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## Follow-up programs for high risk neonates

**ABS 1**

### ENDOTHELIAL MICROPARTICLES AND ENDOTHELIAL PROGENITOR CELLS IN PRE-PUBERTAL CHILDREN BORN PREMATURELY. ASSOCIATIONS WITH CARDIOVASCULAR RISK FACTORS

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**INTRODUCTION**

It still remains a controversial issue whether prematurity constitutes an independent risk factor for the subsequent development of cardiovascular disease and endothelial dysfunction. Endothelial microparticles (EMPs) and endothelial progenitor cells (EPCs) are reliable early markers of endothelial damage; they have not been studied, so far, in prepubertal children born prematurely. The aim of this study is the measurement of EMPs and EPCs in prepubertal children born prematurely and the assessment of possible correlations with cardiovascular risk factors.

**METHODS**

The study population consisted of 106 children, 8-13 years old (52 preterm and 54 full term, as controls). Anthropometric measurements (body mass index – BMI, waist/hip circumference – WHR), arterial blood pressure and biochemical parameters (glucose, insulin, serum lipids) were assessed. In addition, ultrasonographic measurements of interventricular septum thickness (IVSd), left

ventricular internal dimension (LVIDd), mass (LVM) and mass index (LVMI), common carotid (cIMT) and abdominal aorta (aIMT) intima-media thickness, were performed. Circulating EMPs [CD62e(+) and CD144(+)] and EPCs [CD34(+)/VEGFR2(+) and CD34(+)/VEGFR2(+)/CD45(-)] were quantified by flow cytometry. For statistical analysis, Student's t-test, Mann-Whitney U-test, and correlation/multiple regression analysis were applied.

**RESULTS**

In comparison with controls, children born prematurely presented with higher BMI ( $p = 0.01$ ), WHR ( $p = 0.05$ ), systolic ( $p < 0.001$ ) and diastolic ( $p = 0.04$ ) arterial blood pressure, IVSd ( $p = 0.006$ ), cIMT ( $p < 0.001$ ) and aIMT ( $p = 0.03$ ). Circulating CD62e(+) and CD144(+) EMPs were found to be significantly higher in preterm than in full-term children ( $p = 0.01$  and  $p = 0.005$ , respectively). Also, CD34(+)/VEGFR2(+) and CD34(+)/VEGFR2(+)/CD45(-) EPCs were significantly higher in children born prematurely compared with controls ( $p = 0.02$  and  $p = 0.05$ ). Circulating CD62e(+) EMPs correlated significantly with gestational age ( $r_s = -0.21$ ,  $p = 0.05$ ), serum total cholesterol levels ( $r_s = 0.24$ ,  $p = 0.03$ ), cIMT ( $r_s = -0.32$ ,  $p = 0.02$ ), aIMT ( $r_s = -0.22$ ,  $p = 0.03$ ) and LVMI ( $r_s = -0.25$ ,  $p = 0.02$ ). Furthermore, the expression of CD34(+)/VEGFR2(+) EPCs was positively correlated with systolic ( $r_s = 0.38$ ,  $p = 0.001$ ) and diastolic ( $r_s = 0.36$ ,  $p = 0.003$ ) arterial blood pressure, serum insulin levels ( $r_s = 0.28$ ,  $p = 0.01$ ), IVSd ( $r_s = 0.29$ ,  $p = 0.01$ ), LVIDd ( $r_s = 0.25$ ,  $p = 0.03$ ), LVM ( $r_s = 0.34$ ,  $p = 0.004$ ), cIMT ( $r_s = 0.33$ ,  $p = 0.005$ ) and aIMT ( $r_s = 0.31$ ,  $p = 0.01$ ).

**CONCLUSIONS**

Prepubertal children born prematurely demonstrate increased expression of endothelial microparticles (EMPs) and endothelial progenitor cells (EPCs), indicative of endothelial dysfunction and/or vascular damage, in comparison with full-term born children. Significant correlations between EMPs and EPCs expressions and cardiovascular risk factors reflect possible endothelial injury and/or activation of vascular repair and remodeling.

**ABS 2**

### MATERNAL PERSPECTIVES ON QUALITY OF LIFE IN A GROUP OF HIGH-RISK PREMATURE INFANTS

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## INTRODUCTION

Long-term studies indicate that preterm infants have issues with growth, health, learning and behavior during childhood, which may persist into adulthood. Therefore, of recent interest in medical practice and research is the measurement of quality of life (QoL). QoL is a complex personal construct, which generates continuous debate in the literature and has so far produced very little consensus.

## METHODS

Prospective longitudinal study through a questionnaire developed by the authors and completed by the mothers of high-risk preterm infants. The questionnaire included items regarding socio-economic characteristics, the impact of preterm birth on mother's feelings – guilt, stress, worry, main concerns regarding infant's acquisitions, general development in first two years of life including attendance at a neonatal follow-up program (NFP). The answers were correlated with the medical evaluation of infants, through NFP. The data were analyzed using SPSS® Statistics version 20.0.

## RESULTS

703 subjects responded to the questionnaire. The group was homogenous regarding age (median 28 years), gestational age of neonates (30 weeks  $\pm$  2) and birth weight (1,177  $\pm$  184 grams). Subjects were predominantly housewives (47.2%), high-school educated (41%), unmarried (44.4%), low income (41%), first child (42%). 49% declared that expenses for the complex care of their preterm infant affected family income. 48% receive no help in the daily care of their child and feel burdened, 35% feel guilty for having had a preterm delivery and 24% feel it was unfair they had a preterm infant. Elements by which mothers appreciate a good QoL for their children are: motor acquisitions 50.2% ( $p = 0.001$ ), cognitive gains only 5.4% – although at the same time 32% declare that the absence of normal cognitive acquisitions for gestational age constitutes a negative factor for QoL –, the absence of hospitalization during the first two years of life ( $p = 0.001$ ) and medium risk category during NFP ( $p = 0.001$ ). Irrespective of socio-economic status, over 50% of subjects recognize progress in their infants following attendance at NFP ( $p = 0.086$ ) with favorable implication on QoL. Another

element favoring good QoL is that 74.9% of the infants studied were fed with the mother's own milk during the first six month of life; these subjects were classified in the low and medium-risk category ( $p = 0.001$ ). The biggest concern of mothers during the first two years of life is weight gain ( $p = 0.01$ ). Other elements that mothers associate with poor QoL are: changes in the behavior of their infants (39.8%), frequent hospitalizations (21.4%) feelings of guilt – 50% of mothers with high education ( $p = 0.008$ ) and 45% of unmarried mothers ( $p = 0.008$ ) – and, irrespective of socio-economic profile, high expenses for proper care (49%,  $p = 0.001$ )

## CONCLUSIONS

The main factor by which QoL is appreciated as “good” is weight gain, followed by normal motor achievement. Feelings of guilt for having had a premature infant and the expenses that affect family income are associated with a poor QoL, from the mothers' perspective.

## ABS 3

### ARE THERE DIFFERENCES IN THYROID FUNCTION BETWEEN INFANTS CONCEIVED BY IN VITRO FERTILIZATION AND NATURALLY CONCEIVED INFANTS?

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## INTRODUCTION

Sparse data exist suggesting that assisted reproduction technologies are associated with thyroid dysfunction of the offspring, possibly due to epigenetic alterations that might occur during preimplantation manipulations and/or abnormal maternal endocrine environment during the first trimester of pregnancy. However, relevant studies are quite limited in children and present controversial results, whereas no previous study has followed the evolution of the thyroid function from birth in infants conceived by *in vitro* fertilization (IVF). The aim of this study was to investigate the thyroid function of neonates born following IVF in comparison with naturally conceived controls.

## METHODS

324 neonates (108 IVF, 216 controls) were prospectively studied. Infants with congenital anomalies, major morbidity or maternal thyroid disease were excluded. Ninety-six IVF neonates and 156 controls were prematurely born (gestational age  $32.1 \pm 3.2$  and  $34.0 \pm 2.2$  weeks, respectively). In all infants, TSH levels were measured on routine screening Guthrie card blood samples within the 1<sup>st</sup> week of life (Autodelphia, Perkin Elmer System). Furthermore, after venous sampling, serum TSH and free thyroxine (FT4) levels were determined by Elecsys Roche analyzer in infants with elevated TSH levels on Guthrie card ( $> 8 \mu\text{IU/mL}$ ) or clinical signs of hypothyroidism or born prematurely  $< 34$  weeks of gestation. Student's t-test or Mann-Whitney U test,  $\chi^2$  and multiple regression analysis were applied.

## RESULTS

On dried blood spot of Guthrie card, elevated TSH levels were found in 2/324 neonates. In the remaining 322 neonates, TSH levels on Guthrie card were significantly higher ( $p = 0.02$ ) in IVF neonates ( $2.36 \pm 1.97 \mu\text{IU/mL}$ ) in comparison with naturally conceived controls ( $1.94 \pm 1.39 \mu\text{IU/mL}$ ), albeit within the normal reference range. On venous blood sampling, low serum FT4 levels ( $< 0.8 \text{ ng/dL}$ ) reminiscent of hypothyroidism or hypothyroxinemia of prematurity were found in 14.8% of IVF infants vs. none in the control group ( $p5 \mu\text{IU/mL}$ ) with normal FT4 levels, indicative of hyperthyrotropinemia or subclinical primary hypothyroidism, were found in 39.5% of IVF infants vs. 11.3% of controls ( $p < 0.001$ ). After adjusting for gestational age, birthweight and being born small for gestational age (SGA) by multiple regression analysis, IVF conception was independently associated with thyroid dysfunction, especially with increased TSH levels. T4 replacement therapy was administered to 12 IVF vs. 2 naturally conceived infants ( $p < 0.001$ ).

## CONCLUSIONS

IVF infants are at increased risk of presenting thyroid dysfunction in comparison with naturally conceived ones. Increased TSH levels, indicative of hyperthyrotropinemia or subclinical primary hypothyroidism, are most frequently observed and may be the result of epigenetic alteration in the set point of TSH sensitivity. Monitoring of thyroid function of IVF infants is essential for timely recognition of thyroid axis disturbances and appropriate treatment.

## ABS 4

### **NORMAL EXAMINATION FINDINGS AT 2 YEARS CORRECTED AGE DOES NOT PREDICT NORMAL DEVELOPMENT AT 5 YEARS IN THE CASE OF EXTREMELY PREMATURE INFANTS**

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## INTRODUCTION

The aim of the study was to assess whether a normal neurologic examination and neurobehavioral test at 2 years corrected age is associated with normal development at 5 years of age in the case of extremely premature infants.

