September 22nd, 2023 15:00 - 17:00

BDI E-Poster (STATION 1)

ID 247. DPAGT-1 RELATED CONGENITAL DISORDER OF GLYCOSYLATION DIAGNOSED BY RAPID TRIO EXOME SEQUENCING IN A PRETERM NEONATE

Doctor Helen McDermott[1], Mr Lewis Pang[2], Dr Derek Lim[3], Dr Prakash Satodia[1,4]
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Background: Congenital disorders of glycosylation (CDG) are rare but are multisystem disorders comprising a wide and heterogenous spectrum of disorders and presentation, with rapidly increasing knowledge of their genetic basis.

Case Report: A female dichorionic-diamniotic twin was born preterm at 32 weeks gestation due to fetal bradycardia. Antenatal scans were reported normal except for polyhydramnios. There was no relevant family history and her twin and older sibling are healthy. The proband was born with arthrogryposis (fig1), gracile bones, dysmorphism including frontal bossing, posteriorly rotated low-set ears, hypertelorism, flat nasal bridge and arachnodactyly. She required invasive respiratory support due to hypercarbia and respiratory failure except for a short period of non-invasive support days 4-6. She developed thrombocytopaenia, coagulation disorder and conjugated jaundice. She had oedema and resistant hypoalbuminaemia with a picture of nephrotic syndrome. Clinical diagnosis, discussed between neonatal and clinical genetics teams, was thought to be ARC (arthrogryposis-renal dysfunction-cholestasis) syndrome. Due to severe respiratory and multiorgan failure her intensive care was reorientated to palliative care on day 16.

Palliative care was based on clinical suspicion of ARC prior to genetic diagnosis, as CDG was not within the differential diagnosis at that time.

Rapid trio exome sequencing identified compound heterozygous DPAGT1 missense variants, consistent with a genetic diagnosis of congenital disorder of glycosylation and confirmatory transferrin testing showed a pattern consistent with CGD type 1. Sequencing showed a maternally inherited NM_001382.3:c578T>Cp.(Leu193Pro), likely pathogenic variant and a paternally inherited NM_001382.3:c324G>Cp.(Met108Ile), likely pathogenic variant in DPAGT1. These affect the N-linked protein glycosylation step essential in many processes, including in neuromuscular functions. No other likely causative variants were identified. Post-mortem examination concurred with clinical findings.

A genetic diagnosis allows the family to be counselled on future pregnancy recurrence risks and access any available prenatal testing.

Conclusion

This case demonstrates the utility of rapid exome/ genome sequencing. There are very few reports of neonates with DPAGT1-CDG. We believe that this may be one of the first reports in a preterm neonate, providing further phenotypic evidence for DPAGT1 mutations. Clinical teams should be aware that such presentations may be due to an underlying CDG defect.

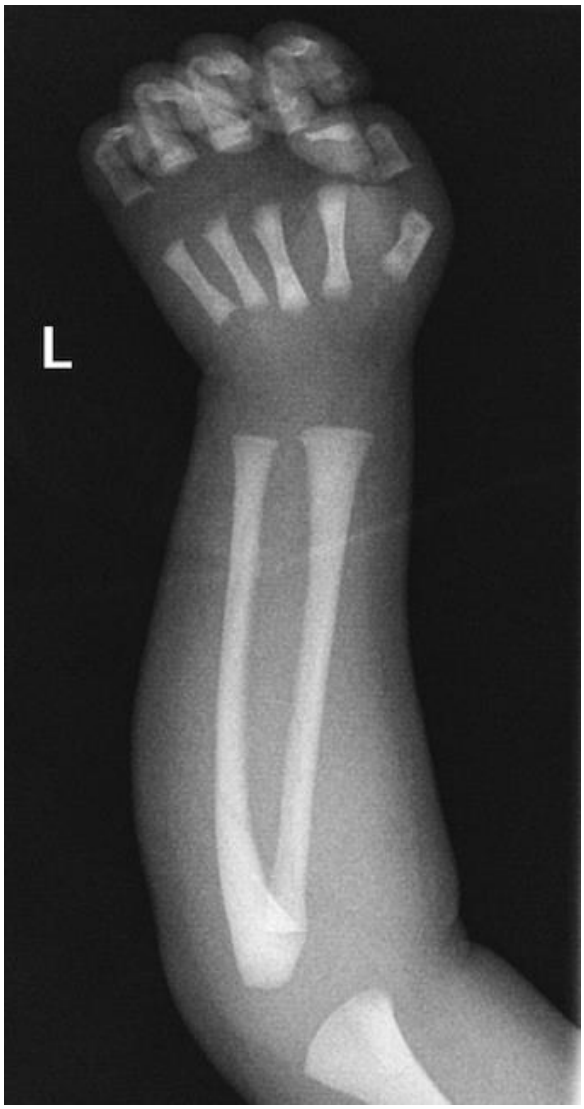


Figure 1 Forearm xray showing fixed flexion deformities at proximal and distal interphalangeal joints and mild ulnar bowing

ID 123. LONG-TERM MOTOR DEVELOPMENT AFTER HYPOTHERMIA-TREATED HYPOXIC-ISCHAEMIC ENCEPHALOPATHY

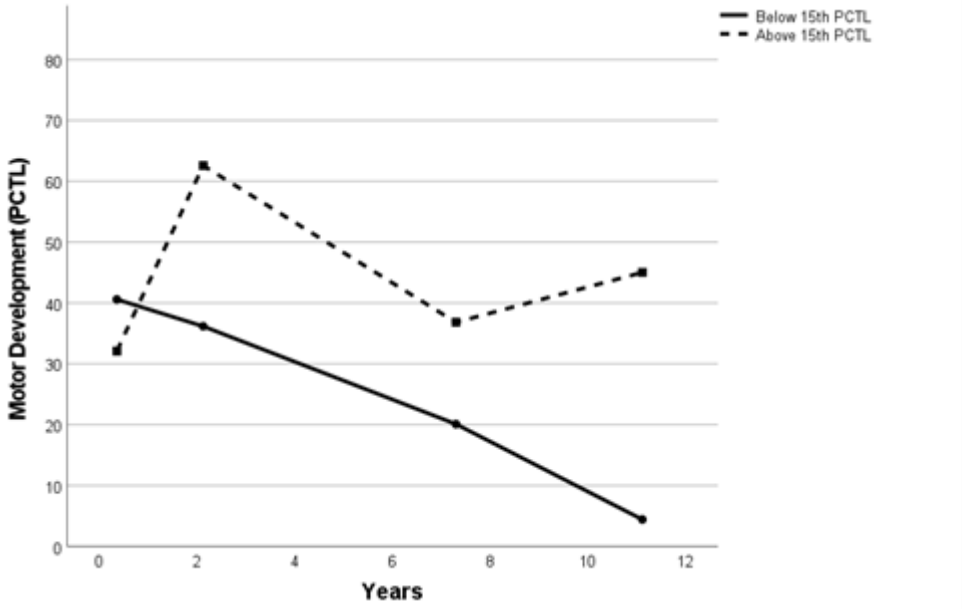
Mrs Mimmi Eriksson Westblad[1,2], Associate Professor Kristina Löwing[2,3], MD, PhD Katarina Robertsson Grossmann[1,4], Professor emeritus Mats Blennow[1,4], MD, PhD Katarina Lindström[1,5]
[1]Division of Paediatrics, Department of Clinical Science, Intervention and Technology, Karolinska Institutet, [2]Medical Unit Occupational Therapy and Physiotherapy, Karolinska University Hospital, [3]Division of Paediatric Neurology, Department of Women´s and Children´s Health, Karolinska Institutet, [4]Department of Neonatology, Karolinska University Hospital, [5]Department of Child Neurology, Karolinska University Hospital

Background: Hypoxic-ischemic encephalopathy (HIE) is one of the most common causes of neonatal death or later development of disabilities. Therapeutic hypothermia (TH) was implemented in Sweden in 2007 as the standard care for children with moderate to severe HIE. TH has been demonstrated to reduce the risk of death and increase the rate of survival without disabilities at 18–22 months of age. Recently some cohort studies have investigated motor outcomes at early school age (6–8 years) in survivors of hypothermia-treated HIE free of cerebral palsy (CP). The knowledge about motor functioning in children with a history of hypothermia-treated HIE approach early adolescence, 10–12 years is still sparse. The aims of this study were to describe longitudinal motor development in children treated with TH due to HIE and to explore motor functioning in early adolescence.

Material and Methods: Children treated with TH due to HIE during the period 2007–2009 were included in a prospective follow-up study. Motor development was assessed on four occasions, (mean ages)) using Alberta Infant Motor Scale at 0.35 years, the Bayley Scales of Infant and Toddler Development-III at 2.1 years, and The Movement Assessment Battery for Children (MABC-2) at 7.3 and 11.1 years. MABC-2 Checklist, a parental questionnaire, was completed at 7.3 and 11.1 years. Longitudinal motor assessments were reported as percentiles. General cognitive ability was assessed using Wechsler Intelligence Scale for Children Fifth Edition (WISC-V) at 11.1 years.

Results: Thirty-one percent (14/45) of the children had a motor percentile ≤ 15th indicating a risk of motor difficulties at 11.1 years. These children showed a significantly lower motor percentile at 2.1 years compared to the participants showing >15th percentile at 11.1 years. The children's longitudinal motor development displayed a weak association with WISC-V (0.38 p=0.013).

Conclusion: Among survivors treated with TH due to HIE free of moderate or severe CP, a third showed test results indicating a risk of motor difficulties at 11.1 years. Children scoring ≤ 15th percentile already had lower results at 2.1 years of age, indicating the possibility of identifying children with motor difficulties already at about two years of age.


