September 20th, 2023 08:30 - 9:00

POSTER WALK – BRAIN 2

ID 575. SEX DIFFERENCES IN RISK OF INTRAVENTRICULAR HEMORRHAGE: A SYSTEMATIC REVIEW, FREQUENTIST AND BAYESIAN META-ANALYSIS, AND META-REGRESSION

Doctor Marlou Raets[1], Tamara Hundscheid[1], Doctor Eduardo Villamor[1]

[1]1 MosaKids Children's Hospital, Maastricht University Medical Center (MUMC+), School for Oncology and Reproduction (GROW), Maastricht University, Maastricht, The Netherlands

Background: Most of the complications associated with very preterm birth are more common in boys. Intraventricular hemorrhage (IVH) is generally considered to be part of this male disadvantage of prematurity. However, it is not known whether sex differences in IVH affect all degrees of the condition and whether they maintain over time. Our aim was to conduct a systematic review and meta-analysis on studies addressing sex differences in risk of developing IVH among preterm infants. Methods: PubMed/Medline and Embase databases were searched. Severe IVH was defined as grade 3/periventricular venous infarction (previous grade 4) and mild IVH as grade 1 or 2 according to Papille et al. 1978. The random-effects male/female odds (OR) and 95% confidence interval (CI) were calculated in the frequentist meta-analysis. OR>1 indicates higher rate of IVH in males. The results were further supplemented by a Bayesian model average (BMA) meta-analysis. BMA uses the Bayes factor (BF)10 that is the ratio of the probability of the data under the alternative hypothesis (H1) over the probability of the data under the null hypothesis (H0).
Results: We included 64 cohorts (629.271 infants). Frequentist meta-analysis showed a positive association between male sex and severe IVH (32 studies, OR 1.32, 95% CI 1.22 to 1.39) and any IVH (36 studies, OR 1.35, 95% CI 1.17 to 1.57), but could not

demonstrate an association between infant sex and mild IVH (11 studies, OR 1.32, 95% CI 0.85 to 2.06). BMA showed that the evidence in favor of H1 (i.e., infant sex is associated with IVH) was extreme (BF10>1000) for severe IVH, whereas the evidence in favor of H0 was weak for mild IVH (BF10=0.55). Subgroup analysis did not show significant geographic differences in the association between infant sex and IVH. Meta–regression showed that the male disadvantage in risk of any IVH is decreasing over time. This is not the case for severe IVH. Conclusions: Our study confirms the presence of a male disadvantage with respect to severe IVH, but not with respect to less severe forms of the condition. This male disadvantage may be decreasing in the case of any IVH.

None declared

ID 139. The influence of intensive care treatment in infancy on cortisol levels in childhood and adolescence

Miss Judith Ten Barge[1], Miss Madhvi Moelchand[2], Prof. Monique van Dijk[1,2], Dr. Sinno Simons[1], Mr. Joost van Rosmalen[3,4], Prof. Dr. Erica van den Akker[5], Prof. Dr. Dick Tibboel[2], Dr. Gerbrich van den Bosch[1]

[1]Department of Neonatal and Pediatric Intensive Care, Division of Neonatology, Erasmus MC – Sophia Children's Hospital, Rotterdam, The Netherlands, [2]Department of Neonatal and Pediatric Intensive Care, Division of Pediatric Intensive Care, Erasmus MC – Sophia Children's Hospital, Rotterdam, The Netherlands, [3]Department of Biostatistics, Erasmus MC, Rotterdam, The Netherlands, [4]Department of Epidemiology, Erasmus MC, Rotterdam, The Netherlands, [5]Department of Pediatrics, Division of Pediatric Endocrinology, Erasmus MC – Sophia Children's Hospital, Rotterdam, The Netherlands

Background

Infants admitted to the intensive care unit experience numerous early life stressors such as painful procedures, which often require treatment with opioids. These early life stressors may have long-term effects on hypothalamic-pituitary-adrenal (HPA) axis functioning. This study aimed to determine the long-term effects of intensive care treatment and related exposure to stress, pain, and opioids in infancy on salivary cortisol levels in childhood and adolescence.