## METHODS

Premature infants with gestational ages 28-33 weeks born in different centres were assessed as part of a neurodevelopmental follow-up programme. The visits were scheduled at term corrected age, 2, 4, 6, 12, 18 and 24 months and at 3 and 5 years. For neurologic examination we used the Amiel Tison Neurologic Examination and for the neurodevelopmental examination we used the Bayley III Test. For the assessment of the risk of autistic spectrum disorders we used the M-CHAT test followed by psychiatric assessment.

## RESULTS

Out of the 58 premature infants that entered the study, 8 (13.79%) were classified by 2 years of age to have cerebral palsy and did not have a normal neurologic examination. Another 15 (25.86%) presented with minor motor abnormality fulfilling the criteria for developmental coordination disorder (DCD) and 35 had a normal neurologic examination. When assessed at 3 years of age, 12 of the patients with normal neurologic examination at 2 years corrected age showed a delay in fine motor milestones of 2-4 months compared with the other patients from the group ( $p < 0.004$ ) and at 5 years 18/35 patients showed delayed fine motor milestones and abnormalities in their motor skills. The main risk factors for motor delay were low gestational age ( $p < 0.001$ ) and neonatal sepsis ( $p < 0.0003$ ). Language development was considered to be normal at 2 years in 45/58 former premature infants, the percentage remained unchanged at 3 and 5 years. There were 3 children diagnosed before 3 years of age with autistic spectrum disorder (ASD) features in the group. By 3

years, 5 more infants were diagnosed with the same condition and at 5 years the total number of former premature infants diagnosed with ASD was 10/58 (17.24%). The main risk factor was male gender (8/10) and gestational age lower than 30 weeks ( $p < 0.001$ ). Epilepsy was diagnosed in 3/35 premature infants with normal neurologic examination at 2 years, with the first seizure occurring in all the patients after the age of 3 years.

#### CONCLUSIONS

More than half of the extremely premature infants with a normal neurologic examination at 2 years corrected age developed motor or behavioral abnormalities or seizures (epilepsy) by 5 years of age. This is why we suggest the minimal duration of the follow-up programme for this category of infants be more than 2 years of age (at least 5) in order to identify these abnormalities and to begin the appropriate therapy in a timely manner.

#### ABS 5

##### **SURVIVAL RATES AND NEURODEVELOPMENTAL OUTCOME AMONG EXTREMELY PRETERM INFANTS ( $\leq 28$ WEEKS) IN NORTHWEST (NW) GREECE: A 16-YEAR REVIEW**

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#### INTRODUCTION

Advances in perinatal and neonatal care over recent decades have improved the survival of extremely preterm infants (EPT). However, surviving children born extremely preterm are at high risk of long-term neurodevelopmental problems, particularly cerebral palsy (CP). The aim of the study was to estimate survival rates and perinatal characteristics and to investigate the prevalence of CP among EPT neonates hospitalized in the Neonatal Intensive Care Unit (NICU) of Ioannina University Hospital – referral tertiary perinatal centre for NW Greece.

#### METHODS

All neonates with GA  $\leq 28$  weeks who were treated in the NICU from 1/1/2000 to 31/12/2015 were

included in the study. The survival rates and perinatal characteristics were recorded retrospectively from the electronic NICU database. CP cases were identified at the outpatient neonatal follow-up clinic and subsequently referred to the special CP team. Changes in these parameters were compared during two consecutive periods: 2000-2007 (period I) and 2008-2015 (period II).

#### RESULTS

One hundred and ninety-three EPT were cared for in the NICU, 74 of these in period I and 119 in period II. Their mean GA and BW were 26.3 weeks and 858 g respectively. Outborns were 14% (23% in period I vs 8% in period II,  $p < 0.01$ ). Antenatal steroid administration was 50% (41.9% in period I vs 55.1% in period II). Eighty-four neonates (43.5%) were born to multiple pregnancies and 55 (28.5%) after *in-vitro* fertilization. One hundred and twenty-one neonates (62.7%) survived to discharge: 43 (58.1%) in period I and 78 (65.5%) in period II. Survival rate was 39.1% in neonates born at GA  $\leq 26$  weeks vs 75.8% in those at GA 26<sup>+</sup>-28 weeks ( $p < 0.01$ ). Increased survival trend was observed at GA 26<sup>+</sup>-28 weeks during the second period (79.5% in period II vs 69.6% in period I). Ninety-three neonates attended the follow-up NICU outpatient clinic – 36 in period I (83.7%) and 57 in period II (73.1%). CP was diagnosed in 10 children (10.9%): 4 in period I and 6 in period II. In period I, 3 out of the 4 children had severe tetraplegia and 1 diplegia and in period II 2 out of the 6 children had tetraplegia and the remaining 4 had mild hemiplegia.

#### CONCLUSIONS

During the 16 years of the study, the total number of extreme preterm neonates and their survival at hospital discharge were increased in the second period. CP prevalence was stable in the study population. However, CP cases were less severe in the second period.

#### ABS 6

##### **BRAIN ULTRASOUND AND MRI FINDINGS IN NEONATES WITH A HISTORY OF CHORIOAMNIONITIS**

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## INTRODUCTION

Chorioamnionitis is one of the main causes of premature labor before the 30<sup>th</sup> week of gestational age. It is associated with white matter damage, cerebral hemorrhage and poor neurodevelopmental outcome. The aim of our study was to record brain ultrasound and MRI findings in premature neonates with a history of chorioamnionitis, as well as to follow the evolution of brain damage from the first days after birth to full-term postconceptional age.

## METHODS

Our study population consisted of eight premature neonates of 24-28 weeks gestational age, with birth weight 610-1,140 g and a positive history of chorioamnionitis (fever and elevated white blood cells or CRP levels of the mother or the neonate with or without a positive blood or amniotic fluid culture). A brain ultrasound was performed in all neonates during the first three days of extrauterine life and on a weekly basis thereafter, until they reached 40-43 weeks post-conceptional age. At that time a brain MRI was performed.

## RESULTS

Brain ultrasound in the first week after birth revealed increased echogenicity of the periventricular white matter in seven cases. Later, four of these neonates presented with cystic periventricular leukomalacia (PVL). Brain MRI performed at 40-43 weeks post-conceptional age also confirmed the presence of PVL lesions in these four cases, whilst three other neonates presented diffuse excessive high signal intensity (DEHSI). Moreover, two babies with cystic PVL and DEHSI also presented delayed white matter myelination. Brain hemorrhage (Grade II-IV) was recorded in three cases, in combination with PVL lesions. Finally, cerebellum hemorrhage was recorded as an ultrasound and MRI finding in one neonate, who had a worse outcome.

## CONCLUSIONS

Brain ultrasound is a useful tool in detecting early brain lesions, whilst MRI reveals the whole spectrum of central nervous system involvement, when performed at full-term post-conceptional age. Early diagnosis of central neural system lesions and a prompt therapeutic approach in combination with close follow-up are the gold standards for the improved neurodevelopmental outcome of our premature babies.

## ABS 7

### DISORDERS OF COAGULATION IN PRETERM AND TERM NEONATES WITH CONGENITAL

## HEART DISEASE: PRESENTATION OF PRELIMINARY RESULTS

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## INTRODUCTION

Children with congenital heart disease (CHD) display significant alterations in coagulation factors placing them at increased risk for bleeding, thrombosis or both. The aim of the present study was to investigate specific pro-coagulant factors and natural inhibitor levels in neonates with cyanotic, acyanotic or complex CHD.

## METHODS

Sixteen patients were enrolled in the study during a 10-month period (May 2017-March 2018). Prothrombin time (PT) and activated partial thromboplastin time (aPTT), fibrinogen, vitamin-K dependent factors (FII, VII, IX, X), D-dimers, antithrombin, proteins C and S were measured during a steady phase in 10 out of 16 patients. Co-existing infection was present in 4 cases.

## RESULTS

Nine patients (56.3%) were male, while 7 (43.8%) were female. Mean gestational age ( $\pm$  standard deviation) was 36.5  $\pm$  2.8 weeks and median birthweight (interquartile range) was 2,732 g (1,312). Cyanotic, acyanotic and complex heart disease was the main diagnosis in 6 (37.5%), 6 (37.5%) and 4 (25%) neonates, respectively. Eight neonates (50%) were of Greek origin, 6 neonates (37.6%) were born to immigrant mothers from European countries, one neonate (6.3%) from Africa and one (6.3%) from Asia. Natural conception was reported in 2 cases (12.5%), while the remaining 14 neonates (87.5%) were born after pregnancies conceived by assisted reproduction. Prenatal diagnosis of CHD was made in 9 cases (56.3%). Chromosomal abnormalities were identified in 3 neonates (18.8%). With regard to outcome, 10 patients (62.5%) are still alive and

6 patients (37.5%) succumbed to their condition. What is more, significant prolongation was noticed in PT according to the complexity of heart disease ( $p = 0.044$ ). Specifically, PT was prolonged in cases of complex CHD as compared to cyanotic ( $p = 0.057$ ). Interestingly, FIX levels were significantly elevated in patients that died ( $12.8 \pm 2.2$  vs  $15.8 \pm 1.4$ ,  $p = 0.016$  and  $51.2 \pm 16.0$  vs  $81.3 \pm 27.2$ ,  $p = 0.022$ ). By contrast, FVII levels were significantly decreased in patients that died ( $25.5 \pm 7.5$  vs  $54.5 \pm 22.2$ ,  $p = 0.010$ ). D-dimer levels were slightly increased, whereas natural inhibitor levels were slightly decreased. These results indicate a state of chronic, subclinical disseminated intravascular coagulation in children with complex CHD, consistent with the findings of other similar studies. Coagulation abnormalities are probably due to hypoxia, resulting in erythrocytosis and subsequently in hyperviscosity, blood flow stasis and microthrombi formation.

#### CONCLUSION

Children with CHD show substantial alterations in their coagulation profile. Many of these abnormalities can be of great prognostic value since their prompt identification may alter the progression of the disease in this vulnerable population.

#### ABS 8

### EVALUATION OF MODERATE AND SEVERE PHYSICAL FUNCTIONING LIMITATIONS AMONG EXTREMELY LOW BIRTH WEIGHT INFANTS (BORN BEFORE 28 WEEKS OF GESTATION) 2015-2016 IN LATVIA

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#### INTRODUCTION

According to WHO data, about 10% of babies are delivered prematurely around the world annually. Lower gestational week is inversely proportional to good quality of life and health due to deep immaturity of all organ systems. There were 2,641 premature babies delivered in 2015-2016 in Latvia (respectively 6.1% and 6.0%). Among them, extremely low birth weight patients were 65 in the year 2015, and 84 in 2016. In this study we compiled data on moderate and severe physical functioning limitations and disabilities after discharge from the NICU.