Below 15th PCTL
Above 15th PCTL
Motor Development (PCTL)
80
70
60
50
40
30
20
10
0
0
2
4
6
8
10
12
Years

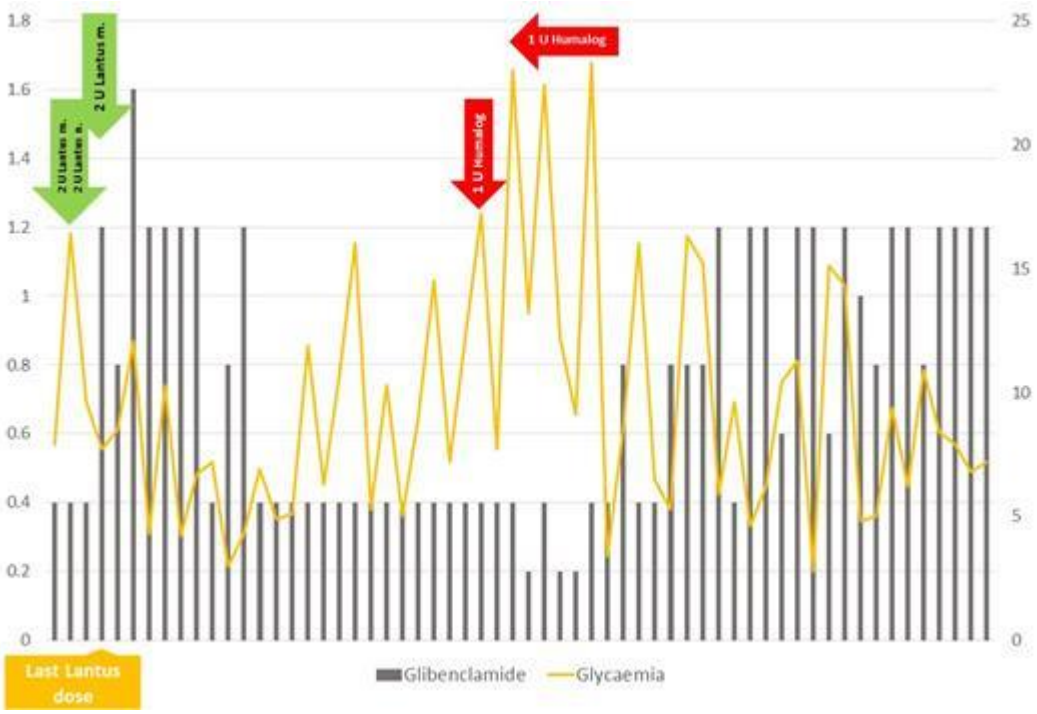
ID 235. NEONATAL DIABETES: CASE REPORT OF A 2-DAY-OLD PRESENTING WITH HYPERGLYCAEMIA DUE TO KCNJ11 GENE MUTATION

Doctor Gabija Gaidamavičienė[1], Doctor Rasa Traberg[1], Doctor Giedrė Mockevičienė[1], Doctor, PhD Ilona Aldakauskienė[1], Doctor Elisa De Franco[2]
[1]Hospital Of Lithuanian University Of Health Sciences Kaunas Clinics, [2]University of Exeter

BACKGROUND
Neonatal diabetes presents with uncontrolled hyperglycaemia in the first 6 months of life. KCNJ11 and ABCC8 gene mutations are the most frequent causes of permanent neonatal diabetes. They affect the ATP-sensitive potassium channels in the β-pancreatic cells and brain synapses, so diabetes may be accompanied by DEND (developmental delay, epilepsy, neonatal diabetes) syndrome. Most of these cases can successfully be treated with sulphonylurea agents, which may improve the neurodevelopment outcomes in patients with DEND syndrome.
We report a case of an infant presenting with hyperglycaemia and later diagnosed with a KCNJ11 mutation.

CASE REPORT
The male newborn was born at 35th week of pregnancy. He had symptoms of respiratory distress several hours after birth. Capillary glucose level rose 36 hrs. after birth (9,8 mmol/l). It decreased spontaneously at first, however, at 96 hours of age glucose remained high (up to 16 mmol/l). A continuous infusion of insulin was started. The patient had no symptoms nor diabetic ketoacidosis, insulin, and C-peptide levels were normal. He was kept on continuous insulin infusion and boluses as needed. The need for insulin remained constant.
Neonatal diabetes was suspected, and genetic testing was proceeded. KCNJ11 gene pathogenic variant c.175G< A p. (Val59Met) was confirmed with Sanger sequencing (The Exeter Genomics Laboratory) on the 44th day of life.
This variant is associated with and high probability of DEND syndrome. The patient was put on glibenclamide at the age of 57 days (delay due to drug supply failure). He was switched to glibenclamide entirely in two days; however, we had difficulties selecting the right dose (Fig. 1). He was discharged at the age of 79 days with a glibenclamide dose of 0,61 mg/kg/d.
Follow-up visits with the neurology and endocrinology teams showed good glycemic control, a slight delay in motor development, and no epilepsy.

CONCLUSION
Despite the rarity of genetic neonatal diabetes, it should be considered in infants with recurrent hyperglycemia. In several genetic variants, including KCNJ11, diabetes can be successfully managed with oral sulphonylurea agents. Rapid genetic testing and initiation of sulphonylurea therapy are extremely important since it also improves neurodevelopmental outcomes of DEND syndrome.



Transition from insulin to glibenclamide and dose selection

ID 147. THE WIDER BENEFITS OF NEWBORN SCREENING FOR DUCHENNE MUSCULAR DYSTROPHY: A SYSTEMATIC REVIEW

Miss Georgina Blades[1], Dr Prakash Satodia[2]
[1]Warwick Medical School, University Of Warwick, [2]University Hospitals Coventry and Warwickshire

Background: Duchenne Muscular Dystrophy (DMD) is a rare genetic disease affecting 1 in every 5,000 live male births annually. The condition results in early loss of ambulation and often fatal cardiorespiratory complications. In their 2022 review, the Newborn Screening Committee (NSC) in the UK recommended against newborn screening (NBS) for DMD, partially due to a lack of consensus surrounding parental attitudes to NBS and its wider benefits to patients and their families, an area in which the evidence has not been systematically reviewed (UK NSC, 2022). This report aims to provide the data previously not available for consideration for the re-analysis scheduled for 2025/26.

Methods: A systematic review was performed using four scientific databases (Web of Science, PsychInfo, MEDLINE and EMBASE). Peer-reviewed studies published before October 2022 investigating parental, wider family, and caregiver attitudes toward DMD NBS and its wider benefits were included.

Results: 15 relevant studies were identified for inclusion in the review after following a standard PRISMA process.
Predominantly, study participants were in favour of DMD NBS, with the majority in each study expressing their support. Although not all papers explored the reasons behind respondents' attitudes, in those that did, several key themes were identified.
Themes:
1. Reproductive choice and family planning – enabling informed decisions about further pregnancies and access to genetic counselling (recognised as a benefit in 80% of the studies).
2. Emotional preparation - early diagnosis would allow parents to access counselling and support groups and may benefit the psychological well-being of affected boys.
3. Avoiding diagnostic delay - mean time between first symptoms and diagnosis was 1.9 years, leaving many parents dissatisfied.
4. Practical advantages – parents valued the additional time for financial preparation and to find appropriate housing and schooling.

Fewer studies recognised the advantages of potential for inclusion in clinical trials and contributions to future research.

Conclusion: The review has identified the themes that the broader benefits of diagnosis in the neonatal period may be considered equally as important as the increasingly acknowledged medical benefits when deciding whether to include DMD in the standard UK NBS panel.

ID 521. Case report: suspected Lowe syndrome in a neonate

Mrs Laima Tamuliene[1], Mrs Brigita Valasinaite[1,2], Dr Ieva Jura Paulaviciene[1,2], Mrs Jolita Biliuviene[1]
[1]Vilnius University Hospital Santaros Klinikos, Children's Hospital, Vilnius, Lithuania, [2]Clinic of Children Diseases, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University

Background: Lowe (or oculocerebrorenal) syndrome is a very rare X-linked genetic syndrome, characterized by triade of congenital cataract (rarely glaucoma), neurologic symptoms (most commonly neurodevelopmental delay or intellectual disability) and renal tubular dysfunction. The estimated prevalence in the general population is 1 in 500,000, affecting mostly males. The average life expectancy is about 40 years.

Case report: A 13-day-old male newborn presented to Vilnius University hospital Santaros klinikos with insufficient weight gain and lazy breastfeeding. He was born at 41 weeks of gestational age by Caesarian section, weighing 3660 g. After birth red reflex of the retina was absent in both eyes. The family, prior to this pregnancy, had 5 miscarriages and 1 ectopic pregnancy, current pregnancy was uneventful. Also, there was no relevant history of genetic disorders in the family.

The patient presented to the hospital with a 17 percent loss of body mass since birth. Clinically newborn was hypotonic with weak tendon reflexes. When adequate feeding by a formula was ensured, the newborn remained hypotonic and sluggish. Therefore additional testing was done: urinalysis detected low molecular-weight proteinuria and hematuria, excessive calcium and potassium excretion with urine. Neurosonoscopy showed hypoplastic corpus callosum and hypoplastic vermis of the cerebellum, findings were later confirmed by brain magnetic resonance imaging. Ophthalmologist confirmed bilateral congenital cataracts and surgical treatment was recommended. After excluding TORCH infections, congenital syndrome seemed like the most probable diagnosis. The patient was consulted by a pediatric nephrologist and geneticist, Lowe syndrome was suspected, and genetic testing is being currently performed.

Conclusion: Although the patient was admitted with common neonatal symptoms, further testing has led to suspicion of Lowe syndrome. Only genetic testing can confirm the final diagnosis.