Methods

In this cross-sectional study, stress reactivity and diurnal cortisol rhythm were measured in children and adolescents (N=76) aged 8 to 18 years with a history of intensive care treatment as an infant (median age 1 day) and compared to those of healthy controls (N=67). The intensive care treatment cohort consisted of four

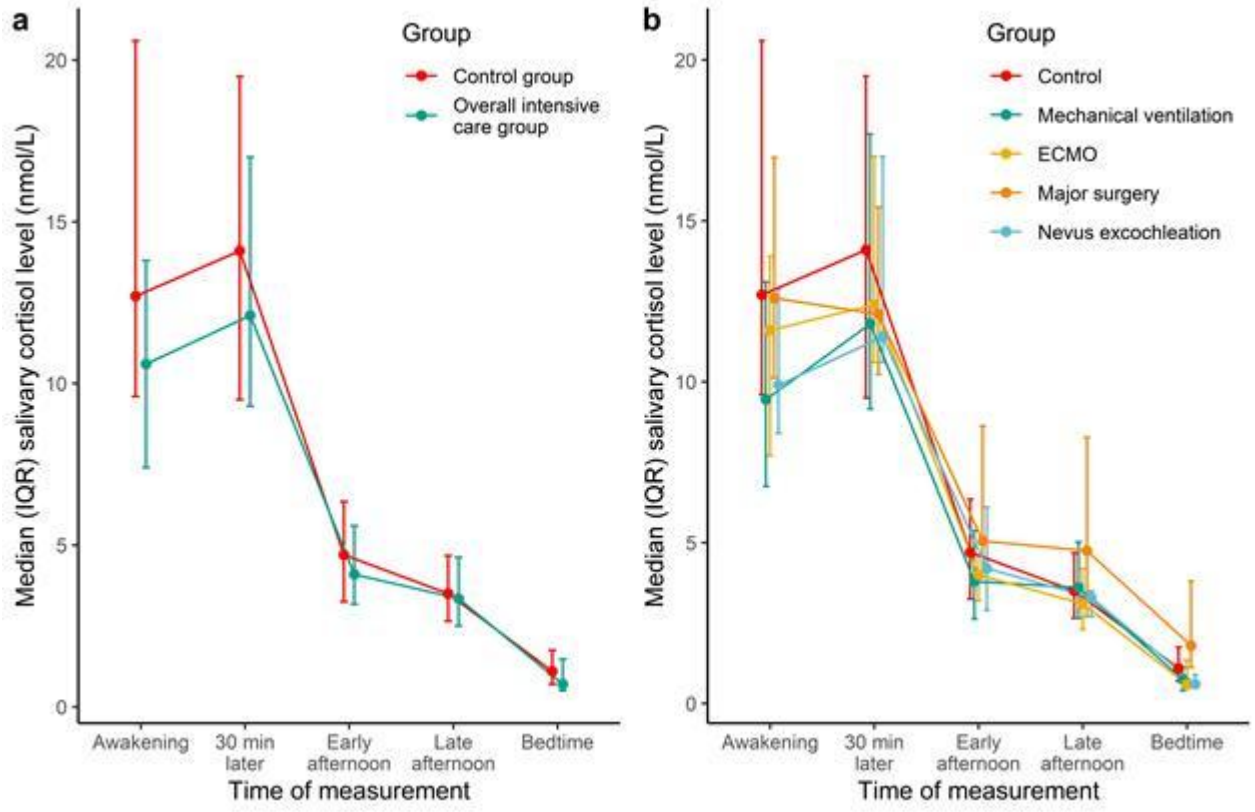
subgroups of children and adolescents with varying levels of exposure to stress, pain, and opioids in infancy. They received either mechanical ventilation (N=20; mainly preterm), extracorporeal membrane oxygenation (N=33), major surgery (N=10), or excochleation of a giant congenital melanocytic nevus (N=13). Salivary samples were collected at three time points during a potentially stressful study visit consisting of pain threshold testing and an MRI examination and at five time points on one day at home, to determine stress reactivity and diurnal cortisol levels, respectively.

