rate of CHD reinforces the importance of an adequate obstetrical ultrasound screening for cardiac anomalies, in order to facilitate on-time referral for fetal echocardiography.

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PO218: Arterial Hypotension Management in the Extremely Preterm Newborn

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Introduction: A significant number of extremely preterm newborns (NB) receive treatment for arterial hypotension. However, both therapeutic approach and accepted cut-offs for treatment are controversial.
Aim: Review the occurrence and local management of arterial hypotension and possible hemodynamic effects in NB infants with gestational age (GA) ≤ 28weeks admitted in NICU.
Methods: A cohort study is done by chart review of all NB with gestational age ≤ 28 weeks admitted in neonatal intensive care unit (NICU) in 2011. Analyzed data: prenatal variables, birth weight, gestational age, Apgar scores, mean arterial pressure (MAP), hemodynamic effect indicators (laboratorial data, ultrasound monitoring) and requirement for inotropic drug support. Comparison between NB treated for hypotension (Group I) and NB not treated (Group II).
Results: Fifty-five infants with GA ≤ 28 weeks were admitted in NICU. Four of these were excluded for insufficient data. Of the 51 NB, 28 (54.9%) were male. The median gestational age was 26 weeks (range 23-28 weeks) and median birth weight was 875g (range 500g-1530g). MAP value in the 24 treated NB (47.1%) was 24.4 mmHg (between 15-39 mmHg) versus 30.3 mmHg (24-39mmHg) in the non treated group, with statistical significance (p = 0.000). The mean gestational age was lower in patients treated for hypotension (25.4 vs 26.4 weeks, p = 0.009). Treatment consisted in volume expansion in 3 cases (12.5%), vasopressors (dopamine and/or dobutamine) in 10 (41.7%) and both in 11 (45.8%). In 17 (70.8%) the treatment was successful. In 13 cases (54.2%) a trigger event was identified. Considering the hemodynamic effects, acute renal failure and oliguria were more frequent in treated patients, reaching statistical significance in oliguric cases (p = 0.04). Just one case of cardiac dysfunction associated with hypotension was identified (5.9%). Seventeen (33.3%) patients died, 64.7% of them were in the treated group, without statistical significance between the two groups.
Conclusions: A significant number of infants with GA ≤ 28weeks was treated for hypotension. Most cases were associated with a trigger event. A higher incidence of renal hemodynamic effects was reported in treated patients. It's important to set cut-off values for this population, but other clinical and functional signs should be considered to decide which and when to treat.

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PO219: Neonatal Alloimmune Neutropenia Due to Anti-Human Neutrophil Antigen- 1b Antibody

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Objective: To describe a case of neonatal alloimmune neutropenia, a very rare disease of the newborn and the first ever reported in our neonatal intensive care unit, with emphasis in its management and outcome.
Description: We report a case of neonatal alloimmune neutropenia due to anti-human neutrophil antigen-1b alloimmunization in a 29 weeks preterm admitted no our neonatal intensive care unit. In this case the neutropenia was severe and persisted for almost 2 months and there was a good response to the administration of intravenous immunoglobulin.
Comments: Neonatal alloimmune neutropenia is caused by maternal production of neutrophil-specific alloantibodies in response to antigens from paternal heritage present in the newborn neutrophiles. The course of the disease is usually mild and self-limiting. The optimal therapy is yet a debate, with some authors finding effective the use of intravenous immunoglobulin, prophylactic antibiotic therapy or recombinant human granulocyte colony-stimulating factor.