ID 168. Risk Factors of Cerebral Lesions in Preterm Neonates

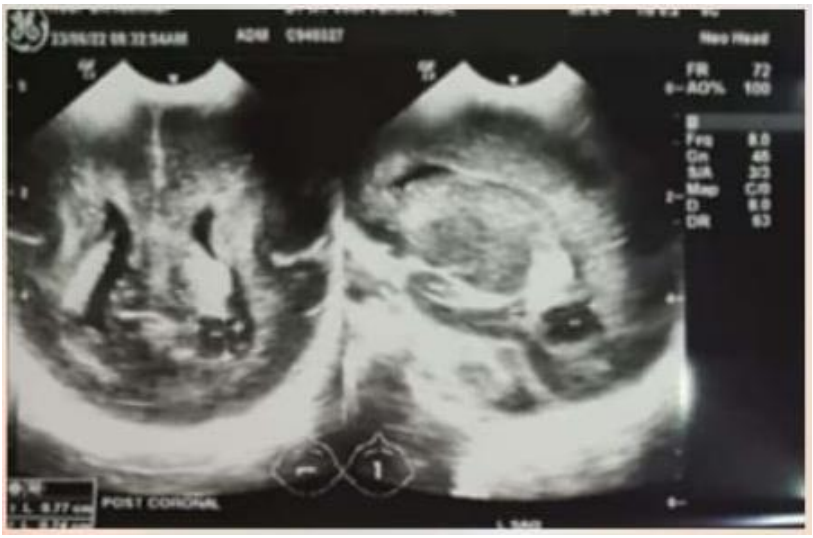
Doctor Gatot Irawan Sarosa[1], Doctor Dimas Tri Anantyo, Gatot Irawan Sarosa, Laras Puspa Nirmala Dimas Tri Anantyo, Gatot Irawan Sarosa, Laras Puspa Nirmala[1]
[1]Kariadi Central General Hospital Semarang

Background: Infant mortality rate in Indonesia is 15/1000 live births in 2019. One of the causes of mortality is prematurity. Premature neonates are vulnerable to both haemorrhagic and ischemic brain injuries. Cranial ultrasonography is useful for early diagnosis of many etiologies of encephalopathy in neonates. We aim to study the risk factors of the cerebral lesions in preterm neonates.

Methods: This was a case control study. We reviewed medical records of preterm neonates admitted to Perinatology Ward and NICU in Kariadi Hospital between January 2019-August 2022. We used chi square, fisher exact test and logistic regression for statistical analysis.

Results: Ninety eight preterm neonates were analysed, 49 were cases and 49 were control. Intraventricular haemorrhage was the most common one (15.3%). Premature rupture of membranes increased the risk for developing cerebral lesions (OR 4.53 (CI 95%; 1.6-12,7). Neonatal infection increased the risk for developing cerebral lesions (OR 13.89 (CI 95%; 1.7-112). The result of multivariate analysis neonatal infection was the most influential risk factor (OR 10.18 (C1 95%; 1.213-85.56).

Conclusion: Premature rupture of membranes and neonatal infection are the significant risk factors for cerebral lesions development in preterm neonates. There were no fetal risk factors in this study. Intraventricular haemorrhage was the most common cerebral lesions in our study.



Intracerebral hemorrhage

ID 192. The Incidence and Management of Germinal Matrix and Intra-ventricular Haemorrhage in Premature Neonates

Mr Yograj Deorukhkar[1], Dr Judit Kiss[1], Dr Anna Gajda[1], Doctor Judit Mari[1]
[1]University Of Szeged

Background: Germinal matrix haemorrhage and intraventricular haemorrhage (GMH-IVH), significantly contribute to morbidity and mortality in preterm infants born < 32nd gestational weeks (GW). This retrospective study aimed to investigate the incidence and management of GMH-IVH in our tertiary care neonatal unit.

Methods: The study included all neonates < 32nd GW admitted to the Neonatal Intensive Care Unit, University of Szeged, between 1st January 2019, and 31st December 2021. Clinical data - gestational age, birth weight, timing of the first cranial US, presence, and severity of GMH-IVH (Grade I-IV), progression, and required medical and surgical treatment - were collected from the electronic patient monitoring system.

Results: Among 190 neonates, 55.6% of extremely preterm infants (<28th GW) developed GMH-IVH, a four-fold higher incidence compared to 12.5% in the very preterm group (28th-32nd GW). The first cranial US was performed on average 3.06 days, in 24.7% of cases GMH-IVH was already present at the time of the initial scan. Progression of GMH-IVH after the first US was observed in 13 (6.8%) cases, and two infants developed new haemorrhage. The overall incidence of GMH-IVH in our study population was 25.8%. Out of 12 babies (6,3%) who developed post-haemorrhagic ventricular dilatation (PHVD), five cases (2.6%) required surgical intervention, with temporary measures followed by ventriculoperitoneal (VP) shunt insertion. Further analysis revealed that infants with PHVD had lower gestational age, birth weight, and female predominance. Neonates needing VP shunt insertion had additional risk factors that might have contributed to development of GMH-IVH and PHVD.

Conclusion: Extremely preterm babies face a significantly higher risk of developing GMH-IVH compared to very preterm babies. The incidence and management approach of GMH-IVH in our unit align with international data. Conservative approach of PVHD, with either expectant management or serial lumbar punctures, was successful in more than half of the cases in the studied population.
Close US monitoring with multiple measurement of ventricular size - anterior horn width, ventricular height and thalamo-occipital distance - is advised to monitor ventricular dilatation, as early intervention play a crucial role in preventing progression and improving outcomes for infants with GMH-IVH.

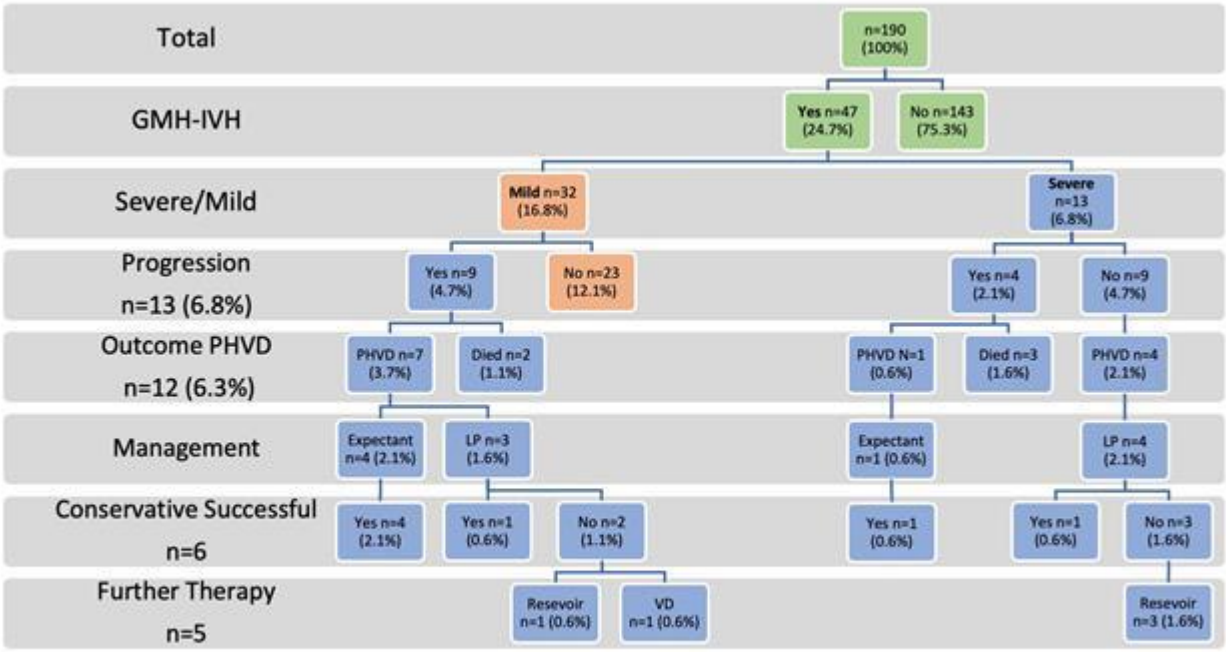


Table 1: Management of GMH-IVH
PHVD Post-haemorrhagic ventricular dilatation, LP lumbar puncture, VD ventricular drain

Table 1: Management of GMH-IVH
PHVD Post-haemorrhagic ventricular dilatation, LP lumbar puncture, VD ventricular drain

ID 157. Choroid Plexus Papilloma

Doctor Tatyana Itova[1]
[1]University Hospital Medica Ruse

Background: Choroid plexus neoplasms are rare intraventricular tumors. They are found in approximately 2% of pediatric brain tumors. They are relatively more common in newborns (5%-20% of perinatal brain tumors). Benign papillomas in newborns are approximately 80% of neoplasms, and carcinomas - 20%

Case report: This is a case report of a 23-year-old pregnant woman whose fetus was found to have a large hyperechoic structure in the region of the right choroid plexus on routine prenatal ultrasound at the 34th gestational week. The mother had acute leukemia at the age of 15. The prenatal follow-up showed an increase in structure, which at 38 weeks of gestation was 2.8/2.0 cm. In the differential diagnosis, hemorrhage and neoplasm in the area of the choroid plexus was discussed. Elective cesarean section was performed during gestational week 38.
Delivering a female newborn with weight 3410g; length 50cm and head circumference 35cm, Apgar score 6/7. Postnatal ultrasound showed a hyperechoic formation with an inhomogeneous structure occupying 3/4 of the right lateral ventricle and without signs of hemorrhage. There are no simptoms of compression of adjacent structures, non-dilated third and fourth ventricles and left lateral ventricle. Follow-up of the structure showed an increase in size during the neonatal period to 4.1/2.7cm with compression of adjacent structures. This necessitated surgical treatment and removal of the entity at the age of one month. Histologically, an atypical papilloma of the choroid plexus of WHO grade II was proven. Follow-up evolution after operative treatment showed involution of the dilated right lateral ventricle to normal dimensions at three months of age. Myoclonic seizures were registered, which responded well to antiepileptic monotherapy

Conclusion: Precise prenatal diagnosis leads to a faster clarification of the problem and helps in the timely treatment of the underlying entity - papilloma of the choroid plexus.