#### GOAL

1. To detect the incidence of moderate and severe physical functioning limitations and disabilities in the group of extremely low birth weight patients.
2. To compare the incidence of moderate and severe physical functioning limitations and disabilities in Latvia with other European countries.

#### MATERIALS AND METHODS

Data from the State Medical Commission for the Assessment of Health Condition and Working Ability and *Statistical Yearbook of Healthcare in Latvia 2015-2016*, The Centre for Disease Prevention and Control, Latvia.

#### RESULTS

The total number of children registered by the State Medical Commission for the Assessment of Health Condition and Working Ability from 01.01.2016-31.12.2017 was 532. They were respectively 296 in 2016, and 236 in 2017. Among monitored patients, extremely low birth weight patients were 16 in 2015 and 13 in 2016. Out of all the extremely low birth weight patients delivered and registered in 2015, 7 patients had (43.75%) severe, 8 (50%) moderate, and 1 (7.69%) very severe physical functioning limitations. In 2016, 84 extremely low birth weight patients were delivered, and 13 of them were registered (15.47%). Of those registered 5 (38.46%) had severe, 7 (53.84%) moderate, and 1 (7.69%) had very severe physical functioning limitations. The main reason for physical functioning limitations is diseases and syndromes involving the CNS (cerebral palsy, seizures, delay of mental and physical development), combined with bronchopulmonary dysplasia (BPD) in 9 cases, or with retinopathy of prematurity (ROP) in 3 cases. Other reasons for physical functioning limitations were short gut syndrome (4 cases), necrotic amputation of right wrist fingers (2 cases), congenital abnormality of skeleton (1 case). We compared our data with the EPICURE multicenter study (UK, Ireland), where 308 premature patients born before 25 weeks of gestation were included and were evaluated in the 30<sup>th</sup> month of life and at 6-11 years of age. In their population, at 30 months of age there were 30% of severe and moderate developmental delays. In our study the numbers of moderate and severe physical functioning limitations were lower (precisely 26.4% in 2015 and 15.47% in 2016), but we included patients up to 28 weeks of gestation.

#### CONCLUSIONS

1. This is the first time we have performed this type of data analysis in Latvia.

2. These data are of great importance for neonatologists working in NICU and the delivery room.

### ABS 9

#### EVALUATION OF PLATELET FUNCTION WITH PFA-100 IN NEONATES OF PREGNANCIES COMPLICATED WITH GESTATIONAL DIABETES

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#### INTRODUCTION

Platelet function analysis with PFA-100 is an *in vitro* test that assesses platelet-related hemostasis (aggregation and agglutination) by measuring closure times (CTs), found to be decreased in healthy term neonates compared to adults. Accordingly, we assumed that certain high-risk neonatal populations – prone to hemostatic disorders – may present with compromised platelet function. In this respect, we aimed at performing PFA-100 in the offspring of pregnancies with Gestational Diabetes Mellitus (GDM) and correlating the results with perinatal parameters.

#### METHODS

The study comprised 93 umbilical cord (UC) blood samples – 53 from diabetic pregnancies (GDM Group) and 40 healthy infants (Control group). PFA-100 analysis performed with COL/EPI (collagen-epinephrine) and COL/ADP (collagen-ADP) cartridges provided 2 CTs for each sample.

#### RESULTS

No significant differences in COL/EPI-CT values were observed between the two groups. COL/ADP-CT was significantly lower in the GDM group vs the Control group ( $b = -3.045$ ,  $p = 0.033$ , 95% CI  $-5.841$ – $[-0.249]$ ).

#### CONCLUSIONS

The lack of difference in COL/EPI CTs between the two groups may possibly be attributed to variable compensatory mechanisms apart from platelet function, such as hematocrit, levels of vWF and drug administration to the mother. On the other hand, the difference in terms of COL/ADP probably reflects the hyperreactivity of the platelets in the GDM

group due to the prevalence of pro-inflammatory response and oxidative stress.

### ABS 10

#### IS AUTISTIC SPECTRUM DISORDER IN PRETERM CHILDREN THE SAME ENTITY AS IN TERM CHILDREN?

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#### INTRODUCTION

In the preterm population, the incidence of Autistic Spectrum Disorders (ASD) is two-fold higher than in term-born children, with structural brain abnormalities very often acting as a possible causative agent. With detailed behavioral evaluation, suspicion of diagnosis and early intervention can be made before 12 months of age. With early intervention, some patients will be able to achieve an independent life, although in many others the severity of the disease will have a lifelong negative impact. Our aim was to study a group of children with ASD to compare the preterm with the term population and spot co-morbidities that may affect the initial diagnosis or outcome itself.

#### METHODS

We retrospectively analysed the medical follow-up records of all preterm and term children with ASD regarding clinical parameters such as gazing, verbal and non-verbal communication, imaginary play, repetitive behaviors, social interaction, self-care, ability to enter school and presence of CNS abnormalities.

#### RESULTS

Thirty-eight ASD cases were analyzed up to 11 years of age. History of prematurity of  $27 \leq GA \leq 35$  weeks concerned 28.9% (11/38). Boys were 81.57% (31/38) and girls 18.42% (7/38). CNS disorders were recorded in 63.63% (7/11) preterm children, of whom 3/7 had VP-SHUNT for post-hemorrhagic hydrocephalus, 2/7 punctuate white matter lesions, 1/7 hypoxia, 1/7 microcephaly. ADHD co-morbidity affected 34.2% (13/38) of ASD children in the term population. Mean age at first evaluation and diagnosis was 30.5 months ( $r = 17$ -60 months), but in the preterm subgroup diagnosis and early intervention was made before 12 months of age. Mean intervention interval and follow-up time was 5.6 years (max 11 years). Mean



maternal and paternal age at conception was 35.22 years (r 19-45 years) and 38.58 years (r 22-61 years) respectively. 36.36% of mothers and 27.27% of fathers had higher education diplomas/degrees. The term population had better outcome compared to preterm in gazing (57.14% vs. 36.36%), self-care (51.85% vs. 18.18%), communicative speech (37.03% vs. 18.18%), independent school entry (33.33% vs. 18.18%), and parental interaction (77.77% vs. 36.36%). In total 54.54% of the preterm subgroup had the worst outcome, compared to 3.7% of the term children.

#### CONCLUSIONS

Preterm children with ASD have a worse outcome than full-term children, possibly due to coexisting CNS lesions.

#### ABS 11

##### LATE PRETERM NEONATES. A SPECIAL POPULATION WITH INCREASED MORBIDITY

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#### INTRODUCTION

Late preterm (LP) neonates are defined as those neonates born at 34<sup>+0/7</sup> to 36<sup>+6/7</sup> weeks of gestational age, while they were previously referred to as "near-term" infants. This change in terminology resulted from the understanding that these neonates, although born near term, are immature. It seems that the last 6 weeks of pregnancy represent a milestone period for the growth and development of the fetal brain and lungs as well as other systems. There is a great deal of evidence supporting the increased morbidity and mortality of these neonates when compared with term neonates.

#### OBJECTIVE

To assess the morbidity of LP neonates hospitalized in our NICU and compare it with that of term neonates.

#### MATERIALS AND METHODS

We studied 154 neonates hospitalized in our NICU over a twelve-month period. The neonates were categorized into 2 groups: group A included LP neonates while group B included term neonates. We recorded: the type of delivery, body temperature and the presence of hypoglycemia on admission, the incidence of RDS, the development of jaundice, the time of full enteral feeding and hospitalization stay. We compared the two groups for all these

parameters. Chi-Square and Mann-Whitney U test were used for statistical analysis.

#### RESULTS

Caesarean section (CS) rates were significantly higher ( $p = 0.012$ ) in group A ( $n = 49$  neonates). LP neonates were found more susceptible to hypoglycemia and hypothermia on admission ( $p = 0.06$  and  $p = 0.001$ , respectively) when compared to term neonates ( $n = 105$ ). The time of full enteral feeding and the duration of hospitalization were prolonged in LP neonates at statistically significant levels. Increased morbidity for RDS and jaundice was noticed in group A, but with no statistically significant difference.

#### CONCLUSIONS

Our study results confirm that LP infants have increased risk of neonatal morbidities associated with organ immaturity. This is very important for obstetrical decision-making when considering late preterm delivery. New strategies for the evaluation, therapeutic interventions and long-term follow-up of LP neonates should be established. Although these infants are at higher risk for morbidity and mortality when compared with term infants, most of them are expected to do well.

#### ABS 12

##### PERINATAL PATHOLOGY ASSOCIATED WITH LONG-TERM RISK FOR FUNCTIONAL BOWEL DISORDERS IN FIRST YEAR OF LIFE

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#### INTRODUCTION

The introduction of follow-up observation and rehabilitation of children with perinatal pathology has significant relevance for preventing the development of functional bowel disorders [1, 2]. The aim of the study was to determine the clinical and para-clinical indicators that characterize bowel functional state violations in infants with a medical history of perinatal pathology.

#### METHODS

The comprehensive examination of 25 children who had symptoms of perinatal pathology in the early neonatal period (group I) and 25 healthy children (group II) was conducted. All children were born at term. The survey was carried out at the postnatal

age of 5-6 months. The functional state of the intestine was assessed by determining the level of albumin, secretory immunoglobulin A (sIgA) and  $\alpha$ 1-antitrypsin (A1-AT) in the stool using an ELISA. The study was approved by the Research Ethics Committee of the Bukovinian State Medical University.

## RESULTS

In children of group I during the early neonatal period, severe asphyxia at birth (32.0%), intrauterine growth retardation (32.0%), and early neonatal sepsis (36.0%) were diagnosed. At the time of examination at the age of 5-6 months, hypoxic-ischemic lesion of the central nervous system (48.0%), anemia (24.0%), malnutrition (40.0%), delay of physical development (28.0%), delay of speech development (36.0%) were established. In children of group I during the survey, the following bowel functional state violations were identified: constipation (32.0%), inclination to stool softener (20.0%), flatulence with bloating and intestinal colics (28.0%), disorders of appetite (48.0%), vomiting (16.0%). Albumin levels ( $9.7 \pm 0.48$  mg/g vs  $3.3 \pm 0.16$  mg/g,  $p < 0.05$ ), A1-AT levels ( $540.2 \pm 27.01$  mg/g vs  $113.9 \pm 5.69$  mg/g,  $p < 0.05$ ) and sIgA levels ( $2,538.7 \pm 126.93$  mg/g vs  $1,087.7 \pm 54.38$   $\mu$ g/g,  $p < 0.05$ ) were significantly increased in the stools of group I children. This indicates the state violations of maldigestion, malabsorption, and motor-evacuation function of the intestine, and also local immunity changes.