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PO220: Clinical Problems in Infants of Mothers with Thrombophilia

Tanya PRAMATAROVA, Nina YARAKOVA, Boryana SLANCHEVA, Nelly JEKOVA

Aim: The main aim of the trial is to determine the frequency of respiratory distress / RD / and disorders of coagulation in infants of mothers with thrombophilia.
Materials and methods: In 51 newborns of mothers with thrombophilia were evaluated the presence of respiratory distress syndrome and maternal-fetal infection / MFI /. The children were divided in two groups: Group I- 16 newborns of mothers with thrombophilia and Group II- 25 healthy children. We analyzed Hb, Ht, Er, Thr, prothrombin index / INR /, activated partial thromboplastin time / aPTT / in both groups.
Results: The analysis of Hb, Ht, Er, Thr showed no evidence of anemia or coagulopathy with platelet consumption. In 64.7% of children was observed respiratory distress during the first days, 21.5% had severe respiratory distress / RDS /, that required intubation and assisted ventilation. Only in 10 /19.6%/ children with RDS there were data proving MFI / high CRP and positive microbiological samples/. There was no significant difference in the INR value in Group I /1.5 ± 0.3/ and group II /1.6 ± 0.1/. The children of mothers with thrombophilia had significantly more shortened aPTT /35.1s ± 4.2/ compared with the control group: aPTT /43.9 ± 4.4/.
Conclusion: The high incidence of RD and shortened aPTT indicate that maternal thrombophilia is a risk factor for thrombosis in newborns. MFI that are accompanied with activated PAI also lead to thrombosis, especially in children in Neonatal Intensive Care Units. These results point out that there should be prevention of other risk factors for thrombosis such as dehydration and placement of central venous catheters.

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PO221: The Effect of Haemotransfusions on Erythropoiesis and Transfusion Requirements in Anemia of Prematurity

Tanya PRAMATAROVA, Nina YARAKOVA, Boryana SLANCHEVA, Nelly JEKOVA

Aim and tasks: The major gene regulating erythropoietin / EPO / synthesis is hypoxia induced factor / HIF /. Proceeding from the assumption that the transfusions / HT / remove hypoxia due to anemia and inactivate HIF, the aim of the study was to show the decreased activity of erythropoiesis after HT.
Materials and methods: Patients: 40 premature infants < 34 g.a. and birth weight < 1400g with anemia of prematurity. We analyzed: Hb /g/l/, Ht%, Thr x 109/l, Ret%, 24-48 hours and 7-10 days after HT. The dynamics of changes of blood lactate / mmol / l / level after HT was used as an indirect index of relative hypoxia / activated HIF /. The changes of Hb /g/l/ and Ht% determined the need of haemotransfusions.
Results: After HT, along with the increase of Hb from 89.7 ± 10.0 to 119 ± 13.3, there was significant decrease in Ret% from 2.4 ± 1.1 to 1.4 ± 0.5, 7-10 day after HT. There was also a reduction of Thr from 391.5 ± 131.5 to 250.7 ± 57.2 and blood lactate in mmol / l from 2.5 ± 1.1 to 1.5 ± 0.7. The study showed that 7-10 days after HT, the values of Hb and Ht decreased to baseline levels, that required new transfusion.
Conclusion: Transfusion of packed red blood cells in patients with anemia of prematurity suppresses erythropoiesis, which is demonstrated by the significant reduction in reticulocyte count. The decreased level of blood lactate after HT shows elimination of the relative hypoxia that is required for hypoxia- induced expression of HIF and erythropoietin synthesis.

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PO222: Effectiveness of Thrombin and ADP on Antigen CD62P (P-Selectin) Expression in Newborns