ID 173. The pathogenic variant in CACNA1D gene – a case of a premature twin neonate with refractory hypoglycemia and a healthy sibling

Doctor Maja Zaninović, Prim. mr. sc. Branimir Peter, Doctor Koraljka Manestar Rukavina, Doctor Suzana Fučkor, Doctor Maja Ješić, Doctor Dorotea Drašković, Prof. dr. sc. Iva Bilić Čače
[1]Clinical Hospital Center Rijeka

The CACNA1D gene provides instructions for making one part (the alpha-1 subunit) of a calcium channel called CaV1.3. The voltage-sensitive calcium channels mediate the entry of calcium ions into excitable cells and are also involved in a variety of calcium-dependent processes, including regulating hormone and neurotransmitter release, muscle contraction, and a gene expression. Mutations in the CACNA1D gene have been found to cause the dysregulation of several body functions, of which especially prominent were unexplained early-onset primary aldosteronism, seizures, neurologic abnormalities, sinoatrial node dysfunction and deafness.
We report a case of a premature twin male neonate with severe polyhydramnios, fetal macrosomia, dysmorphic features, congenital hyperinsulinemic hypoglycemia, convulsions and a concentric left ventricular hypertrophy. Following the resuscitation after birth he was intubated, mechanically ventilated and the treatment for hypoglycemia and seizures was initiated. To maintain normal blood glucose values he received glucose infusion with high glucose infusion rate and due to hyperinsulinism the treatment with diazoxide was introduced. Gradually his condition was deteriorating and despite intensive treatment the patient died of a multiple organ failure on the sixth day of life.
Regarding the clinical features, the whole-exome sequencing was performed in our patient, his twin sister and parents. The pathogenic variant in the CACNA1D gene was found in our patient, while it wasn't identified in other family members.
So far, 12 individuals with a confirmed or predicted high-risk pathogenic CACNA1D variant were reported in the literature, with similar clinical disease spectrum.
A genetic diagnosis of a de novo mutation in CACNA1D gene not only revealed the etiology of the syndrome, but ruled out the disease in other family members which has made the genetic counseling possible.

ID 672. Correlation of Therapeutic Hypothermia for HIE and Pulmonary Hypertension

Doctor Rashida Javed[1], Doctor Harsha Gowda[1]
[1]Birmingham Heartlands Hospital, Uk

Background and Aim: Neonates with perinatal asphyxia and moderate to severe Hypoxic Ischemic Encephalopathy(HIE) are currently treated with Therapeutic Hypothermia(TH) as a part of brain protective strategy. Perinatal asphyxia is a risk factor for development of Persistent Pulmonary Hypertension(PPHN). In animal studies, hypothermia was associated with an increase in pulmonary vascular resistance(PVR). One degree drop in temperature can increase PVR by 1-2%. It was suggested that increasing oxygen requirement during TH is probably attributable to PPHN and may have serious clinical consequences.
The aim of this study is to evaluate any correlation of therapeutic hypothermia and development of pulmonary hypertension.

Method: Retrospective study of all infants who underwent TH for moderate to severe HIE over a period of 3 years(Jan 2020–Dec 2022). Data was collected from Badger(Electronic Patient Record). The diagnosis of PPHN was based on clinical signs (pre and post ductal saturation difference >10%, high oxygen requirement) and/or Echocardiography findings of raised pulmonary pressures. Correlation of TH and PPHN was determined. Ventilation days and length of hospital stay was recorded. Treatment with inhaled nitric oxide(iNO) and inotropes was assessed. Outcome was measured in terms of MRI brain severity and feeding method at discharge.

Result: Total 60 neonates were included in the study who were treated with TH for HIE. 17% were diagnosed with PPHN. 60% developed moderate PPHN and 20% had mild PPHN. All were successfully treated for PPHN. Correlation of TH causing PPHN was found in 60% whereas, 40% who developed PPHN did not had association with TH. Only 50% required Nitric oxide for PPHN management. Table1

Conclusion: In this small cohort of infants who underwent TH for HIE, 10% developed PPHN after initiation of TH. Clinicians treating these infants need to be aware of this potential complication when providing TH for HIE. Neonates with lower Apgar score are more prone to develop PPHN while undergoing TH. These infants need longer ventilation days and length of hospital stay.
No difference in immediate outcomes like MRI brain changes and feeding at discharge are observed.
Large multicentral studies are urgently required to establish this association to provide robust evidence.

Table 1: Comparison of Neonates who developed PPHN vs No PPHN while undergoing Therapeutic Hypothermia for HIE

	TH with PPHN (n=10)	**TH without PPHN (n=50)**
Gestational age (mean ± SD)	39.5 ± 2.1	38.3 ± 1.5
Birth weight, kg (mean ± SD)	3.5 ± 0.98	3.2 ± 0.6
APGAR at 5 min (mean ± SD)	2.7 ± 2.3	3.8 ± 2.7
Inotropes needed (%)	100%	40%
Inhaled Nitric Oxide (%)	50%	0
Ventilation days (mean ± SD)	5.7 ± 1.3	2.8 ± 1.7
Length of hospital stay (mean ± SD)	14 ± 10	12 ± 13.2
Outcome		
MRI findings:		
1. Mild HIE (%)	20%	16%
2. Moderate HIE (%)	10%	28%
3. Severe HIE (%)	30%	22%
4. Normal MRI (%)	30%	34%
Bottle/breastfeeding at discharge (%)	60%	68%
Nasogastric feeding at discharge (%)	30%	24%
Deceased	1	4

ID 888. A newborn case of methyl malonic acidemia presenting with bicytopenia

MD Seda Aydogan[1], Professor Dilek Dilli[1], MD Cem Geyik[1], MD Sariye Elif Özyazıcı Özkan[1], MD Asburce Olgac[1]
[1]Ankara Etlik City Hospital

Background: Methylmalonic acidemia (MMA) is an autosomal-recessive inborn error of metabolism of organic acids that affects the survival and quality of life of patients, if not promptly diagnosed and treated. Clinical manifestations are due to the accumulation of methylmalonic acid and other metabolites in the patients' bodies. The disease onset of MMA ranges from the neonatal period to adulthood. In newborns, MMA shows a wider range of findings including vomiting, respiratory distress, feeding problems, lethargy, and severe acidosis. Here, we report a case of MMA in a newborn who presented with sepsis symptoms and bicytopenia.

Case report: A 21-day-old male newborn was admitted to the NICU with fever and feeding difficulty. He was born weighing 3350 g by vaginal route from the first pregnancy of a 24-year-old mother at the 39th gestational week. There was no known consanguinity, but both parents were from the same region. First laboratory analyses revealed elevated acute phase reactants and bicytopenia. Antibiotherapy was started with the suspect of sepsis following blood culture sampling. Despite treatment, the bicytopenia persisted, and diaper dermatitis, malar rash, hypertension, and capillary leak syndrome emerged. On postnatal day 49, the patient gradually deteriorated; he needed mechanical ventilation due to respiratory depression and lethargy. The results of metabolic tests showed increased methylmalonic acid excretion in the urine. Considering MMA, genetic tests were planned for MMA and the cobalamine gene defects. Brain MRI findings were consistent with periventricular white matter changes. Peritoneal dialysis was performed to remove the accumulated methylmalonic acid from the body. Hydroxycobalamin and carnitine were started for the management of MMA, and the patient's diet was adjusted by the metabolism specialist. On the 70th day of life, the patient was discharged in good health with diet and lifestyle recommendations. Genetic counseling was given to the parents.

Conclusion: With this report, we would like to draw attention to the fact that organic acidemia should be considered in newborn babies who present with sepsis symptoms, lethargy, persistent bicytopenia, rash, or a diaper dermatitis.

ID 225. Effect of Patent Ductus Arteriosus to electrocortical activity of premature infants.

Mrs Kristina Štuikienė[1], Mrs Regina Vidmantė[2], Professor Kastytis Šmigelskas[3], Doctor Ilona Alda-kauskienė[4], Professor Rasa Tamelienė[5]
[1]Hospital Of Lithuanian University Of Health Sciences Kaunas Clinics. Neonatology clinic., [2]Hospital Of Lithuanian University Of Health Sciences Kaunas Clinics. Neonatology clinic., [3]Lithuanian University of Health Sciences. Health research institute. Faculty of Public health., [4]Hospital Of Lithuanian University Of Health Sciences Kaunas Clinics. Neonatology clinic., [5]Hospital Of Lithuanian University Of Health Sciences Kaunas Clinics. Neonatology clinic.