## CONCLUSION

The dynamic observation, fundamental clinical and paraclinical examination and treatment to prevent the development of chronic diseases of the intestine should be conducted with the long-term preservation of clinical signs of bowel functional state violations in children after perinatal pathology.

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## ABS 13

### THE ANALYSIS OF MEDICAL SERVICES, STAFF AND EQUIPMENT IN NEWBORN WARDS AND OBSTETRICS UNITS IN ROMANIA

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## INTRODUCTION

The present situation of the infant mortality rate in our country has led the most important NGO operating in the field of children's rights to analyze the causes of this phenomenon. Following the analysis, Save the Children Romania has worked for the prioritization of investments in the necessary medical equipment in the newborn wards and the training of medical staff. The analysis was made with a view to assessing the capacity of the medical units that care for newborn babies in Romania with regard to the level of medical equipment, staff involved and the way the maternity ward actually meets the classification given by the Ministry of Health.

## METHODS

In partnership with the Ministry of Health, a questionnaire was administered to a large number of medical units dedicated to newborn babies. Thus, a comprehensive picture was obtained, with data to be used for future intervention. Statistical analysis was performed on the data provided by the respondents from all over the country.

## RESULTS

The emergency services in the ITU and neonatology units are non-existent in the maternities classified at Level I. The maternities need at least 5 full-time physicians to ensure continuity of activity in the medical units. 91% of the Level I maternities have less than 5 specialists in obstetrics-gynaecology and 99% of them have less than 5 neonatologists. In half of the Level I maternities, ultrasounds cannot be performed outside daytime working hours and in 51% of them laboratory tests cannot be performed during the night. Only in 89% of the maternities classified as Level III can biochemical tests be performed at night. As to medical equipment, 13% of the maternities classified as Level I have no standard incubators for prematurely born babies, 56% of the maternities classified as Level II have no ventilators and 14% of the maternities classified as Level III have one single infant warmer resuscitation unit.

## CONCLUSIONS

The medical staff is insufficient to ensure the continuity and quality of services. The medical

equipment is significantly less than needed, old or worn-out. The situation needs to be corrected rapidly and the quality of medical services improved so that the infant mortality rate may decrease steadily. To that end, immediate national-level measures are needed, such as drawing up and implementing a staff retention plan and supplying the gynaecology, obstetrics and neonatology units with modern medical equipment.

## ABS 14

### THE EFFECT OF MATERNAL PRE-ECLAMPSIA ON NEONATAL OUTCOME

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#### INTRODUCTION

Hypertensive disorders represent the most common cause of maternal morbidity and mortality. This will generate up to 20% of maternal deaths worldwide. Recent studies suggest that the increase in the soluble receptors for vascular endothelial growth factor (VEGF) and transforming growth factor-beta in the maternal circulation will generate pre-eclamptic pathologies. Pre-eclampsia will have implications on the newborn as well. Infants born to mothers with pre-eclampsia may show evidence of intra-uterine growth restriction, preterm birth, asphyxia, neutropenia and high risk of neonatal infection.

#### METHODS

We conducted a longitudinal, observational study at the 1<sup>st</sup> Neonatology Department of the County Emergency Hospital, Cluj Napoca, Romania between November, 2013 and October, 2015. The cohort consists in: study group – neonates exposed during fetal life to maternal hypertension, and the control group – neonates with no exposure to this maternal condition. The enrolment was done by matching technique selection according to the gestational status, making a 1:1 match, the difference between the two groups being the absence or presence of maternal hypertensive disease. We excluded newborns with chromosomal diseases or malformation. The statistics was produced by using EpiInfo™ 3.5.1. To test the differences in the

distribution of the variables between the two groups, we used the Hi square statistic test or the Fisher exact test, as appropriate. Results were considered statistically significant at a  $p < 0.05$ . To quantify the importance of the link between exposure and disease, we used statistical indicators: relative risk (RR) and difference risk (RD), and associated confidence intervals.

#### RESULTS

In the study we enrolled 98 newborns: 49 exposed to maternal disease and 49 non-exposed. For 65% of the study group the exposure was to severe maternal hypertension. Two patients of the study group were born from mothers with HELLP syndrome; 80% of the study group consisted in preterm newborns. The incidence of intra-uterine growth restriction in the study group was significantly higher than in the control group ( $p = 0.006$ ), RR: 3 (95% CI 1-8) and RA: 22% (95% CI 6-38%). Hypoglycemia was also more often present in the study group than in the control group: 18 patients (37%) vs 10 patients in the control group (20%) ( $p = 0.07$ ). The study group had a higher incidence of intraventricular hemorrhage than the control group. ( $p = 0.02$ ), RR: 2 (95% CI 1-3); RA: 20% (95% CI 2-38%). In the study group there were 5 cases of neonatal death, against 2 cases in the control group.

#### CONCLUSION

In the study, severe pre-eclampsia was the most common condition. IUGR was more frequent in exposed patients than in non-exposed ones. Other consequences of pre-eclampsia in the study group were hypoglycemia and intraventricular hemorrhage (with double incidence in the study group than in the control group). The incidence of death in the study group was higher than in the control group.

## ABS 15

### MORBIDITY IN EARLY TERM AND FULL-TERM NEONATES IN A NICU

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#### INTRODUCTION

Term neonates (37-41 weeks' gestation) have been considered as a homogeneous group – regarding morbidity – when compared to preterm and post term neonates. But there is substantial evidence suggesting that significant differences exist in the

outcomes of infants delivered within this 5-week interval. As morbidity appears to be greater for neonates born at 37-38<sup>+6/7</sup> weeks of gestation than for those born at 39-41 weeks, the adoption of the ACOG-recommended designations – “early term” for neonates born at 37 to 38 completed weeks’ gestation and “full term” for those born at 39 to 40 weeks’ gestation – is considered necessary.

#### AIM

To assess morbidity in early term neonates (ET) compared to full term neonates (FT).

#### METHODS

A retrospective study was conducted, with data from our NICU’s electronic archives, concerning 124 term neonates hospitalized in the NICU during 2016. The study population was divided into two groups: ET and FT neonates. The type of delivery, body temperature on admission, the incidence of RDS, asphyxia/stress, septicemia, mechanical ventilation/oxygen therapy, the day of full enteral feeding and the duration of hospitalization were recorded.

#### RESULTS

Statistically significant differences were noticed, regarding the type of delivery, with ET neonates (n = 68) being born mainly via caesarean section (CS) (77.9%), and among them 71.2% via elective CS. In ET neonates, an increased incidence of RDS, prolongation of mechanical ventilation-oxygen therapy-hospitalization stay, and delay of full enteral feeding (p value < 0.05) were observed. On the other hand, FT neonates (56) showed an increased incidence of asphyxia/stress (p value = 0.016) and septicemia (p value = 0.27).

#### CONCLUSIONS

According to our study results, there was an increased morbidity of ET neonates, a finding consistent with literature data. We believe that our findings confirm furthermore the need to reconsider the optimal timing for delivery in uncomplicated pregnancies.

#### ABS 16

### NEURODEVELOPMENTAL ASSESSMENT OF NEWBORNS WITH SEVERE HYPERBILIRUBINEMIA

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#### INTRODUCTION

Exchange transfusion (ET) has proven a universal, efficient and reliable treatment for severe hyperbilirubinemia to prevent bilirubin-induced neurologic dysfunction and neonatal mortality.

The aim of this study is to evaluate the neurodevelopment of neonates who were admitted for severe hyperbilirubinemia.

#### METHODS

Infants who were admitted to a tertiary neonatal intensive care unit with severe hyperbilirubinemia (total serum bilirubin [TSB]  $\geq$  25 mg/dL) between January 2015 and August 2017 were included in the study. Patients were grouped as Group 1 if they underwent ET, and Group 2 if they received only phototherapy or intravenous immunoglobulin adjuvant to phototherapy. Neuromotor and cognitive assessment was performed using the Developmental Monitoring and Evaluation Guide (DMEG/GIDR).

#### RESULTS

Sixty-five infants were enrolled in the study. The mean gestational age and birthweight were  $37.7 \pm 1.3$  weeks and  $3,085 \pm 445$  g, respectively. The mean TSB level at admission was  $25.24 \pm 4.35$  mg/dl. Thirty-four percent were born by cesarean section. Seventeen (26.2%) patients underwent ET (Group 1), and 48 (73.8%) patients received only phototherapy or intravenous immunoglobulin adjuvant to phototherapy. The mean age of the infants was  $20.6 \pm 6.4$  months (range 12-36 months) at the time of evaluation. Nine infants, of whom 4 from group 1 (23.5%) and 5 from group 2 (10.8%) showed developmental delay. The DMEG/GIDR scores were similar between the groups (p > 0.05). The TSB level and the ratio of bilirubin to albumin at admission were similar in infants who had developmental delay and those who did not (p > 0.05). Out of 9 patients, 2 had autism, and 1 had kernicterus. Cognitive understimulation was observed in 2 children, who joined the follow-up program of the Developmental and Behavioral Unit. Mild cognitive developmental retardation was observed in 1 child by the Department of Child and Adolescent Psychiatry. Isolated fine motor delay was observed in one patient, but was resolved at follow-up. One patient who had delay in expression also had bilateral latency of 1<sup>st</sup> wave at BAER.

The family of one patient with delay in narrative language and play did not accept the support.

#### CONCLUSIONS

Neonates treated with the diagnosis of severe hyperbilirubinemia run a high risk of developmental delay. Neurodevelopmental follow-up is important in these infants for early intervention.

#### ABS 17

### PLATELET FUNCTION ASSESSMENT VIA PFA-100 IN NEONATES WITH PERINATAL HYPOXIA/ ASPHYXIA

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#### INTRODUCTION

Perinatal hypoxia/asphyxia is responsible for significant mortality and morbidity. Increased platelet consumption is an important cause of thrombocytopenia in hypoxia/asphyxia. Primary hemostasis (mainly platelet function) is evaluated by PFA-100 (Platelet Function Analyzer) which measures closure times (CTs – the times required to clot formation *in vitro* using different agonists of platelet activation and aggregation). It is known that neonatal platelets are hypo-reactive compared to those of older children and adults. The present study aims at evaluating platelet function in neonates with perinatal hypoxia/asphyxia via PFA-100 and correlate it with several perinatal parameters.