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Background/Aims: Platelets play an important role in haemostasis but also in immunity. Expression of P-selectin (CD62P) is a marker of stimulated or activated blood platelets. P-selectin is a component of the cell membrane of platelet alpha granules. P-selectin is involved in the interaction between leukocytes and the endothelium, platelets and neutrophils and platelets and the endothelium. Platelets in newborns are hyporeactive in many activities. We tested the effectiveness of the agonists: thrombin and ADP on the expression of CD62P antigen on the surface platelets of healthy term newborns.
Patients and Methods: The study involved 55 healthy, full term newborns, 25 females and 30 males. Blood was collected from the umbilical artery immediately after cutting the umbilical cord.
We compared the per-centage of CD62P on the surface of native platelets before and after applying thrombin (final concentration 0.01 IU/ml) or ADP (final concentration 0.015 mM/ml). Gly-Pro-Arg-Pro (GPRP) (final concentration 2.5 mM/ml) inhibits thrombin-induced fibrin clot formation and platelet aggregation, but not thrombin-induced platelet activation. We used the flow cytometer Coulter PC500, Krefeld, Germany. FITC-conjugated anti-CD 62P was used, (DAKO A/S Denmark), which is directed against CD 62P, a component of the alpha granule membrane. The study was approved by the parturients and the Ethics Committee of the Medical University of Bialystok according to the guidelines for Good Clinical Practice, nr R-I-2003/13/2001.
Results: We found 3.89 ± 3.03 per-centage of platelets expressing of CD62P on platelets in native state in newborns; male 3.44 ± 2.21, female 4.42 ± 3.77. After the application of a strong thrombin agonist there was an almost 5-fold increase in the expression of CD62P on the platelets surface 18.79 ± 15.99 (female: 20.6 ± 13.25, male: 17.28 ± 18.04) and after the application of a weak ADP agonist an almost 2-fold increase in expression 7.39 ± 6.68 (female: 7.52 ± 6.5, male: 7.29 ± 6.94).
Conclusion: We found that the platelets of male newborns had lower reactivity (changes in P-selectin expression) compared with the platelets of female newborns. This may affect their reduced ability to fight infection, because reduced expression of P-selectin may be responsible for delayed neutrophil migration.

PO223: New Insights in Iron Homeostasis in Term Intrauterine Growth Restricted Infants at Birth: The Role of Hepcidin

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Introduction: Perinatal iron deficiency may lead to long-term abnormal neurodevelopmental outcomes. Intrauterine growth restriction (IUGR) due to placental insufficiency predisposes to iron deficiency primarily because of impaired transplacental iron transport and chronic intrauterine hypoxia. Furthermore, IUGR is characterized by a pronounced inflammatory response. The present study aimed to prospectively investigate iron homeostasis in full-term IUGR and appropriate-for-gestational-age (AGA) infants at birth, by evaluating cord blood concentrations of hepcidin (a bioactive molecule, principal regulator of iron metabolism, down-regulated by hypoxia and up-regulated by inflammatory signals), erythropoietin (EPO, a marker of prolonged fetal hypoxia), soluble transferrin receptor (sTfR, a marker of increased erythropoiesis and tissue iron deficiency), ferritin, iron and unsaturated iron-binding capacity (UIBC).
Methods: Serum cord blood samples from 151 singleton full-term pregnancies (47 well-defined IUGR and 104 AGA) were analysed for concentrations of all above parameters by enzyme immunoassays and spectrophotometry.
Results: Hepcidin, iron and UIBC concentrations were similar in both groups, while EPO concentrations were higher in IUGR cases than AGA controls (p = 0.047). Cord blood sTfR concentrations were increased in IUGR, compared to AGA infants (p = 0.004) and negatively correlated with their customized centiles (r =- 0.238, p = 0.003). Ferritin concentrations were lower in IUGR cases than AGA controls (p = 0.039). In both groups, no correlations were observed between cord blood hepcidin concentrations and iron status indices.
Conclusion: Cord blood hepcidin concentrations may not be affected by IUGR at term, probably due to a balance, on the one hand, of chronic fetal hypoxia (indicated by higher EPO concentrations and Doppler studies) and impaired iron metabolism (indicated by lower ferritin and higher sTfR concentrations) and on the other, of pronounced inflammation characterizing the IUGR state. The lack of association between cord blood hepcidin and iron status markers could probably imply a complex indirect regulation of fetal hepcidin production in response to body iron changes. Finally, our findings, and particularly the documented for the first time in IUGRs increased sTfR concentrations, stress the importance of regular follow-up for early detection of iron deficient anemia and possible iron supplementation, not only in preterm, but also in full-term IUGR neonates.