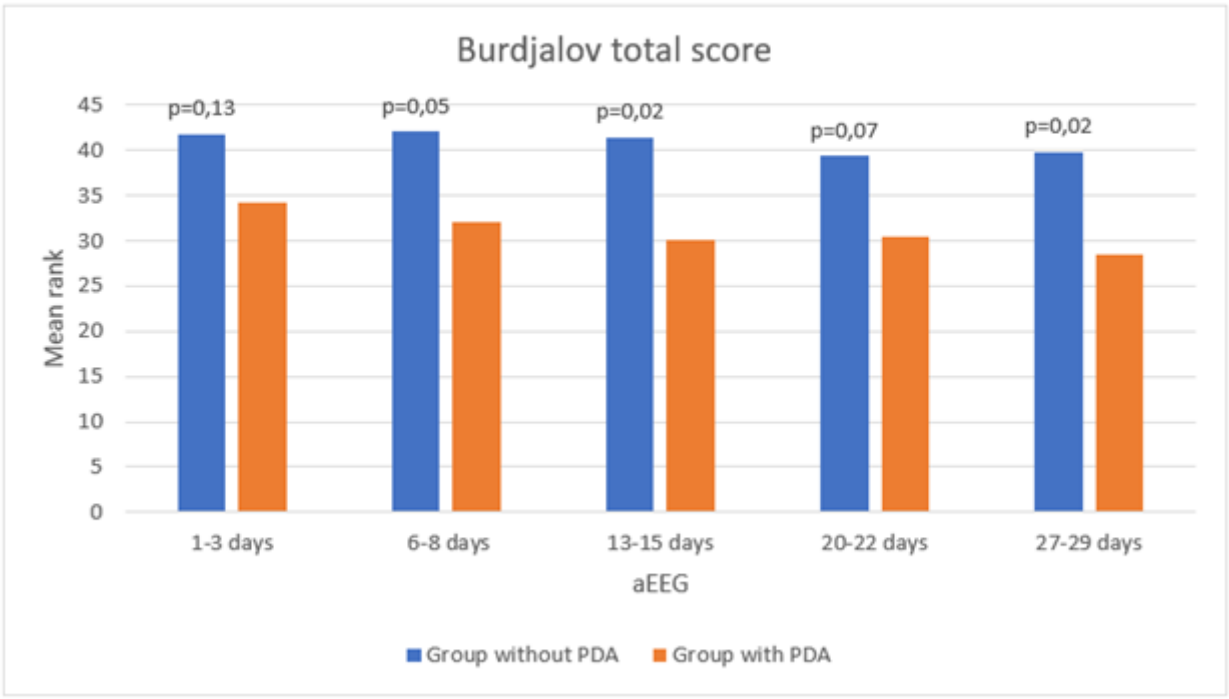
Background. With increase in the incidence of preterm birth, quality of life in premature infants who suffer from perinatal brain injury has become a major concern. The aim of this study was to evaluate whether the presence of patent ductus arteriosus (PDA) may affect the amplitude-integrated encephalography (aEEG) of premature newborns.

Methods. We prospectively included infants born between 22–28 weeks of gestation between June 2020 and July 2022. Serial aEEG recordings were performed at five time points of age (days 1–3, 6–8, 13–15, 20–22, and 27–29). Recordings were analyzed for background pattern, onset and appearance of cyclicity, and lower amplitude border and bandwidth, which were used to derive a composite Burdjalov score. Results were compared between two groups of infants with and without hemodynamically significant PDA. The hemodynamic significance of PDA was confirmed by echocardiography. The non-parametric approach in statistical analysis was used, bivariate analysis was conducted using chi-squared test or Mann-Whitney U test.

Results. In total, 76 premature infants were included: 46 with PDA (median gestational age 26 weeks, IQR 24–27; median birth weight 875 grams, IQR 706–1038) and 27 without PDA (median gestational age 27 weeks, IQR 26–28; median birth weight 1010 g., IQR 850–1140). The mean ranks of all dimension scores were higher for group without PDA at every time point. Mean ranks of total scores were significantly higher in PDA-free group at three time points: 6–8, 13–15 and 27–29 days ($p<0.05$), at other time points the difference was non-significant.

Conclusion. PDA negatively affects the Burdjalov scores of premature newborns till one month of age. This may be a consequence of impaired cerebral blood flow due to PDA.

Figure 1. The distribution of Burdjalov total score in two groups.



ID 224. THE ASSESMENT OF THE INTRAVENTRICULAR HEMORRHAGE AND ECHOCARDIOGRAPHY CHANGES IN PRETERM BABIES BORN TO MOTHERS WITH ANEMIA AND PREECLAMPSIA.

Doctor Nargiz Mammadova[1], Doctor Afag Akhundova[1], Doctor Pusta Orujova[1], Doctor Nurangiz Hajiyeva[1], Doctor Fatima Seyidbayova[1]
[1]Azerbaijan Medical University

Background: Anemia and preeclampsia are the most common pathologies of pregnancy and affect the health of the mother and the child. The cardiovascular system of the fetus and the newborn is very vulnerable to these conditions. Moreover, the development of poor cognitive results and neuropsychiatric diseases was noted at an early age in this category of children.

Aim: In the current case-control study, we studied the role of anemia during the pregnancy, preeclampsia in the development of cerebral hemorrhages and pathologies occurring in the cardiovascular system in newborns born to mothers with these conditions.

Methods: For this purpose, we investigated 56 premature newborns born from mothers whose pregnancies were complicated by anemia and preeclampsia. The newborns were placed into 2 comparison groups: group I included 36 babies born to anemic mothers, and group II included 20 babies born to preeclamptic mothers.
All newborns were born without asphyxia. Instrumental examinations (neurosonography and echocardiography) were performed to assess the changes that may occur in the brain and cardiovascular system in the early neonatal period. The statistical processing of the results was carried out using the Anova method and Crosstab in the SPSS 20 statistical computer program.

Results: As can be seen in Table 1, grade I hemorrhage was more common in Group I infants and statistically significantly different. PFO was more common in both groups and the high incidence of PFO in children of anemic mothers, again reflects the depletion of compensatory mechanisms in these children (Table 1).

Conclusion: Considering that the newborns in the study were not exposed to asphyxia, complications during pregnancies with anemia caused more brain injuries and hemorrhages in newborns compared to preeclampsia. This probably caused brain hemorrhages due to the acceleration of cerebral blood circulation in the fetus against the background of anemia of the mother and an increase in the resistance index. Thus, the timely correction of pregnancy anemia in the mothers can reduce the risk of brain hemorrhages in newborns.

Table 1

Intraventricular hemorrage		I group	II group	χ2	P
–	N	29	16	3,943	0,035
	%	80,6%	80,0%		
I grade	N	7	3		
	%	19,4%	15,0%		
III grade	N	–	1		
	%		5,0%		
PDA -	N	30	17		0,293
	%	63,8%	36,2		
PDA +	N	6	3		
	%	66,7%	33,3		
PFO -	N	22	15		0,871
	%	59,5%	40,5%		
PFO +	N	14	5		
	%	73,7%	26,3%		

Results of neurosonography and echocardiography examination in preterm mnewborns

ID 844. Neurodevelopment Outcomes Of 22-26 weeks gestation AT University Hospital Birmingham Tertiary NICU for birth cohort: 2012-2019

Doctor Ahmed Mohamed[1], Doctor Pinki Surana[1]
[1]Birmingham Heartlands Hospital - Birmingham - United Kingdom

Background and aims: Preterm children are at increased risk of developmental problems. NICE recommends regular F2F follow-up appointments and a structured developmental assessment at corrected age of 2 years to allow timely identification of problems and early intervention. With main aim of Assessment of their neurodevelopmental outcomes focusing on Type of assessment and Neurodevelopmental outcomes.

Subjects and Methods: All infants <27 weeks gestation who have been born and admitted at UHB NICU between January 2012 – December 2019.
The data was sourced from BadgerNet for details and 2 year follow up.
Outcomes analysed as per: 1) NICE Developmental follow-up of children and young people born preterm Quality standard [QS169] Published: 18 May 2018.
2)Report of a BAPM/RCPCH Working Group Classification of health status at 2 years as a perinatal outcome Published Jan 2008

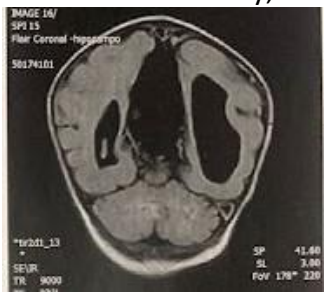
Results: Between Jan 2012 and December 2019, a total of 285 babies between 22-26 weeks have been admitted and 193(67.7%) have survived of which 119(61.65%) have had follow up and neurological assessment with our unit and community team while the remaining referred back to their original units or followed up with their community teams.
Between 2012 and 2016 Bayley's assessment have represented 77% while paediatric assessments have represented 15% and others represented the rest in comparison to 2017 and 2019 born babies that needed assessment during covid where 37.5% were paediatrics assessments, 43.8% were Bayley assessments and 18.7% represented the rest.
A total of 72(60.5%) babies had no disability, 32(26.9%) had moderate and 15(12.6%) had severe disability.

Summary: Due to the pandemic- F2F Bayley assessments decreased from 77% to 43.8%; 1/3 rd of the developmental assessments were not standardised assessments (in normal follow up outpatient clinic)
In terms of severe disability: Our results have shown less severe disability in 23-25 weeks gestation vs British Association of perinatal medicine numbers, similar rates of severe disability in 26 weeks gestation.
This is reassuring as improved survival is not at the cost of increased severe disability, keeping in consideration the Covid pandemic affecting examination and neurological assessments.