#### MATERIALS AND METHODS

Umbilical cord blood was collected from 43 neonates with perinatal hypoxia/asphyxia and 40 healthy neonates serving as controls. CTs were determined using PFA-100 according to the manufacturers' instructions, with two cartridges, COLEPI (collagen and epinephrine) and COLADP (collagen and ADP). These agonists induce platelet adhesion, activation and aggregation.

#### RESULTS

There were no statistically significant differences in COLEPI CTs between the two groups, whereas COLADP CTs were found to be significantly lower

in neonates with perinatal hypoxia compared to healthy neonates (b = 3.773, p = 0.001, 95% CI -6.033-[-1.514]).

#### CONCLUSION

The lack of difference in COLEPI CTs between the two groups could possibly be attributed to various compensatory mechanisms, such as hematocrit, levels of vWF and drug administration to the mother. Lower COLADP CTs in cases of perinatal hypoxia/asphyxia possibly indicate neonatal platelet hyper-reactivity, due to the prevalence of oxidative stress in these cases.

#### ABS 18

### AETIOLOGY AND OUTCOMES OF BABIES BORN WITH HYDROPS FETALIS IN A TERTIARY NEONATAL UNIT

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#### INTRODUCTION

“Hydrops fetalis” is a condition where fluid accumulates in at least two body spaces in the fetus including the peritoneum, pericardium, pleura or skin. The incidence of hydrops fetalis ranges from 1 in 1,500 to 1 in 3,000 pregnancies [1]. Advances in ultrasonography and in genetic and molecular testing have improved the prenatal diagnosis of hydrops fetalis. This condition can be classified as immune or non-immune hydrops based on aetiology. The aetiology of hydrops fetalis is important as it affects outcomes. Aneuploidy, cardiovascular anomalies, non-cardiac thoracic anomalies and placental abnormalities are associated with a worse outcome [2]. Favourable diagnoses include infections, arrhythmias, chylothoraces and gastrointestinal disorders. Later gestation at diagnosis and later gestation at birth have been associated with improved survival.

#### AIM

The aim of the study was to ascertain the aetiology and outcome of live born babies with hydrops fetalis admitted to a tertiary neonatal unit over a nine-year period (01/04/2009 to 31/03/2018).

#### METHODS

Retrospective review of babies with Hydrops from electronic database – Neonatal Badgernet between 01/04/2009 and 31/03/2018.

**Table 1 (ABS 18).** Aetiology of hydrops fetalis.

Immune hydrops – 2 (6%)	Non immune hydrops – 22 (69%)				Unknown – 8 (25%)
	CVS	Genetic/ chromosomal	Infection	Others	
Total – 2 • Rhesus incompatibility – 1 • Anti-C and anti-D antibodies – 1	Total – 14 • Arrhythmias – supra ventricular tachycardia – 4 • Ebsteins anomaly – 4 • Congenital heart block – 1 • Complex structural anomalies – 5	Total – 4 • Down syndrome – 3 • FOXC2 mutation/ lymphoedema distichiasis – 1	Total – 2 • Parvovirus – 2	Total – 2 • Congenital cystadenomatoid malformation – 1 • Chylothorax – 1	Total – 8

## RESULTS

In the 9-year period, 32 babies were identified with hydrops fetalis of whom 27 (84%) were inborn and 5 (16%) were referred for tertiary care to our centre. Hydrops was detected in 28 (88%) babies in the antenatal period, of whom 9 (32%) had an early diagnosis during the first anomaly scan at 20 weeks of gestation and 19 (68%) at later gestation. Only 4 (12%) babies were diagnosed during the postnatal period. One baby had complete resolution of hydrops in the antenatal period; 8 of the 32 (25%) babies required antenatal interventions which included intra-uterine transfusions, chest drains and laser ablation. Aetiology is presented in **Tab. 1**. In the post-natal period, 46% of babies had severe pulmonary hypertension of the newborn, requiring inhaled nitric oxide and 1 baby required Extra Corporeal Life Support. Half of all the babies required inotropic support and 3 babies had prostaglandin-dependent cardiac anomalies. 15 (47%) babies survived to hospital discharge and 17 babies (53%) died. Of the 17 babies that died, 7 babies had cardiovascular anomalies, 6 died of unknown cause, 2 had Trisomy 21, 1 had congenital parvo virus and 1 had Rhesus incompatibility. Of the babies who died, 8 had a gestational age of 28-32 weeks, 8 of 33-36 weeks and 1 was born at term.

## CONCLUSION

Mortality in babies with hydrops fetalis remains high despite advances in antenatal diagnosis and treatment. Prematurity, chromosomal abnormalities and complex cardiac conditions are associated with higher mortality. Antenatal counselling should reflect outcomes if the cause is known.

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## ABS 19

### NEONATAL JAUNDICE DUE TO HEREDITARY SPHEROCYTOSIS: A CASE REPORT

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## INTRODUCTION

Jaundice is the main and most frequent condition during neonatal life requiring medical intervention. On the other hand, one of the commonest causes of hemolytic jaundice, especially in the Caucasian population, is Hereditary Spherocytosis (HS), a disorder with structural abnormalities of the Red Blood Cell (RBC) membrane, leading to lower deformability and higher osmotic fragility of the spherical shaped RBCs and mostly inherited in an autosomal dominant manner. This condition can even be symptomatic from the first days of life, thus posing a diagnostic puzzle for pediatricians and neonatologists.

## MATERIALS AND METHODS

We present a case of HS that presented from the first day of life in the form of hemolytic jaundice with a negative direct antiglobulin test (DAT) and positive HS markers on the peripheral blood smear.

## CASE REPORT (RESULTS)

A full-term male neonate born after an uneventful pregnancy to a mother with HS, presented with jaundice on the first day of life, with a total capillary bilirubin at 16.8 mg/dl. Investigation revealed signs of hemolysis with negative DAT, no blood group or Rhesus incompatibility, and an increased reticulocyte count (6.7%). The peripheral blood smear showed signs of anisochromasia and polychromasia and confirmed the presence of spherocytes. The neonate received phototherapy for a total of 36 hours due to persistent jaundice. The

diagnosis was confirmed by calculating the ratio MCHC/MCV which was 0.38 ( $> 0.36$  indicating HS). On the 9<sup>th</sup> day of life it was mildly anemic, but jaundice levels had reached a plateau. Thus, it was discharged from the unit with an appropriate hematologic follow-up schedule, according to which the infant never received blood transfusion until the first year of life.

#### CONCLUSIONS

HS affects 1:1,000-1:2,000 live births and can be described as a heterogeneous disorder where deformation and decreased surface area of RBCs leads to shorter lifespan and pathological sequestration of the erythroid line cells, even from the first day of life. Patient history is highly suggestive since 65% of all neonates diagnosed with HS have one parent with HS. In the process of differential diagnosis, peripheral blood smears are indispensable but in 1/3 of the cases spherocytes cannot be detected, which makes our case even more interesting. HS ratio (MCHC/MCV) indicates with high sensitivity and specificity the presence of the condition, while there are also definitive diagnostic tests such as osmotic fragility testing or EMA binding. Finally, a close follow-up of all these cases is mandatory since these neonates may be transfusion-dependent, especially until the first year of age.

#### ABS 20

##### NEONATAL TACHYARRHYTHMIAS IN A NEONATAL INTENSIVE CARE UNIT OF A TERTIARY HOSPITAL

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#### INTRODUCTION

The incidence of neonatal arrhythmias (NA) is 1%-5%. In the majority of cases it is benign, thus likely to disappear during the first months of life. Some cases are potentially serious. The aim of the study was to evaluate the incidence and outcome of neonates with arrhythmia, hospitalized in a NICU of a tertiary hospital.

#### METHODS

A retrospective cohort study was conducted among 10 neonates with tachyarrhythmias admitted to

a NICU, during the years 2013-2017, 5 males/5 females, mean birth weight  $3.2 \pm 0.5$  kg, mean gestational age  $36 \pm 3.5$  weeks, caesarean delivery 10/10 (4 neonates due to antenatal diagnosis, 3 due to previous cesarean delivery and 1 due to twin pregnancy). One mother was in treatment with T4 due to thyroid dysfunction.

#### RESULTS

The diagnosis was made by a surface ECG. One neonate had Ebstein disease, while the others (9/10) showed normal intra-cardiac structure on echocardiography. Four neonates had postnatal supraventricular tachycardia (HR  $> 240$  bpm) whereas 2 had more than one episode. Three were cardioverted initially with adenosine, but due to resistance or recurrence two received supplementary treatment with amiodarone. One neonate had an electrocardiographic pattern consistent with Wolff-Parkinson-White conduction. All were discharged on oral antiarrhythmic medications (2 on propranolol and 2 on a combination flecainide and propranolol). Two neonates presented with atrial flutter and variable AV block. Both received amiodarone and propranolol and due to resistance underwent electrical cardioversion (0.5-1 joule/kg) in order to restore a normal sinus rhythm. Both were discharged on oral propranolol. Four neonates presented with premature atrial contractions (PACs), PACs with aberrant conduction, 2 sequential PACs, atrial bigeminy and premature ventricular contractions. Only two of them were discharged on oral anti-arrhythmic medications, one with flecainide and the neonate with the Ebstein anomaly with propranolol. All had excellent outcome with normal Holter rhythm on follow up.

#### CONCLUSIONS

Arrhythmias in neonates should be recognized and treated promptly as most of them are benign with excellent outcome.

#### ABS 21

##### PLATELET FUNCTION ASSESSMENT VIA PFA-100 IN NEONATES WITH INTRAUTERINE GROWTH RESTRICTION (IUGR)

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## INTRODUCTION

Intrauterine growth restriction (IUGR) is characterized by the inability of the newborn to achieve its endogenous growth potential and is associated with generalized platelet impaired activity in the first days of life to a degree reversely dependent on gestational age. The PFA-100 method is based on platelet adhesion and aggregation by simulating primary hemostasis using two cartridges: collagen-epinephrine (COL/EPI) and collagen-ADP (COL/ADP). The time required to stop blood flow is defined as Closure Time – CT. Our study aims at examining platelet function in IUGR neonates via PFA-100 and at correlating the results with several perinatal parameters.

## MATERIALS AND METHODS

The study comprised 83 umbilical cord (UC) blood samples – 43 with IUGR and 40 healthy controls. In addition to two CTs, other parameters (hematocrit, platelets and mean platelet volume) were also measured.