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PO224: Anemia in a Newborn

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Introduction: Anemia is the most common hematological abnormality in newborns. It can be due to hemorrhage, hemolysis or red cell production failure. Fetomaternal hemorrhage occurs in 30-50% of pregnancies with a wide spectrum of clinical variation. Secondary to the resultant anemia there may be devastating consequences such as neurological injury, stillbirth or neonatal death.
Case report: We report a case of a female neonate born at 40 weeks gestation by vaginal delivery, the third pregnancy in a 31-year-old healthy white woman. Maternal viral serologies were all negative, including HSV and Parvovirus. An amniocentesis was performed at 28 weeks due to a positive biochemical screening; being the mother B negative, 2 doses of Anti-D Immunoglobulin were administered during pregnancy. At birth she presented with a tight nuchal cord that was uneventfully clamped and cutted; however, marked pallor was noted and Apgar scores were 6 and 8 at 1 and 5 minutes, respectively, with no need for active resuscitation. Tachypnea, subcostal retraction, hepatomegaly and a systolic heart murmur were also noted; chest x-ray showed large cardiomegaly. Cardiac ultrasound confirmed left concentric ventricular hypertrophy with patent ductus arteriosus and pulmonary hypertension (40mmHg). Hematological results showed severe anemia (hemoglobin 3.5g/dl), high reticulocyte count (39.2%), leucopenia (6.900/mm3) and thrombocytopenia (80.000/mm3). The baby was given two red blood cell transfusions, with clinical improvement. Because of an elevated C-reactive, protein antibiotics were started; later, placental anatomopathological examination showed multiple microabcesses. Infant's blood type was O positive. Kleihauer-Betke test suggested a fetomaternal hemorrhage and flow-cytometry confirmed a volume of fetal blood transfusion of 200ml. In the first day of life, tonic clonic seizures were observed, located to the right limbs, which responded to phenobarbital therapy. The EKG showed a frontal left focus and cranial MRI showed a left frontoparietal cortico-subcortical ischemic lesion due to hypoperfusion with probable prenatal origin.
Conclusion: Massive fetomaternal hemorrhage (> 150ml) occurs in 0.12-0.5% of pregnancies. In a large proportion of cases the cause remains unknown. In our case we heve identified at least two risk factors: amniocentesis and a tight nuchal cord. Severe anemia with high reticulocyte count, cardiomegaly, hepatomegaly and a prenatal ischemic lesion suggests chronic evolution.

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PO225: Prohepcidin Levels and Iron Metabolism Parameters in Neonates

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Background: Hepcidin, a β-defensin-like antimicrobial peptide and iron (Fe) regulatory hormone, is linked to disturbances of Fe homeostasis during inflammation. Recent study showed that concentrations of prohepcidin (PH) and hepcidin are increased during severe neonatal infections. Significant changes in Fe metabolism during neonatal infections are caused by inflammation and by iatrogenic anemia itself. It seems to be useful to assess Fe status before and after infection, because sustained disturbances may affect the treatment of infants' anemia.
Objective: Neonatal infections may influence Fe homeostasis in the hepcidin-related pathway. The aim of the study was to determine serum level of PH in neonates with bacterial infection before and after treatment, and to assess whether any association exists between PH's level and Fe homeostasis.
Patients and methods: 63 full-term newborns with and without clinical and laboratory signs of infections were enrolled to the study. 2 blood samples were collected from each patient with suspected bacterial infection (n = 35) - at the time of diagnosis and after antibiotic therapy. One sample was obtained from patients of similar age without infection (n = 28) - the comparison group. Complete blood count, reticulocytes, C-reactive (CRP), PH, ferritin, Fe, total iron binding capacity (TIBC), transferrin (TRF), soluble transferrin receptor (sTfR), transferrin saturation (TSAT) and results of bacterial cultures were recorded.
Results: Serum PH levels were lower in ill newborns both before and after treatment than in the comparison group (p < .05). At diagnosis, serum Fe and TSAT were lower, whereas CRP and TIBC were significantly higher in the group of ill newborns (p < .05). Low median level of Fe, TRF and TSAT before treatment negatively correlated with CRP. PH levels before and after infection did not correlate with parameters of Fe homeostasis.
Conclusions: No association was found between PH's level and studied parameters of Fe homeostasis. Thus, our results demonstrate that measurement of PH in neonates with bacterial infections, especially after completion of antibiotic therapy, is not informative enough for implementation of suitable medical intervention to prevent progression or development of anemia.