ID 373. AICARDI SYNDROME IN A NEWBORN AT A HOSPITAL IN NORTH-WESTERN SÃO PAULO: A CASE REPORT

Mr Vitor Sarri[1], Ms Lara Vilares[1], Mr Frederico Ramos[1], Mr João Renato Villas Bôas[1], Ms Gabriela de Araujo[1], Ms Simone Fernandes[1]
[1]Faculdade de Medicina de Catanduva

AiCardi Syndrome (AS) is a rare congenital condition with an estimated incidence of 1 in 105.000. It is characterized by agenesis of the corpus callosum, choroid plexus lacunae defects, and infantile spasms. The following report describes the case of a newborn patient at a hospital in the north-west region of São Paulo, Brazil, who presented with a syndromic condition and difficult-to-control seizures, despite the use of various antiepileptic drugs.
The newborn child was delivered at 37 weeks gestation, female. During prenatal care, a morphological ultrasound revealed hydrocephalus with ventricular dilatation. The delivery was performed via cesarean section. The child had malformations in the upper limbs (absence of the radius and ulna bones in the left upper limb and absence of fingers in both limbs), high-arched palate, and left microphthalmia.
The newborn was admitted to the NICU due to severe respiratory distress, which persisted even after cycles of positive pressure ventilation. She remained hospitalized for 59 days.
Four days after birth, a transfontanelle ultrasound reveals dilatation of the ventricular system and complex brain malformation. A MRI was performed, showing agenesis of the corpus callosum and craniofacial malformation. An echocardiogram confirmed the presence of patent ductus arteriosus and atrial septal defect. The ophthalmologic examination revealed optic nerve hypoplasia.
On the 34th day of hospitalization, the newborn experienced her first afebrile tonic-clonic seizure, which persisted despite the use of phenobarbital, phenytoin, midazolam, valproic acid, levetiracetam, and clobazam for the next 50 days of hospitalization.
After numerous seizure episodes, at four months of age, the infant was discharged from the hospital with partial seizure control and prescriptions for the aforementioned antiepileptic drugs. Referrals were made to general pediatrics, pulmonology (due to prolonged use of oxygen therapy), pediatric cardiology, genetics, ophthalmology, neurodevelopment, and early stimulation (APAE).
In conclusion, regarding agenesis of the corpus callosum, it can occur partially or completely, being pathognomonic of the syndrome. Infantile spasms, difficult to control, are also part of the classical triad of AS, and early use of anticonvulsants is essential to prevent brain injuries and other complications. Additionally, the need for multiple drugs to control seizure activity was noted.



MRI imaging, showing agenesis of the corpus callosum

ID 649. Cognitive outcome at 8 years of age in Twin to Twin Transfusion fetoscopic laser photocoagulation and extreme prematurity: Case study

MD, PhD Effrosyne Tsekoura[1], Doctor Angeliki Lyndiakou[1], Mrs Spyridoyla Mpiza[1]
[1]Asklepieion General Hospital

Background: Twin to twin transfusion syndrome (TTTs) is a perinatal condition at high risk for adverse outcome including neurodevelopmental disorders. This risk is exaggerated in the case of extreme prematurity. We present the neurocognitive outcome at 8 years of age of a case of TTTs and extreme prematurity following fetoscopic laser photocoagulation (FLP).

Case Presentation: Monochorionic twins were born at 25 weeks GA following FLP for TTTs. Donors birth weight was 850gr (50th – 90th percentile) and recipient's was 950gr (90th -97th percentile). No severe CNS morbidities were noted during NICU admission. Initial follow up evaluation revealed cognitive and behavioral delay in both cases. There were many problems with social interaction, language delay, autistic features. Early intervention program was initiated promptly and systematically with occupational therapy, speech and language therapy and behavioral treatment. Behavioral assessment at 8 years follow up revealed improvement of autistic futures, remaining signs of behavioral immaturity, mainly due to attention deficit. Cognitive evaluation with WISC-V revealed low normal general developmental index, with subscales heterogeneity. Both children had problems with working memory and language dexterities. Nevertheless, the donor twin (Table 1) had higher values in both working memory index and verbal comprehension index compared to the recipient (Table 2).

Conclusion: In our case despite the severe perinatal conditions for adverse neurodevelopmental outcome, both children at school age following early intense intervention program had minor neurodevelopmental abnormalities mainly referred to working memory and language dexterities. Initial autistic features had subsided. Our findings are in parallel with current literature data, they are optimistic for when counselling young couples. In our case it is also shown that donors have better outcome than recipients. We emphasize the need for early follow up and prompt intervention.

Κλίμακα	Άθροισμα τυπικών βαθμών	Σύνθετος Δείκτης	Εκατοστημόριο
Λεκτική Κατανόηση	20	100	50
Οπτικοχωρική Αντίληψη	15	86	18
Ρέων Συλλογισμός	16	88	21
Εργαζόμενη Μνήμη	12	76	86
Ταχύτητα Επεξεργασίας	15	86	18
Συνολική Κλίμακα	54	83	13

Table 1

Κλίμακα	Άθροισμα τυπικών βαθμών	Σύνθετος Δείκτης	Εκατοστημόριο
Λεκτική Κατανόηση	15	86	18
Οπτικοχωρική Αντίληψη	19	97	42
Ρέων Συλλογισμός	16	88	21
Εργαζόμενη Μνήμη	11	74	4
Ταχύτητα Επεξεργασίας	14	86	18
Συνολική Κλίμακα	54	83	13

Table 2

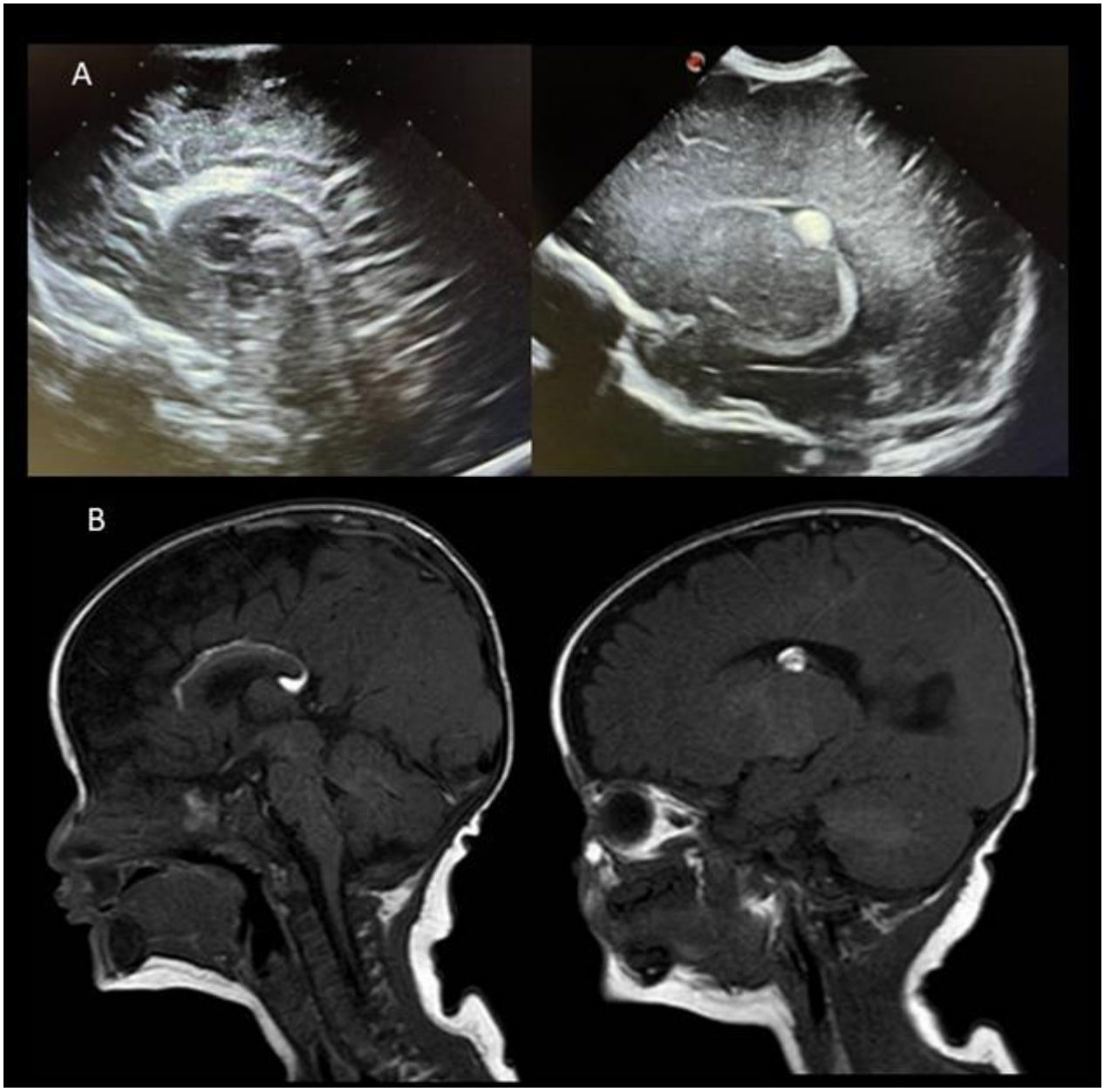
ID 746. AN ATYPICAL CASE OF CONGENITAL PERICALLOSAL LIPOMA

Doctor Antonella Castronovo[1], Doctor Marzia Trivelli[1], Doctor Bianca Bizzarri[1], Doctor Luca Massimi[2], Dctor Marco Guazzaroni[3], Doctor Andrea Cunico[3], Doctor Camilla Gizzi[1]
[1]Department of Neonatology and NICU, Sant'Eugenio Hospital, [2]Department of Pediatric Neurosurgery - Policlinico Gemelli, Catholic University of Sacred Heart, [3]Department of Radiology - Sant'Eugenio Hospital

Background
Pericallosal lipoma (PL) is a rare congenital malformation (<0.1% of congenital brain tumors) with a generally favorable prognosis. It can be associated with agenenesis or hypogenisis of the corpus callosum, ventriculomegaly, choroid plexus lipomas, midline defects, dysraphism and genetic syndromes. Typically, two morphological types are described: tubulonodular (usually anterior) and curvilinear (usually posterior).