Results

After adjustment for age, sex, and gestational age, the diurnal cortisol output in the overall intensive care group was 18% (approximately 1000 nmol/L) lower than that in the control group (95% CI [−31%, −3%], P = 0.022). Cortisol awakening response, diurnal decline, and stress reactivity to the pain threshold testing and MRI examination neither differed significantly between the overall intensive care group and control group, nor between the intensive care subgroups and the control group.

Conclusions

Children and adolescents with a history of intensive care treatment in infancy have similar cortisol profiles to those of healthy controls, except for an 18% lower diurnal cortisol output, which can be ascribed to lower cortisol levels upon awakening. The clinical relevance of this reduction in cortisol output is yet to be determined.



Line graphs showing median (IQR) diurnal cortisol levels in the overall intensive care group and control group (a) and the intensive care subgroups and control group (b).

Line graphs showing median (IQR) diurnal cortisol levels in the overall intensive care group and control group (a) and the intensive care subgroups and control group (b).

None declared

ID 988. COMPARISON OF MAGNETIC RESONANCE SPECTROSCOPY RESULTS IN GROUPS OF PRETERM NEWBORNS AND FULL TERM NEWBORNS UNDERGOING THERAUETIC HYPOTHERMIA

Doctor Magdalena Zasada[1], Mrs Paulina Karcz[2], Docrtor Marta Olszewska[1], Doctor Aleksandra Kowalik[1], Doctor Izabela Herman–Sucharska[2], **Professor Przemko Kwinta**[1]
[1]Jagiellonian University, Medical College, Department of Pediatrics, Krakow, Poland, [2]Jagiellonian University, Medical College, Department of Electroradiology, Krakow, Polska

Background: The in vivo assessment of the concentration of selected metabolites during magnetic resonance spectroscopy (1H–MRS) in asphyxiated newborns is a useful tool in predicting their further outcome. In newborns born prematurely, the results are not consistent. Moreover, there are few published studies which used the same methodology to compare the MRS results in premature infants and full–term asphyxiated infants.

Methods: 23 preterm infants with gestational age below 32 weeks without brain injury (control group), 22 children diagnosed with grade III–IV intraventricular hemorrhage or cystic periventricular leukomalacia (preterm brain injury group) were evaluated by 1H–MRS at the term equivalent age. MRS data were analyzed on an Advantage Workstation, (General Electrics– GE) with Functool and Spectroscopy Analysis by GE. Metabolism of the central nervous system was obtained from thalamus bilaterally. Moreover, the same MRS protocol was applied to 28 children with hypoxic–ischemic encephalopathy (HIE) tested at the age of 5 days (after hypothermia treatment).
Results: Lactate/N–acetylaspartate (NAA) (mean/SD: 0.23/0.09 vs. 0.17/0.06; p=0.007), Lipids/creatine (0.30/0.09 vs. 0.24/0.07; p=0.05) and Lactate/creatine (0.29/0.13 vs. 0.22/0.07; p=0.017) ratios were significantly higher in preterm brain

injury group compared to control group. Interestingly, there were no significant differences in the metabolite profiles between preterm brain injury group and HIE group: Lactate/NAA (0.23/0.09 vs. 0.22/0.24; p=0.85), Lipids/creatine (0.33/0.09 vs. 0.26/0.14; p=0.31) and Lactate/creatine (0.29/0.13 vs. 0.27/0.22; p=0.73). Four newborns among control group (17%), 13 preterm injury group children (59%) and 7 HIE children (25%) had Lactate/NAA ratio >0.3 (p<0.01).
Conclusions: There are significant differences in the metabolite profile measured by the 1H–MRS at term equivalent age between preterm infants with and without brain injury. However, no differences were found between premature infants with brain damage and the group of hypothermia treated HIE infants. More than half of premature infants with brain damage had a high Lac/NAA ratio (>0.3), which is considered a indicator of poor prognosis.
It is worth noting that such a high ratio was recorded at the age of expected delivery, many weeks after the initial intracranial event.