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PO226: Hemophagocytic Lymphohistiocytosis in a Premature Neonate: Case Report

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Introduction: Hemophagocytic lymphohystiocytosis (HLH) represents a severe hyperinflammatory condition secondary to an abnormal proliferation of activated lymphocytes and histiocytes. The cardinal symptoms are prolonged fever, splenomegaly and cytopenias. Although HLH may develop during neonatal period, reports in preterm newborns (PT) are very rare.
Clinical Case: We report a 26-week PT boy (BW 780g), born after a monozygotic twins pregnancy complicated by fetofetal transfusion syndrome, premature rupture of membranes and metrorrhagia. During NICU hospitalization, respiratory support with mechanical ventilation was needed over 2 months due to the development of chronic lung disease and supportive cardiac care was needed to compensate heart failure. On his second month of life he developed a severe HLH subsequent to a recurrent/persistent sepsis (coagulase-negative *Staphylococcus* and *Candida parapsilosis* were isolated). He presented with fever, hepatosplenomegaly and cytopenias. Multiple transfusions of erythrocytes and platelets were necessary. Laboratory studies showed hyperferritinemia (872 µg/L) and elevated soluble IL-2 receptor levels. The study of lymphocytes T showed a normal function of NK cells and bone marrow biopsy was inconclusive. Genetic analysis wasn't performed. Meanwhile, a congenital immunodeficiency syndrome was excluded. Treatment was provided with large broad-spectrum antibiotics, antifungals,

dexamethasone and immunoglobulin. He fully recovered from the HLH.

Conclusion: HLH is a very rare condition in PT and establishing this diagnosis is particularly difficult. Once a delayed diagnosis results in a high mortality, the neonatologist should keep this condition in mind on those PT with splenomegaly, cytopenias and recurrent/persistent sepsis that is unresponsive to common antibiotics, so a prompt and adequate treatment can be started.

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PO227: Comparison of the Efficacy of Serum C-Reactive Protein, Procalcitonin, Interleukin-6 Levels and Parameters of Neutrophil-Monocyte Volume, Conductivity, Scattering and Volume Distribution Width in the Diagnosis of Neonatal Sepsis

H Tolga CELIK, Oytun PORTAKAL, Sule YIGIT, Gulsen HASCELIK, Ayse KORKMAZ, Murat YURDAKOK

Sepsis is an important cause of morbidity and mortality among newborn infants. Blood culture is the gold standard. Early and definitive diagnosis of neonatal sepsis is difficult because its sings and symptoms are nonspecific. New CBC parameters such as neutrophil and monocyte volume, conductivity, scattering and volume distribution width were introduced in the diagnosis of sepsis recently. We aimed to investigate these parameters in newborn sepsis and compare their efficacy with serum CRP, Procalcitonin (PCT), IL-6 levels. This study was conducted in Hacettepe University Neonatology Unit, between July 2010 and February 2012. Total 227 newborns, 116 sepsis (40 proven, 76 clinical sepsis) and 111 control included in the study.

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PO228: Thromboelastogram and Thrombin Generation Assay for the Evaluation of Hemostasis in Newborns: Effects of Prematurity and Vitamin K

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Background and aims: Thromboelastogram (TEG) gives information about the coagulation cascade showing the combined effects of coagulation factors and thrombocyte functions. Thrombin Generation Assay (TGA) measures the time dependent changes of thrombin concentration. Standard values for newborns do not exist for TGA and TEG. We aimed to evaluate the effects of prematurity and vitamin K on hemostatis by TEG and TGA in addition to conventional methods.

Methods: Preterm (n = 16) and term (n = 36) infants who received routine vitamin K prophylaxis were evaluated with PT, INR, PTT, fibrinogen, TEG and TGA measurements performed from cord blood and venous blood obtained on day 3.