## RESULTS

No statistically significant differences were observed in COL/EPI-CT and COL/ADP-CT between the 2 groups. COL/ADP-CT was significantly elevated in female infants compared to males ( $b = 0.53$ , 95% CI 0.010-0.097,  $p = 0.018$ ) and was decreased in neonates born with vaginal delivery compared with those born via caesarean section ( $b = -0.58$ , 95% CI -0.106-[-0.011],  $p = 0.016$ ).

## CONCLUSIONS

The lack of difference in CTs between the two sub-groups possibly indicates counteractive mechanisms in platelet-disturbed reactivity, such as increased hematocrit, vWF polymers and increased MPV. Prolongation of COL/ADP-CT in female neonates may be attributed to the potential inhibitory effect of estradiol on platelet aggregation. The shorter CTs in neonates with vaginal delivery probably indicate cytokine induction of platelet activation, which is known to be enhanced in vaginal delivery.

## ABS 22

### DURAL SINUS MALFORMATION IN A NEONATE-LONG TERM FOLLOW UP

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## INTRODUCTION

Dural Sinus Malformation (DSM) is a rare congenital intracranial dural arteriovenous malformation with a high incidence of mortality and neurological disorders in children who survive. Early diagnosis and referral with early, staged endovascular embolization is crucial.

## CASE REPORT

A female baby was born after an IVF pregnancy. Obstetric ultrasound revealed a cystic lesion at 34 weeks' gestation. A subsequent fetal MRI identified a giant dural sinus lake of the posterior part of the superior sagittal sinus involving the torcular herophili. The final diagnosis was DSM. An elective caesarean section due to the lesion was performed at 36 weeks gestation. On physical examination evident macrocephaly, large posterior fontanel and diastasis of the sagittal suture were noted, with no cranial murmur. Neurological examination was normal. Ultrasound on the 1<sup>st</sup> day of life demonstrated a cystic-like mass corresponding to aneurysmal dilatation of the posterior part of the superior sagittal sinus involving the torcula, while the color doppler ultrasound demonstrated venous flow inside the lesion. MRI on the 2<sup>nd</sup> day of life showed a superior sagittal sinus DSM involving the posterior third of the superior sagittal sinus and torcular herophili. The heterogeneous appearance with areas of high and low signal intensity indicated spontaneous thrombosis. The MR venography showed a huge dilatation of the superior sagittal sinus corresponding to the dural malformation. There was less flow inside the DSM, suggesting thrombosis. On the MR arteriography a giant dural sinus lake with multiple mural arteriovenous shunts and partial thrombosis was identified. On the 3<sup>rd</sup> day of life the neonate presented clinical signs of cardiac failure. She was treated and stabilized with diuretics and inotropic agents. MRI at the 61<sup>st</sup> day of life showed a marked reduction of the size of the malformation due to spontaneous thrombosis. The baby was transferred to a specialized center abroad at the age of 3 months in order to undergo angiography combined with embolization of the remaining arteriovenous fistulae. The arteriography showed spontaneous regression. At the 6, 12 and 24 months' follow-ups the baby had normal neurological examination and developmental assessment. MRI at 24 months showed further regression. On neurological examination and developmental assessment at the age of 5 years the child performed above her age. MRI at the 12<sup>th</sup> year of age showed near-complete resolution of the



DSM and normal brain parenchyma. On the long-term follow-up at the age of 13 years the patient was found to have excellent school records.

#### CONCLUSIONS

We present a unique case of midline DSM with involvement of the torcular Herophili and multiple arteriovenous fistulae with spontaneous regression by thrombosis and a 13-year follow-up with excellent neurodevelopmental outcome.

#### ABS 23

### INCIDENCE OF URINARY INFECTIONS IN NEWBORNS WITH CONGENITAL HYDRONEPHROSIS

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#### INTRODUCTION

Congenital hydronephrosis is a special clinical entity in neonatal pathology – representing dilation of the basin and kidney calices, with possible consequences for urinary tract infections and renal dysfunction.

#### AIM

The purpose of this paper is to evaluate the frequency of urinary tract infections in newborns with congenital hydronephrosis.

#### MATERIAL AND METHODS

A retrospective study covering a period of 2 years (01.01.2016-31.12.2017) was performed, analyzing the observation sheets of the Neonatology – Prematurity Clinic of the Emergency Hospital for Children "Louis Turcanu" Timisoara, on a group of 12 patients admitted with the diagnosis of congenital hydronephrosis.

#### RESULTS

Urinary infections were present in 58.33% (7 cases) of newborns with congenital hydronephrosis. Of those affected, 5 cases, i.e. 71.42%, had repeated hospitalizations for recurrent urinary infections. The gender distribution of the total number of newborns diagnosed with different types of hydronephrosis has shown a slight predominance of the male gender: 85.71% boys vs. 14.28% girls. At the imaging investigations (abdominal ultrasound, cystography), the posterior urethral valve was

involved in 57.14% (4 cases), while 42.8% (3 cases) had junctional stenosis.

42.8% (3 cases) of newborns had hydronephrosis and urinary infection associated with vesico-ureteral reflux and 57.14% (4 cases) required surgery. Infants with congenital single kidney accounted for 14.28% (1 case) and 14.28% (1 case) was associated with congenital heart malformation. The remainder of the cases required corrective surgery to avoid severe complications (acute renal failure, recurrent urinary tract infections) that would have required prolonged hospitalization with increased demand for human and material resources.

#### CONCLUSIONS

Early identification of congenital hydronephrosis from the antenatal period provides significant benefit for planning the subsequent treatment course and preventing possible complications, particularly urinary infections.

#### ABS 24

### MOTOR DEVELOPMENT OF EARLY TERM INFANTS ASSESSED BY THE ALBERTA INFANT MOTOR SCALE

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#### INTRODUCTION

The motor performance of preterm neonates has been an interesting field of research in recent years. However, motor development of early term infants (37-38 weeks of gestation) is less well studied. The aim of this study was to compare early term infants with mature full-term ones in terms of motor development using the Alberta Infant Motor Scale (AIMS), a norm-referenced measure to assess the gross motor abilities of infants from birth to independent walking.

#### METHODS

AIMS scores were evaluated monthly from 1 up to 19 months of age in a cross-sectional cohort of 1,061 healthy full-term infants (547 early term and 514 mature full term). Total AIMS scores were compared per month and also per trimester of chronological age between groups. Linear regression analysis was performed to account for the impact of gestational

age on the total AIMS score, after correction for chronological age and sex.

## RESULTS

By comparison per month, significantly lower AIMS scores were detected in early term infants as compared to mature full-term ones at the 6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup> and 12<sup>th</sup> month of age ( $p = 0.01$ ,  $p = 0.006$ ,  $p = 0.012$  and  $p = 0.02$ , respectively). By comparison per trimester, mean AIMS scores were significantly lower in early term vs. mature full-term infants at the first ( $p = 0.011$ ), second ( $p = 0.05$ ) and third trimester ( $p = 0.002$ ) of life, but there were no differences between groups thereafter. According to the results of linear regression analysis in the total study population, being born even one week earlier leads to a small but statistically significant reduction in total AIMS score during the first year of life ( $p < 0.001$ ).

## CONCLUSIONS

The motor development of early term infants is impaired as compared to that of mature full-term ones during the first year of life, but there are no differences between groups thereafter. Shorter gestational age has a negative influence on motor development even in the population of full term infants and it should be taken into account in the clinical assessment by AIMS.

## ABS 25

### NEURODEVELOPMENT EVALUATION AT FIRST YEAR OF LIFE OF PRETERM NEONATES WITH CONGENITAL HEART DISEASE – PRELIMINARY STUDY

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## INTRODUCTION

Developmental and neurological outcomes of preterm neonates (PNs) with congenital heart disease (CHD) are a challenge for the clinician. The aim of the study was to assess psychomotor development and neurological sequelae before and after surgery for congenital heart defects.

## METHODS

We retrospectively studied 61 neonates (20 preterm < 35 weeks) with various types of CHD, hospitalized

in a neonatal intensive care unit (ICU) of a tertiary hospital between September 2015 and December 2017. All had neurological and neurodevelopmental evaluations at the first month and at 1 year of life.

## RESULTS

Out of 600 neonates, the study included 61 neonates with congenital heart defects. 20 (33%) were preterm. Eight PNs died (13%). Out of 12 living PNs (9 males/3 females, mean birth weight  $1.2 \pm 0.46$  kg), 7 underwent surgery for significant patent ductus arteriosus, 2 for tetralogy of Fallot (one complete correction and one B-T shunt) and 1 for coarctation of the aorta. One PN with Fallot and one with ventricular septal defect underwent drug treatment. All PNs had neurodevelopment follow-up evaluation in our follow-up clinic. Two infants were lost to follow-up. Neurological assessment included movement pattern, muscle tone, posturing, deep tendon reflexes, hearing and vision evaluation and activity level. Findings were classified as normal or abnormal, and abnormalities were scored as mild, moderate, or severe. Three had hypotonia, 1 strabismus, and 2 children with cyanotic CHD were less able to interact with their environment perhaps due to maternal over-protectiveness. More investigation is needed in order to find modifiable risk factors to optimize long-term neurodevelopmental outcome.

## CONCLUSIONS

It is necessary to assess neurodevelopmental deficits in infants with cardiac malformations, especially those who have undergone cardiac surgery.

## ABS 26

### NON-COMPACTION CARDIOMYOPATHY IN A NEONATE

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## INTRODUCTION

Non-compaction cardiomyopathy (NCCAM) is a rare disease resulting from arrested myocardial development during embryogenesis. We report a case of early diagnosis of NCCAM in an infant with no symptoms.

## CASE REPORT

A 3-day old infant, of 3 kg birth weight, was referred for evaluation of a heart murmur and extrasystolic arrhythmia. Obstetric and perinatal history was uneventful, as was the family history.

Clinical examination was normal. There were no cyanosis, breathing difficulty or feeding problems. The heart sounds were normal and there was a mild systolic murmur better heard at the cardiac apex. ECG showed QRS axis 90°, biventricular hypertrophy with QTc 491 msec. There were elevated glutamine and alanine levels, CMV IgG title > 250 IU/ml, IgM 0.09 IU/ml and lactic acid 28.2 mmol/L. The echocardiogram revealed a dilated left ventricle above the papillary muscles with poor function. The endocardium of this region was irregular with multiple trabeculations and recesses with straddles crossing the ventricle and a ratio of non-compacted layer (NC)/compacted layer (C) > 2. Color Doppler showed communication between the myocardial recesses and LV cavity. There was mild mitral insufficiency. The rest of the study was normal. Cardiac MRI confirmed clinical suspicion with an NC/C > 2.3 measured at end-diastole and a trabeculated LV mass greater than 20% of the global LV mass. Holter ECG multiple monomorphic PVCs followed by compensatory pause were recorded. Captopril 0.2 mg/kg x 3 and carvedilol 0.05 mg/kg were initiated. Three months later, the child was symptom-free with regular rhythm.