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ID 577. SPECTRUM OF NEONATAL INTRACRANIAL PATHOLOGIES AND PREVALENCE OF INTRAVENTRICULAR HAEMORRHAGE IDENTIFIED ON CRANIAL ULTRASOUND IMAGING IN SUB-SAHARAN AFRICA: A SYSTEMATIC REVIEW

Doctor Eva Loucaides[1], Dr Jonathan Elliott[2], Dr Georgina Yan[3], Dr Eleanor Duckworth[4], Dr Rachael MacLeod[5], Dr Frederick Katongole[6], Dr Wilson Okot[6], Dr Raymond Senyonga[6], Professor Cornelia Hagman[7], Professor Frances Cowan[8], Dr Charles Opodo[9], Dr Cally Tann[9]

[1]Croydon Health Services NHS Trust, London, UK, [2]Barts Health NHS trust, London, UK, [3]University College London EGA Institute for Women's Health, London, UK, [4]Royal United Hospitals Bath NHS Foundation Trust, Bath, UK, [5]University Hospitals Bristol and Weston NHS Foundation Trust, Bristol, UK, [6]MRC/UVRI & LSHTM Uganda Research Unit, Entebbe, Uganda, [7]Children's Research Center, University Children's Hospital Zurich, Zurich, Switzerland, [8]Imperial College, London, UK, [9]London School of Hygiene & Tropical Medicine, London, UK

Background: Globally, an estimated 30 million neonates are affected annually by prematurity, intrauterine growth restriction and neonatal encephalopathy, with the majority born in low–income countries. Neonatal cranial ultrasound (CUS) is a robust point–of–care imaging modality commonly utilised to identify intracranial pathologies. We conducted a systematic review to explore the spectrum of pathology, and specifically the prevalence and severity of intraventricular haemorrhage (IVH), amongst preterm and low birth weight (LBW) infants on neonatal CUS imaging in sub–Saharan Africa.

Methods: We searched MEDLINE, Embase, Global Health, Global Index Medicus, Cochrane Library, PsycINFO, Scopus, Web of Science, and Google scholar without language restriction. We included primary data from neonatal CUS imaging studies

from the sub–Saharan Africa region, as defined by the World Bank. We excluded aggregate data grouped by age ranges not exclusive to the neonatal period. Pooled estimates of the prevalence of IVH amongst preterm and/or LBW infants were calculated using a meta–analysis of proportions. IVH severity was categorised as low–grade (grade I/II) or high–grade (III/IV).

Results: Of 18,431 records screened, 92 studies were identified from 14 sub–Saharan Africa countries; of which South Africa (33%, n=30) and Nigeria (29%, n=27) were most highly represented. Amongst included studies, 39 (42%) focused on IVH, 12 (13%) on neonatal encephalopathy, 11 (12%) on intracranial infection, 9 (10%) on ventriculomegaly/hydrocephalus, and 7 (8%) on congenital brain anomalies. Where stated, the majority of scans were performed by paediatricians and/or radiologists. Figure 1 reports the pooled prevalence of IVH amongst preterm and/or LBW neonates. Where IVH severity was graded [20 studies; n=3733], the pooled proportion with high–grade IVH was 24% (95% CI: 20–28%) [20 studies, n=924]. IVH prevalence was increased in those of lower gestational age (<32 weeks; 40% (95% CI: 28–51%) [12 studies; n=1,220]) and of very low birth weight (<1500g; 32% (95% CI: 24–40%) [17 studies; n=3,289]).

Conclusion: A spectrum of intracranial pathology has been reported in neonatal CUS studies from sub–Saharan Africa. Amongst preterm and LBW infants, IVH was common, and increased with reducing gestation and birth weight. A quarter of IVH were high–grade with potentially far reaching implications for affected children and families.