Results: Cord blood PT, INR, PTT and fibrinogen values were similar in both groups. TEG-R value was increased in preterm group showing delayed onset of coagulation compared to term group (p = 0.003). Other TEG and TGA measurements were similar in cord blood. After vitamin K prophylaxis; pt and inr decreased, fibrinogen increased in preterm infants (p values; 0.032, 0.01 and 0.009, respectively). In term infants; ptt decreased, fibrinogen, TEG-R, TEG-MA and TGA-lag time increased after vitamin K (p values; 0.034, 0.001, < 0.001, 0.018, < 0.001 and 0.004, respectively).

Conclusion: In cord blood analyses; preterm infants didn't have a significant difference apart from a delay in coagulation. The cloth strength was increased in term infants after vitamin K. The lack of such improvement in preterm infants may be attributable to immature hepatic functions of the preterms.

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PO229: Hemolytic Disease of Fetus and Newborn Due to Minor Red Blood Cell Antibodies: Seven Years Study

Ana Teresa MARIA, Sónia PIMENTEL, Ana ALEGRIA, Teresa TOMÉ

Introduction: Minor red blood cell (RBC) antibodies, although less common than AB0 or Rh(D)-antibodies, can be responsible for severe hemolytic disease of the fetus and newborn. Until late 2011, in Portugal, routine screening for antibodies to RBC antigens was recommended only for Rh(D)-negative pregnant women. This underestimated the risk of hemolytic disease in the fetus and newborn. We aimed to determine the fetal and newborn morbidity associated with minor RBC antigen alloimunization in our center.

Population and Methods: We reviewed the clinical records of newborns whose mothers had registered minor RBC antigens sensitization between January 2004 and December 2011.

Results: Eighty-three cases of maternal sensitization to fetal minor RBC antigens were reported. Newborns gestational age ranged

	Cut-off level	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	AUC (%)
CRP (mg/dl)	> 0.16	75.0	76.3	50.8	91.9	77.7
PCT (ng/dl)	> 0.44	75.0	86.0	60.4	89.3	86.9
IL-6 (pg/ml)	> 15.4	70.8	74.2	45.5	91.0	72.5
I/T ratio	> 0.19	62.5	92.5	79.4	88.9	81.5
MNV (au)	> 159.50	37.5	94.6	71.4	80.8	63.4
MNC (au)	< 144.50	78.4	46.8	35.2	86.7	62.6
MNS (au)	< 141.50	86.5	37.6	32.7	87.2	64.5
NDW (au)	> 29.25	66.7	75.3	43.9	84.0	68.2

Sensitivity, specificity, positive and negative predictive values (PPV and NPV) for CRP, PCT, IL-6 and new CBC parameters.

from 29 to 41 weeks and birthweight ranged from 1310 to 4360 grams. The most frequent antibodies were anti-E (23; 28%), anti-C (15; 18%), anti-c (11; 13%), anti-Jka (10; 12%) and anti-Cw (6; 7%). There were 29 cases (35%) of immunization to more than one antigen. Previously described risk factors were as follows: six cases (7%) of blood loss in the actual pregnancy, three cases (4%) of previous maternal blood transfusion, four cases (5%) of intravenous drug abuse. Severe antenatal alloimmunization, with fetal anemia requiring *in utero* RBC transfusion, was present in four cases (4.8%) and in two cases more than two procedures were needed. Jaundice in the first 48 hours of life with indication for phototherapy was the main sign of suspicion (34 cases, 41%). Of these symptomatic newborns, ten required at least one exchange transfusion (29%), fourteen needed red blood cell transfusion (41%) and 24 met criteria for human immunoglobulin treatment (70%). There were six cases of cholestasis (7%). Thirty-four patients were followed-up at our center after discharge. There were 5 cases of prolonged hemolysis requiring subsequent RBC transfusion.
Conclusions: This study reinforces the need for screening for antibodies to RBC antigens in every pregnant woman irrespectively of Rh (D)-blood group. Pregnant women with minor RBC antibodies other than D should be closely followed to identify fetal anemia. At risk newborns should be screened for hemolytic disease allowing timely treatment and improved prognosis.