#### CONCLUSION

NCCAM can be overlooked in infancy. Echocardiography and cardiac MRI offer early diagnosis and treatment with possibly better clinical course.

#### ABS 27

### PRETERM INFANT FROM COMPLICATED MONOCHORIONIC TWIN PREGNANCY WITH ACUTE KIDNEY INJURY DUE TO ANTENATAL AND POSTNATAL FACTORS

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#### INTRODUCTION

Multiple pregnancies, especially monochorionic ones, are risk factors for higher rates of intrauterine and perinatal morbidities and mortality. Co-twin death particularly after 28 weeks of gestation (GW) is a major risk factor for the surviving twin's brain and for renal damage in the surviving twin. We report on a combination of prenatal and postnatal causes of severe renal damage in a preterm baby after his co-twin's death.

#### CASE REPORT

Male infant, born at 30 GW by caesarean section (CS) from a monochorionic, diamniotic twin pregnancy. On serial fetal ultrasounds (USG) it was found that the other twin had complications due to marginal cord insertion, at 29/30 weeks on fetal USG the second twin's death was confirmed. Due to progression of the surviving twin's fetal distress, CS was performed. The baby was born with a birth weight of 1,330 grams and Apgar score 7/8; he needed respiratory support as well as prophylactic antibiotics (ampicillin and gentamicin) and parenteral nutrition. The first blood tests revealed anaemia and hyponatremia and the baby received red cell transfusion and subsequently became oliguric. His first renal markers were taken on the 2<sup>nd</sup> day of life (DOL) – Creatinine (SCr) was 179 mkmol/L (2 mg/dL), eGFR per Schwartz 5.7 ml/min/1.73 m<sup>2</sup> and UREA was 9.2 mkmol/L, correction of hyponatremia was started on 3<sup>rd</sup> DOL. Due to serious electrolyte imbalance (Na 111 mmol/L) and acute kidney failure (SCr 287 mkmol/L [3.2 mg/L]), the baby was transferred to a third-level NICU on day 4. Receiving restricted amounts of fluid intake, Na correction, furosemide continuous infusion, low dose dopamine infusion, on the 14<sup>th</sup> DOL, the baby regained his birth weight, had normal Na and urea level in blood, and had optimal urine output, without diuretic therapy. In laboratory tests SCr level continuously increased to a maximum of 583 mkmol/L (6.5 mg/dL), 15<sup>th</sup> DOL, eGFR 1.85 ml/min/1.73 m<sup>2</sup>. Renal replacement therapy was considered, but after evaluating all risk factors and laboratory findings we decided to postpone it. Renal USG showed bilateral renal structure, increased echodensity and subcapsular hematoma in the right kidney. Percutaneous puncture of the renal hematoma was performed. At 37 GW ultrasonography showed hypoplastic kidneys with cystic lesion on right kidney after hematoma. Brain MRI at 43 GW showed minor periventricular leukomalacia changes in white matter, myelination was considered normal for gestational age. The baby received chronic renal failure symptomatic treatment, was discharged to home at 38 GW, SCr level was above the normal range, eGFR 6-15 ml/min/1.73 m<sup>2</sup>.

#### CONCLUSION

Considering all factors we have to admit that post-natal renal injury due to treatment errors influenced renal function and possible brain damage for this patient, in this case the factors were gentamicin nephrotoxicity and severe hyponatremia and fluid

overload. This case describes rare complications of complicated twin pregnancy and complications for the surviving twin.

## ABS 28

### UMBILICAL CORD-DERIVED STEM CELLS FOR THE PREVENTION AND TREATMENT OF BRAIN INJURY AS A CONSEQUENCE OF PRETERM BIRTH: SYSTEMATIC LITERATURE REVIEW

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#### BACKGROUND

The incidence of brain injury in premature infants remains a significant cause of long-term neurodevelopmental impairment such as cerebral palsy (CP) and cognitive deficits. There are several studies supporting the efficacy of stem cells in children and adult patients with cerebral palsy. However, the role and type of stem cell therapy in preterm infants with brain injury remains controversial. Umbilical cord blood (UCB) is a great source of both mesenchymal stem cells (MSCs) and endothelial progenitor cells (EPCs) that have the potential to prevent preterm brain injury. MSCs act as an immunomodulator preventing neuroinflammatory cascades triggered by preterm birth. EPCs control angiogenic and vascular reparation. Thus, umbilical cord blood-derived stem cell (UCB DSC) therapy (source of both MSCs and EPCs) has a great potential for the prevention and treatment of preterm brain injury. The purpose of this literature review is to determine whether UCB and DSC are safe and effective in preventing and/or treating brain injury in preterm infants.

#### METHODS

##### *Search strategies*

We searched medical electronic databases such as Google Scholar, Ovid Medline, PubMed, CINAHL, EMBASE, the Cochrane Library, Science Citation Index and Evidence-Based Emergency Medicine. We expanded our search to include all relevant literature from 1988 until January 2018. We chose 1988 as the start of our search as this was when the first UCB cell transplantation was performed. We also searched relevant conference proceedings and journals (for years 2012-2017), contacted experts in the field via Research Gate, and reviewed reference lists of included articles. Search terms included:

premature birth, preterm brain injury, umbilical cord blood, stem cells, mesenchymal stem cells, endothelial progenitor cells, neurodevelopmental deficits, cerebral palsy, cognitive deficits, prevention and treatment.

#### RESULTS

212 records were identified through database searching; 45 full-text articles were assessed for eligibility. Inclusion criteria: all RCTs, cohort and case-control studies relevant to the subject of UCB DSC (both MSCs and EPCs) for the prevention and/or treatment of preterm brain injury. Six studies were included in the final review. Studies reviewed were highly heterogeneous in design, approach, mode of stem cell therapy used and outcomes. We found no clinical trials that addressed the use of UCB DSC for the prevention or treatment of preterm brain injury in premature infants. There are at least 4 studies that are currently under way.

#### CONCLUSION

We anticipated that the studies included in this literature review might be heterogeneous and planned to use Q and I<sup>2</sup> statistics to assess heterogeneity between studies and determine if meta-analysis was appropriate. Unfortunately, due to limited literature sources on umbilical cord-derived stem cells for the prevention and treatment of preterm brain injury, we were unable to come to a clear conclusion with respect to our research question.

## ABS 29

### CONGENITAL HYPOPHYSECTOMY MANIFESTED AS REFRACTORY HYPOGLYCAEMIA IN A NEONATE BORN SGA

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#### INTRODUCTION

Hypoglycaemia is common in neonates born small for gestational age (SGA). When combined with micropenis, congenital multiple pituitary hormone deficiency (MPHD) in the context of congenital hypopituitarism should be considered in the

differential diagnosis. MPHD is a rare disorder with a complex genetic basis and poor genotype-phenotype correlation.

#### CASE REPORT

A 2,200 g male was delivered by caesarian section at 37<sup>+3</sup> weeks of gestation due to intrauterine growth restriction and abnormal NST, to a primigravida, primipara mother, after normal conception. Apgar score was 9 at 1 min and 10 at 5 min. During the first 3 days of life the infant suffered from refractory hypoglycaemia and was treated with progressively increased concentrations of intravenously administered glucose. On physical examination, mild hypotonia and micropenis (penile length < 1 cm) with bilaterally palpable testes were noted. His fetal karyotyping by chorionic villus sampling was 46,XY. The endocrinological work-up revealed secondary hypothyroidism (TSH 5.66  $\mu$ IU/mL [0.5-5], FT4 0.784 ng/dL [0.8-1.8]), secondary adrenal insufficiency (ACTH < 1 pg/mL [7-63], cortisol 0.52  $\mu$ g/dL [6.24-18]), hypogonadotropic hypogonadism (LH < 0.1 mUI/mL, FSH 0.123 mUI/mL and total testosterone < 20 ng/dL [75-400]), growth hormone 4.54 ng/dl and IGF-1 < 15 ng/dl (15-189). Prolactin levels were 291.5 ng/ml (5-20 ng/dl) and plasma renin activity and aldosterone were normal. His MRI scan of the hypothalamic-pituitary region depicted hypoplastic anterior pituitary and ectopic posterior pituitary lobe with absence of pituitary stalk. No mutation was identified after sequencing the 1<sup>st</sup> and 3<sup>rd</sup> exon of PROP1 gene. The neonate received hormonal replacement therapy with levothyroxine, hydrocortisone and testosterone enanthate and at his follow-up visit at the age of 4 months he had appropriate development for his age and normal penile length.

#### CONCLUSIONS

Congenital multiple pituitary hormone deficiency diagnosis is challenging for the clinician and could be fatal to the newborn if unsuspected and untreated. Management by a multidisciplinary team is mandatory.

#### ABS 30

#### PREVALENCE OF ATRIAL FLUTTER IN A NEONATAL INTENSIVE CARE UNIT OF A TERTIARY HOSPITAL

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#### INTRODUCTION

Atrial flutter (AFL) is a rare arrhythmia in neonates with an approximate incidence of 1/50,000 live births in Europe. It is reported to have significant morbidity and mortality, but surviving newborns have a good outcome with rare relapses. The aim of the study was to describe clinical manifestations, treatment and long-term outcome of AFL in a Neonatal Intensive Care Unit of a Tertiary hospital.

#### METHODS

We identified all neonates who presented with AFL during the last 10 years. Four cases presented with AFL and variable AV block. Two were females weighing 2.9 and 3 kg and two were males weighing 2.9 and 3.1 kg. None had heart failure, and all showed normal intracardiac structure on echocardiography. The arrhythmia was well tolerated in all neonates despite the very fast ventricular rate.

#### RESULTS

All neonates presented with asymptomatic tachycardia. The diagnosis was made by a surface ECG. Immediately after diagnosis, pharmacological treatment was commenced in all neonates. They received amiodarone 5 mg/kg iv as a loading dose infused over 30 minutes, followed by 5 mg/kg iv infusion for 12 hours, and then a reduced iv dose 5 mg/kg iv infusion for 24 hours as a maintenance dose for 1 week. Due to refractory AFL and rapid ventricular response, oral beta-blocker (propranolol, 2 mg/kg), was added in two cases. All newborns needed electrical cardioversion to restore normal sinus rhythm. Cardioversion (0.5-1 joule/kg) was performed when hemodynamic instability developed or AFL was sustained for more than 48 hours. Rhythm was normalized after successful cardioversion. All neonates received propranolol for one year. No patient had a recurrence of AFL during the follow-up period, which ranged from 12 months to 10 years.