Case report
We present a 36-weeks GA infant, born from a diamniotic, bichorionic pregnancy, with a MRI prenatal diagnosis of right ventriculomegaly. At birth, he showed a normal cardiorespiratory transition. Postnatal brain US confirmed ventriculomegaly and a persistent hyperechoic oval area into the right ventricle associated with corpus callosum hypoplasia was also described. The baby's postnatal clinical course was unremarkable, and he was discharged at 6 days of life. MRI, performed at 40 weeks of postconceptional age, confirmed in T1w and T2w sequences an hyperintensity referable to a curvlinear lipomatosus lesion (overall size 63 mm) extending from the splenium to the rostrum of the corpus callosum, wich appeared thinned. Moreover, as reported in ultrasound, the lesion extended into the lateral ventricle (10x10mm) (Fig.1). The baby underwent both neuroradiogical and neurodevelopmental follow up. Midline defects, dysraphism and genetic syndromes were excluded. MRIs performed at 6 and 18 months of age, showed a slightly enlargement of the lesion (75 mm) with unchanged charactheristic, while intaventricular portion appeared immodified. His last clinical evaluation performed at 18 months of life and the Bayley III scale administered at 12 months of age showed an adeguate neurological performance.

Conclusion
In our infant, the hyperintensity of the lipoma expected on prenatal MRI was absent, as it may occur according to the literature data, and the diagnosis was made postnatally. Due to the atypical morphology of the lesion that affects the entire length of the corpus callosum up to the ventricle, we consider relevant to follow-up the neurolodevelopmental outcomes, as no data are reported on similar cases. Indeed, literature data report a normal neurological evolution in all cases of curvilinear lipoma whereas up to 25% of the tubulonodular lipomas are associated with some anomalies such as seizures, mental retardation, headache and neuropsychological disorders.



A. Sagittal and parasagittal ultrasound scans
B. Sagittal MRI sequences

ID 704. Two cases of term female newborns with clinical features of EEC3 syndrome at the University Hospital of Split

Doctor Ana Vrdoljak[1], Doctor Vesna Pavlov[2], Doctor Majda Budimir[3], Doctor Luka Brajković[4], Doctor Klara Čogelja[5], Doctor Dubravka Vuković[6], Assistant Professor Anet Papazovska-Cherepnalkovski[7]
[1]University Hospital of Split, [2]University Hospital of Split, [3]University Hospital of Split, [4]University Hospital of Split, [5]University Hospital of Split, [6]University Hospital of Split, [7]University Hospital of Split

Ectrodactyly ectodermal dysplasia-cleft/lip palate 3 (EEC3) syndrome is a rare autosomal dominant disorder with highly variable expression comprising ectodermal dysplasia, absence of the central parts of the hands and feet resulting in split-hand/foot malformation and cleft lip with or without cleft palate. In addition to abnormalities of structures derived from the ectoderm, genitourinary system and eyes can also be affected. The syndrome is not characterized by mental retardation. It is caused by heterozygous mutations in the TP63 gene, 70 % of which are de novo mutations.
We report two cases of term female newborns with clinical features of the EEC3 syndrome and diverse expression of symptoms supported by photographic material.

Case 1 was delivered vaginally with normal birth parameters. Since cystic hygroma had been described by fetal ultrasound, prenatal screening test was performed that showed fivefold increased risk for trisomies. The newborn presented with microcephaly, hairless scalp, nonvisible eyebrows and eyelashes, large posterior occipital and nuchal folds, facial dysmorphic features, agenesis of mammillae as well as ectrodactyly, syndactyly and reduced number of phalanges on both hands and feet. Systemic ultrasound screening revealed bicuspid aortic valve, congenital mitral insufficiency and patent foramen ovale, along with hypoplastic right kidney. Ophthalmology screen showed coloboma of the right iris.

Case 2 was delivered by emergency caesarean section due to placental abruption. Prenatal screening was insignificant. The newborn presented with thinner hair in the front of the head, localized erosions and erythema of skin, syndactyly of the left hand and ectrodactyly on both feet, as well as bicuspid aortic valve and an opened foramen ovale on echocardiography.
In both newborns molecular karyotyping was normal, palate was preserved. Coloboma and changes in the genitourinary system were not presented in second case.
Although clinical phenotype of our cases strongly corresponds with EEC3 syndrome, the results of the genetic analysis are awaited to confirm the diagnosis.

In conclusion, we present two patients with features corresponding to a rare syndromic appearance- EEC3 with variable clinical expression. Multidisciplinary approach to diagnosis and treatment is mandatory as well as confirmatory genetic diagnosis.

ID 726. Fatal Cervical spinal cord injury in a term baby.

Doctor Saadia Bashir[1], Doctor Roja Maharjan[1], Doctor Claudia Chetcutiganado[1]
[1]Bedfordshire Hospitals NHS Foundation Trust

Background:
Spinal cord injury in newborns is a rare but critical complication following difficult extraction during the delivery. The clinical presentations can be catastrophic, which include severe respiratory distress and apnea requiring ventilatory support, varying degrees of sensorimotor loss, decreased or absent movement, areflexia, and a lack of response to painful stimulation. The outcome is usually fatal or severe, with long-term sequelae of respiratory insufficiency, limb weakness, or even paralysis of the limbs.

Case Report:
We described a female newborn with a C1 spinal cord injury born by Forceps-assisted vaginal delivery. The baby was born in a very poor condition following difficult extraction and required full resuscitation at birth and underwent therapeutic cooling for hypoxic ischaemic encephalopathy. After rewarming, she remained ventilator dependent and hypotonic. She was extensively investigated for generalized hypotonia. The Brain Magnetic resonance imaging revealed evidence of significant global insult and a focal brainstem lesion with suspected medullary hemorrhage. Her further follow-up MRI scan showed Marked cervical cord atrophy with some residual foci of old hemorrhage. She was reviewed by a multidisciplinary team at a tertiary center. considering the poor prognosis and almost no chance of any recovery of function, it was decided unanimously by MDT to redirect care and undertake palliative care.

Conclusion:
Spinal cord injury (SCI) is a rare and potentially underdiagnosed critical condition in the newborn. Diagnosing SCI in newborns is challenging due to the wide range of differential diagnoses and associated problems. In asphyxiated newborns undergoing therapeutic cooling, diagnosing spinal cord injury is more challenging as they both can occur concurrently.
Regardless spinal cord injury should be considered in any newborn with poor tone and respiratory effort at birth with or without a history of difficult delivery. Early MRI may assist in the diagnosis and will demonstrate the extent and severity of the injury and is vital for the long-term planning of the management by the parents and medical team.

ID 739. De novo FGF12 mutation causes a severe neonatal epileptic encephalopathy

Doctor Aziza Nasri[1], Doctor Emna Marmech[1], Doctor Amani Guizani[1], Doctor Syrine Khlif[1], Doctor Jihene Hfaidh[1], Doctor Jihed Kenzari[1], Doctor Haifa Ouerda[1], doctor Khlayfia Zied[1], professor Ons Azzabi[1], Professor Ines Selmi[1], Professor Nadia Siala[1]
[1]Mongi Slim Hospital

Background:
Whole exome sequencing has improved gene discovery in epilepsy it also showed genetic heterogeneity in epileptic encephalopathies. We report the data of a newborn with early-onset severe epileptic encephalopathy . The genetic study revealed de novo mutation of the fibroblast growth factor 12 (FGF12) gene.

Case Report :
A 3 days old male newborn, was admitted in our department for neonatal seizures .first child of non consanguineous couple. The pregnancy was uneventful with no relevant family history. He was eutrophic and had a good adaptation to extrauterine life. On day three of life, the new born presented generalized hypertonia, chewing and cyanosis. The examination revealed a hyperexcitable newborn, with peripheral hypertonia. Biological and bacteriological assessments were negatif . the expanded metabolic profil was normal. A transfontanellar ultrasound and MRI were performed but did not show any abnormalities. Electroencephalogram confirmed the neonatal epilepsy. The new born was initially traited with Phenobarbital without improvement. Seizures could not be controlled even with multiple anti-seizure medications : phenytoin, clonazepam and levetiracetam; A therapeutic trial with vitB6, Biotin and Folinic acid was instituted but failed. A study of the whole genome was carried out for the newborn as well as its 2 parents, concluding that there was a de novo mutation of the FGF 12 gene. This made it possible to modify the therapeutic arsenal in our patient. He received Topiramate as an alternative with a relative decrease in seizures. Severe developmental retardation was observed in the patient.

Conclusion :
The FGF12 gene encodes a cytosolic protein that interacts with neuronal sodium channels , Mutations in the FGF12 gene lead to an early-onset of a drug resistant epileptic encephalopathy with a poor prognosis . The development of human genome sequencing techniques has brought diseases into the spotlight. Identifying the causal variation helps to make the clinical diagnosis, give a prognosis, improve patient management, offer genetic counseling and, sometimes, adapt therapeutic management.

ID 808. IMPORTANCE OF TRANSPORTING PLACENTAS TOGETHER WITH ASHPYXIATED NEWBORNS

Doctor Federica Mongelli[1], Doctor Chiara Andreato[1,2], Doctor Marcella Battaglini[1], Doctor Samuele Caruggi[1,2], Doctor Mariya Malova[1,2], Doctor Paolo Massirio[1,2], Doctor Giulia Polleri[1], Doctor Francesco Campone[1], Doctor Carlo Bellini[1], Professor Luca Antonio Ramenghi[1,2]
[1]Neonatal Intensive Care Unit, IRCCS Giannina Gaslini Institute, [2]DINOGMI Department University of Genoa, IRCCS, Istituto Giannina Gaslini

BACKGROUNDS: Perinatal asphyxia represents the leading cause of newborn encephalopathy. The pathogenesis and the risk factors of perinatal asphyxia are not completely understood. The analysis of placenta may reveal underlying processes that affect the development of brain injury. The only tertiary NICU center in Liguria county is at the Gaslini Pediatric Institute. The Neonatal Emergency Transport Service (NETS) collect the asphyxiated newborns. When possible, the NETS neonatologists, transport the placentas together with the newborn to the tertiary center for analysis. Our objective is to investigate the pediatricians' and gynecologists' knowledges on importance of placental analysis and their habits about its transport together with the baby as they call for NETS.