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PO230: The Value of Interleukin 11 (IL-11) in the Diagnosis and Etiology of Neonatal Thrombocytopenia

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Introduction: Interleukin-11 (IL-11) is a key cytokine that plays an important role in the regulation of megakaryocytopoiesis. The purpose of this study was to determine IL-11 levels in cases with neonatal thrombocytopenia and also to investigate the possible association between IL-11 levels and the etiology of thrombocytopenia.
Methods: This prospective study was performed between September 2011 and February 2002. Newborns with thrombocytopenia during hospitalization consisted the study group and neonates without thrombocytopenia consisted the control group. The etiology of thrombocytopenia were classified into 3 groups: sepsis + NEC group, maternal preeclampsia + chronic hypertension group and other causes of neonatal thrombocytopenia. Blood samples were obtained at the diagnosis of thrombocytopenia. Duration of thrombocytopenia, the lowest platelet count and treatment of thrombocytopenia were all recorded. Plasma IL-11 levels were measured with ELISA method.
Results: A total of 83 neonates (51 with neonatal thrombocytopenia and 32 with normal platelet count) were enrolled to the study. The mean serum IL-11 levels were found to be significantly higher in infants with thrombocytopenia compared with those without thrombocytopenia (1.99 pg/ml vs. 1.56 pg/ml) ($p < 0.05$). Similarly, the mean serum IL-11 levels were significantly higher in infants with neonatal thrombocytopenia due to sepsis+ NEC compared with the other infants who had thrombocytpenia due to preeclampsia or other etiologies ($p < 0.05$).
Conclusion: This study shows that IL-11 may be used as an effective diagnostic tool in the diagnosis of neonatal thrombocytopenia. It can also be used for differential diagnosis and predicting the severity of neonatal thromocytopenia.

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PO231: A Case of Neonatal Pancytopenia and Severe Maternal Iron Deficiency: Just a Coincidence?

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Introduction: A number of common disorders can lead to neonatal cytopenias including maternal hypertension, sepsis, immune disorders and congenital viral infections. Although most neonatal cytopenias are transient, diagnosing an inherited marrow failure syndrome carries profound implications for therapy and medical management.
Clinical Case: A term female newborn of adequate birthweight, born from vaginal delivery, presented with scattered petechiae at birth which led to the finding of severe thrombocytopenia (< 10000 platelets/mm3), anemia (11.6 g/dL) and leukopenia (4490/mm3). There were no other findings in the physical examination, including dysmorphic features, lymphadenopathies or organomegalies. Despite a normal neurologic examination, cranial US revealed a small bilateral subependimary hemorrhage. There was a maternal history of severe iron deficient anemia with absent iron storages, treated with intravenous iron beyond 33 weeks gestation and gestational diabetes with adequate glycemic control. The remainder prenatal and family history were unremarkable, including normal maternal serologies and ultrasounds. Infectious markers, including CRP and blood cultures were serially negative. Coagulation workup and antiplatelet antibodies were normal. Platelet genotyping did not show incompatibilities. There was no biochemical or blood smear evidence of peripheral destruction/hemolysis. Viral infections were excluded. Cariotype and metabolic workup were normal. She was treated with IVIG (1g/kg on 2 consecutive days) and platelet transfusions on D1/D2/D7 and D9, as well as iron and folic acid supplements (D15). Due to the maintenance of pancytopenia, with minimum neutropenia on D10 (210/mm3) without lymphopenia, and normocromic normocytic anemia (minimum 8.2 g/dL on D16), with 1.5-2% reticulocyte counts, a bone marrow aspirate was performed (D8). It showed normal erythrocytic, neutrophilic and megakaryocytic lineage precursors, as well as absent iron storages, with no other changes. Platelet counts increased progressively, followed by hemoglobin. She was discharged from the NICU on D22, maintaining neutropenia. On D56 she was readmitted due to an uncomplicated febrile E. coli urinary tract infection and since then maintains a normal blood count. She is still receiving supplemental iron.
Discussion: Maternal iron deficiency anemia has not been identified as a cause of neonatal anemia or pancytopenia. Despite depleted neonatal iron storages, the transient course of this pancytopenia suggests rather a concurrent undiagnosed viral infection. Follow-up will be paramount.