#### CONCLUSIONS

Neonates hospitalized with AFL in our unit during the last 10 years needed electrical cardioversion to restore normal sinus rhythm and had an excellent outcome with no recurrence of AFL and no need for long-term treatment.

**ABS 31****TWO PHENOTYPES... THE SAME DISEASE**

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**INTRODUCTION**

Deletion of the long arm of chromosome 13 (13q deletion syndrome) is a very rare chromosomal aberration which causes mental retardation and multiple congenital malformations. Furthermore, it is associated with an increased risk of retinoblastoma. The syndrome is divided into 3 groups based on the deletion's location relative to chromosomal band 13q32. Groups 1 (proximal to q32) and 2 (including q32) have shown distinctive phenotypes including mental retardation and growth deficiency, whereas group 3 (q33-34 deletion) is defined by the presence of mental retardation but usually the absence of major malformations. Two cases with 13q deletion are reported, both initially followed by prenatal and neonatal biological risk, whose evolution was unfavorable and discrepant from the risk factors; consequently, investigation revealed this chromosomal aberration.

**METHODS***First case*

A boy, the first child, was born at 34-weeks' gestation after a pregnancy complicated by pre-eclampsia and intrauterine growth restriction. The parents were both healthy and were not consanguineous. Birth weight was 1,515 g (p10) and head circumference was 29 cm (p13qter).

*Second case*

A boy, the first of two children, was born at term to healthy unrelated parents. Birth weight was 2,460 g (p5) head circumference was 31.5 cm (p < 5). Apgar scores were 8 at 1 min, 8 at 5 min. There were no relevant events in the neonatal period, but because of the presence of microcephaly and renal pelvis dilatation, the baby was directed to neonatology consultation. Psychomotor development had been delayed since the first months of life and nystagmus was diagnosed at 13 months. The diagnosis of retinoblastoma was made at 15 months, currently in remission. Clinically, the following anomalies were present: large forehead, long face, large ears,

earlobes turned inwards and mongoloid eye slants. When tested at 8 years, his IQ (Griffiths) was 67, with mild to moderate retardation. He had shy/not-disturbing behavior. Karyotype demonstrates an interstitial deletion in chromosome 13, del(13)(q13q14.3).

**CONCLUSIONS**

We present two cases with 13q deletion syndrome with different phenotypical features. Case 1 was a boy with deletion of q33-q34 who had microcephaly, moderate to severe mental retardation and severe behavioral changes. Case 2 was a boy with deletion of q12.3-q14.3 with microcephaly, mild to moderate mental retardation and a personal antecedent of retinoblastoma. Our findings are consistent with previous cases reported. Both were initially followed by biological risk, whose evolution was discrepant from the risk factors, which should alert us to other possible causes of developmental problems in these children. Finally, this must reinforce the importance of karyotyping of all children with a history of retinoblastoma. It is recommended that children with mental retardation, dysmorphic features and personal history of retinoblastoma be candidates for chromosomal investigation.

**ABS 32****STURGE-WEBER-KRABBE SYNDROME – THE IMPORTANCE OF AN EARLY DIAGNOSTIC AND FOLLOW-UP PROTOCOL – A SERIES OF CASE REPORTS**

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**INTRODUCTION**

Rare diseases represent a tremendous burden for modern societies. Early diagnosis and proper long-term management of patients affected by rare diseases would have a positive medical, social and economic impact on both sides: the patient together with his family and society. Sturge-Weber-Krabbe syndrome (SWKS), with an incidence in Europe estimated at around 1/20,000 and 1/50,000, is a rare neurocutaneous disease characterised by the occurrence of severe life-threatening complications.

Even if it is characterised by a great variety of signs and symptoms, the clinical hallmark for early diagnosis of this syndrome is the association of port-wine stains occurring on the face, glaucoma, and ipsilateral leptomeningeal angioma. SWKS can also be associated with neurologic deficits, seizures, migraine, cognitive impairment, growth hormone deficiency or hypothyroidism. Two out of three children with SWKS will develop focal motor or generalised seizures. Thus, early diagnosis of the syndrome together with carefully scheduled EEG screening could predict the onset of seizures and reduce patient risk.

#### MATERIALS AND METHODS

In our clinic we had 4 patients with SWKS, diagnosed at 2 months, 3 months and, two of them, at 4 months. All presented focal epileptic seizures that had appeared before the age of 7 months. We highlight the increased incidence of epileptic seizures in patients diagnosed with this syndrome and the importance of their EEG follow-up from the neonatal period.

#### RESULTS AND CONCLUSION

Through our series of case reports we aim to establish an early diagnostic and follow-up protocol for newborns and infants with SWKS in order to predict and prevent the occurrence of severe life-threatening complications.

#### ABS 33

### CONSIDERATIONS REGARDING THE NEONATAL EVOLUTION OF THE PREMATURE INFANT WITH INTRAUTERINE GROWTH RESTRICTION WITH GESTATIONAL AGE BELOW 32 WEEKS

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#### INTRODUCTION

Intrauterine growth restriction remains a public health problem and is still associated not only with an increased risk of perinatal mortality and morbidity but also with a long-term risk.

#### OBJECTIVE

The study proposes following the time of extraction of a premature pregnancy IUGR with gestational age  $\leq$  32 weeks, taking into account the centralization of blood flow as well as IH (hypoxic index) during observation, following the immediate sequelae

of this new category – as well as their prognosis depending on the associated pathology.

#### MATERIALS AND METHODS

Data was collected from the National Registry of Respiratory Distress in Romania. The period included was between 2015-2017 (01.06.2017), the study was retrospective, the category included preterm infants with IUGR with GA under 32 weeks and preterm infants with GA under 32 weeks born or transferred to the NICU of the Municipal Clinical Hospital – Odobescu Maternity Hospital – Timisoara. The variables were immediate clinical comparisons of preterm babies with IUGR with and without centralization of blood flow, respectively: perinatal asphyxia, persistent pulmonary hypertension, necrotizing enterocolitis, sepsis, pulmonary haemorrhage.

#### RESULTS AND CONCLUSIONS

The clinical and paraclinical management of preterm infants with IUGR remains a challenge compared to preterm infants without IUGR. There was an increase in mortality and NEC rate, pulmonary haemorrhage and sepsis in preterm infants with growth restriction compared to preterm infants with the same gestational age. Growth restriction in premature neonates was not found to protect against other neonatal outcomes associated with prematurity.

#### ABS 34

### DOUBLE SURGICAL PATHOLOGY IN A PRE-TERM INFANT

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#### CASE REPORT

We present the case of a preterm baby born at 29 weeks, delivered by emergency c-section for chorioamnionitis in cranial presentation, weighing 1,300 g, Apgar score 2/4/5, from a risk pregnancy: amniotic membranes broken at 21 weeks of pregnancy, amnio-patch performed at 22 weeks and 3 amnioinfusions at weeks 22, 24 and 26 of pregnancy and genital and urinary infection with *Klebsiella spp.* The newborn was admitted to the clinic for 45 days, initially intubated oro-tracheally

and mechanically ventilated for 9 days, with slow but good respiratory development, subsequently at 10 days of age with an episode of mild ulceronecrotic enterocolitis that responded to conservative treatment. He was discharged at the 45<sup>th</sup> day of life with favorable evolution within the limits of prematurity. At the age of 7 months the infant exhibited 2 bronchiolitis episodes within 1 month. Consequently, chest radiographs were performed and revealed the presence of a left mediastinal tumor mass, a diagnosis confirmed by CT examination, without indication of its origin.

A mediastinal neuroblastoma was suspected. Specific neuronal enolase, alpha-fodoprotein and medullary biopsy were dosed with normal values. Tumor biopsy revealed normal cellular timing tissue.

#### CONCLUSION

Peculiarity of the case: thymic left lobe hypertrophy in a premature infant.

#### ABS 35

### CAUSES OF INFANT MORTALITY IN CROATIA AND THE EUROPEAN UNION IN THE PERIOD 2011-2015

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#### INTRODUCTION

The infant period encompasses the first year of a child's life and mortality in this period is considered to be an important indicator of the health status of a certain population. Over the last 15 years, infant mortality rates in Croatia have decreased, but they still remain above the average rate for the 28 European Union Member States (EU) and the rates in the more developed Member States in particular. Unfortunately, this is the case with some other transition countries as well. The aim of this study was to analyse and compare the causes of infant deaths in Croatia and the EU in the five-year period from 2011 to 2015.

#### METHODS

Data from the European Statistical Office (Eurostat) database were used, pertaining to infant mortality rates in Croatia and other EU Member States, including the average rate for the entire EU. After calculating the rates for each infant subperiod (age < 1 d, age 1-6 days, age 7-27 days and age 28-364 days), a comparison of overall infant mortality rates and infant mortality rates caused by certain categories of causes in the World Health Organization International Classification of Diseases was performed.

#### RESULTS

With the exception of 2012 (3.7‰ in Croatia vs. 3.8‰ in the EU), the overall infant mortality rate in Croatia was above the EU average in the observed period (EU rates: 3.6-3.9‰; rates in Croatia: 3.7-5.1‰). The infant mortality rate related to congenital malformations was slightly higher than the EU average rate (EU rates: 0.9-1.0‰; Croatia rates: 0.9-1.6‰). A more substantial difference was observed with regard to mortality caused by conditions in the perinatal period, these being a far more frequent cause of infant death in Croatia compared to the EU average. In all the aforementioned age groups, infant mortality related to causes associated with maternal conditions and complications of pregnancy and childbirth was much higher than the EU average (EU rate: 0.1‰, rates in Croatia: 0.2-0.6‰). Moreover, this difference is particularly apparent in the first week of postnatal life. In the postneonatal period (28-364 days of age) there were no significant variations in the mortality rate compared to the EU average (EU rates: 0.3-0.4‰, rates in Croatia: 0.2-0.5‰).

#### CONCLUSIONS

The results of the analysis conducted show that the main causes of the higher infant mortality rates in Croatia compared to the EU are related to conditions in the perinatal period, i.e. maternal conditions and complications of pregnancy and childbirth, and that most infant deaths occur in the first week of postnatal life. This may be directly related to the existing maternal and/or infant pathology, but may also indicate a possibly inadequate quality of health care provided to the newborn, which may be a result of birth in a health institution without the necessary level of neonatal treatment. However, the conclusions herein warrant further research.