METHODS: We elaborated a survey for neonatologist and obstetrics which was submitted to the doctors of the hospitals of the region. Seven hospitals (1 tertiary center and 6 primary centers) from Liguria region participated the survey. The questionnaire, including eight different questions, was submitted telephonically.

RESULTS: The response rate was 84%: 94 doctors underwent the questionnaire. Only 29.8% have ever participated an event about the utility of placenta analysis in asphyxiated. The most frequent (72.5%) placental alteration resulted was fetal vascular malperfusion. Almost all the participants (97.8%) knew placental alterations can be associated with MRI brain lesions. Eighty-nine % of our population said placental analysis is, at least, helpful to understand the causes of perinatal asphyxia and 87.2% recognized its medico-legal relevance. The attention to placental transport is not homogeneous: 61.7% of doctors of the spoke center usually ask for placenta while in Center 6 and 7 only 14.3% offer its transport; no pediatrician of Center 4 does it as they reported it's an obstetric purpose.

CONCLUSIONS: The majority of the participants have never participated a training event about "placentas in neonatal asphyxia", those ones who participated were mainly gynecologsists. Despite that clinicians demonstrated to be well informed about the importance of placental analysis, both from a clinical and a medico-legal point of view. However only a few of them offer transport of the placenta together with asphyxiated newborn.

ID 1028. Intraventricular Haemorrhage Outcomes: Single centre NICU experience – 5 year study

Doctor Nikita Gulati[1], Mrs Caroline North[1], Doctor Puneet Nath[1]
[1]UHCW

Background: Intraventricular haemorrhages (IVH) are frequently seen in preterm neonates on NICU. Therefore it is important to recognise the benefits of preventative measures and review the impact of the diagnosis on developmental outcome.

Method: Retrospective data collected from Badger database over a 5-year period from 2018 to 2022, reviewing the antenatal and neonatal history of babies with intraventricular haemorrhages.

Results:
•117 babies were in the study cohort.
•The mean gestational age was 26.5 weeks (range 22-41) with a mean birth weight of 1012g (range 450-3105g).
•57% babies were extreme preterm neonates (<27weeks gestation.)
•63% of babies diagnosed with IVH were male.
•19.6% died during the neonatal admission, a further 2% died within 2 years.
•88% of preterm neonates had steroids antenatally, 60% receiving a complete course. 37% of babies who received a full course had severe IVH (grade 3-4), compared to 49% who received an incomplete course.
•72% of extreme preterm neonates did not have delayed cord clamping. 10% of these babies had severe IVHs. 20% with delayed cord clamping had severe IVH (however the cohort of these babies was small and therefore difficult to interpret the significance.) Implementations from late 2021 to improve delayed cord clamping have been successful.
•At 2 year follow up 46% babies had no developmental delay, 24% had mild delay, 7% had moderate and 22% having severe developmental delay. 2 babies required VP shunts.
•8 babies had neuromotor delays/ cerebral palsy at 2 years. Of these babies 50% had had severe IVH. 50% had received a full course of steroids. Only 1 baby had delayed cord clamping.
•15 babies had speech or hearing delay at 2 years. Majority (73%) had mild IVH during their neonatal admission.

Conclusion: Majority of intraventricular haemorrhages occur in extreme preterm neonates. The benefit of receiving a complete course of steroids antenatally has been shown to lead to less severe IVHs, which subsequently may improve the developmental outcome.
The outcomes highlight the importance of counselling parents about the impact of low grade IVHs as well as severe IVHs as this demonstrates the effect on speech and language development and behaviour.

	No IVH	Grade 1	Grade 2	Grade 3	Grade 4	Unilateral	Bilateral
Day 1 USS	46%	31%	12%	5%	6%	27%	27%
Last USS	50%	11%	11%	11%	18%	2%	31%

Table showing the severity of IVH on first and last cranial ultrasounds during neonatal admission.

ID 932. "FUTURA PROJECT" IN EXTENDED NEWBORN SCREENING FOR INHERITED METABOLIC DISORDERS ASSOCIATED TO GENOME SCREENING IMPROVES THE QUALITY OF DIAGNOSIS AND THERAPIES IN UNSOLVED CASES OF NEURODEVELOPMENTAL AND COMMUNICATION DISORDERS IN EARLY LIFE

Doctor Barbara Hugonin Rao[1,2]
[1]Azienda Usl Toscana Centro Dipartimento Materno Infantile, [2]Boston Children's Hospital - Harvard Medical School

Background : Many neurodevelopment syndromes' symptoms are associated to defects of metabolism, but undiagnosed and unsolved for many time, particularly about defects lipid metabolism, mucopolysaccharidosis, aminoacid functions and storage diseases.
The problem of complex and rare diseases, both genetic and pediatric multifactorial, is extremely underestimated even by medicine, yet it affects over 49% of children under 16 in the world, who have a form of disability. It is essential to study and structure diagnostic pathways to reduce waiting times and treat them better.
Many inherited errors of metabolism are associated to neurodevelopment disorders, as speech and hearing impairment, rare cognitive and motor delay, neurodevelopmental disabilities, associated with rare syndromes.
They are undervalued and not taken in consideration, non-specific, confounding or similar symptoms to other known syndromes, which will not be confirmed by diagnostic tests, with associated gene mutation.

Methods: This research involved 33 cases of neurodevelopment disorders between 0-2 years in children, positive during the neonatal screening, and of 24 children between 3-6 years with different neurodevelopment symptoms (language delay, ADHD, movement disorders, myopathies, intellectual disabilities, sensorial disorders) but without neonatal screening previously or false negative results. We have extended a screening for non mandatory diseases in association with genome sequencing test.

Results: In 1 cases on 2 studied, in both groups there are many association with inborn errors in several rare neurological and neurodevelopment symptoms. The difficulties of neurodevelopment syndrome diagnosis are the signs similar to others neurological disorders, genetics or not.
The combined diagnosis with metabolic and genetic screening for suspect of undiagnosed metabolic disorders improved the final diagnosis, with possibility of tempestive multidisciplinary therapies (parenteral nutrition, diet, speech and swallowing therapies, neurosensorial and behavioural support, physical therapies, surgery, gene therapies).

Conclusion

In neurodevelopment disorders in association with inborn errors of metabolism the improvement of molecular diagnosis is fundamental for reduce the progression of neurological symptoms and for specializated interventions for treatment of cognitive and behavioural illness in early life. The problem of a late diagnosis is often a confusion with neuropsychiatric disorders or undiagnosed diseases, without consideration of genetic and metabolic origin of diseases with early onset.

ID 977. Comparison of semi-LASER vs. PRESS for acquisition of 1H MRS in newborn piglets with HIE.

Doctor Ted Carl Kejlberg Andelius[1], Kasper Seiersen, Lærke Hansen, Sofie Schaaning, Mette Vestergaard Pedersen, Mads Andersen, Sarah Stærke Balling, Esben Hansen, Nikolaj Bøgh, Kasper Kyng, Suresh Victor, Tine Brink Henriksen
[1]Peadiatric Department, Aarhus University Hospital

Background: Peak metabolic ratio of lactate and N-acetylaspartate measured by proton magnetic resonance spectroscopy (1H MRS) have showed promise as a robust biomarker of neural damage in new-borns with hypoxic ischemic encephalopathy (HIE). For clinical 1H MRS, Point RESolved Spectroscopy (PRESS) is the standard pulse sequences available and used in most centres. A novel MRS protocol, semi-LASER, provides improved spectral quality and localization compared to PRESS. Semi-LASER has therefore become the recommended MRS sequence in recent consensus guidelines of MRS in adult CNS disease. However, no reports exist on the use of semi-LASER in the neonatal population. Therefore, we aimed to compare spectral quality of PRESS vs. semi-LASER in a preclinical model of HIE.

Methods: Nine piglets will be enrolled in a neuroprotective trial and will be subjected to a standardized global HI insult. After 44 hours, MRI and MRS will be performed. Scans will be performed on a 3T scanner (M750, GE Healthcare) with a flexible array-coil (GE Healthcare). All animals will have 1H MRS measured with both PRESS and semi-LASER (TR/TE = 2000/288 ms) protocols in a 1.5 cm3 voxel placed in the thalamus. Spectral quality will be assessed by comparing line width and signal to noise ratio (SNR).

Results: In this abstract, pilot data from one piglet is presented (Figure 1). 1H MRS with semi-LASER showed improved spectral quality with SNR of 9 compared to 7 with PRESS.

Conclusion: The MRS from one piglet showed improved spectral quality with semi-LASER. The study is expected to be completed by June 2023, and results from all piglets will be present at jENS2023.

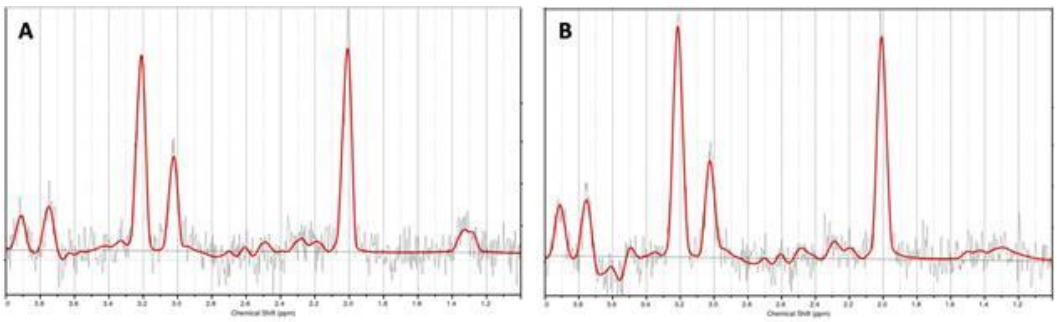


Figure 1. 1H MRS in one piglet acquired with PRESS (A) and semi-LASER (B).