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PO232: Anti-E Alloimmunization: A Rare Cause of Severe Hemolytic Disease in Newborn

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Introduction: Alloimmune hemolytic disease in newborn primarily

involves the major blood groups of Rhesus (Rh) and ABO system, however, minor blood group incompatibilities can also result in significant disease.

Clinical case: A term newborn 6 hour old was referred to our unit due to anemia and hyperbilirrubinemia. The mother was a ARh+ 41 year old healthy primigravida. Pregnancy was uneventful, with negative serologies. The delivery was by C-section due to pelvic presentation and the Apgar score at 1st and 5th minute was 9 and 10, respectively. Admission physical examination revealed mucocutaneous pallor, jaundice of skin and sclera, systolic murmur, hepatosplenomegaly and signs of respiratory distress. Laboratory investigation demonstrated a severe anemia (hemoglobin 5.9g/dL), a peripheral blood smear with 1.25 x 10^{12}/L red blood cells, polychromasia and 15% reticulocytes, thrombocytopenia (72000 platelets) and hyperbilirubinemia (serum total and indirect bilirubin levels 19.8g/dL and 17.9mg/dL, respectively) with positive direct antiglobulin test. Further investigation, including a positive indirect antiglobulin test and a positive anti-E antibody in both the newborn and mother, and minor blood group antigen profiles in family members was compatible with E minor blood group isoimmunization. Three exchange transfusions were performed in addition to human immunoglobulin and phototherapy. Red blood cells and platelets transfusions were also necessary. The newborn was discharged on the 12th postnatal day with normal neurologic examination and acoustic otoemissions and periventricular hyperecogenicities in cerebral ultrasound.

Discussion: Alloimmune hemolytic disease due to minor blood groups presents with mild to severe hyperbilirubinemia manifestations, including hydrops fetalis. Anti-E hemolytic disease should be strongly considered in a newborn with significant hemolytic hyperbilirubinemia if the most common causes of severe neonatal hemolytic disease such as Rh and ABO incompatibilities are not demonstrated.

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PO233: Central Venous Catheter-Related Sepsis in Very Low Birth Weight (VLBW) Infants: A 4-Year Experience of a Neonatal Intensive Care Unit

Marta NASCIMENTO, Marlene ABREU, Teresa MARTINS, Isabel MARTINS, Maria José COSTA

Aims: To evaluate the incidence of sepsis related to central venous catheters (CVC) in very-low-birth-weight (VLBW) infants in a Neonatal Intensive Care Unit (NICU) and assess possible risk factors.

Methods: Clinical data from VLBW infants with CVC admitted to the NICU between January 2008 and December 2011 were retrospectively studied.

Results: One hundred and ninety-five CVC were inserted (93 umbilical catheters and 102 peripherally inserted central catheters) in 119 VLBW infants during this period. Forty-four cases (22.6%) of sepsis related to CVC (19.3 episodes / 1000 catheter days) were diagnosed. For umbilical venous catheters (UVC), the average indwelling time was 6.5 days with a total of 584 catheter days. Sepsis occurred in 13.5% of cases (22.2 episodes / 1000 catheter days) on average 9.0 days after catheter insertion. In peripherally inserted central catheters (PICC), the average indwelling time was 17.1 days with a total of 1692 catheter days. Sepsis occurred in 30.4% of cases (18.3 episodes / 1000 catheter days) on average 10.7 days after catheter insertion. The most common microorganism isolated was *Staphylococcus epidermidis* (71.8%).

Conclusion: The incidence of CVC-related sepsis in VLBW infants in our NICU washigher than other published studies. Birth weight, gestational age, indwelling time of CVC and parenteral nutrition were statistically associated with sepsis. Control of risk factors and strict adherence of protocols for the insertion and maintenance of CVC are essential.

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