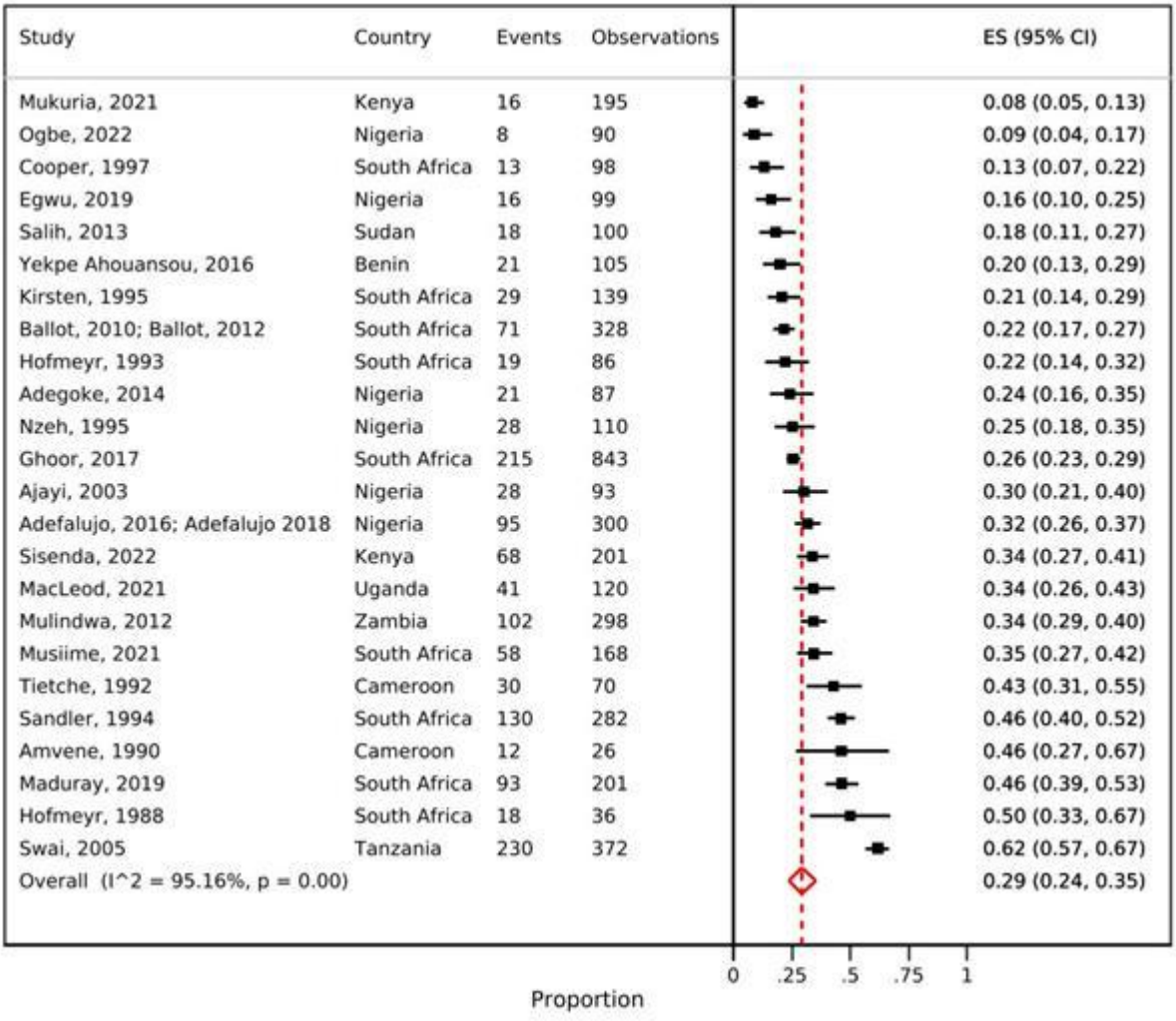

Figure 1: Pooled prevalence of reported intraventricular haemorrhage of any grade amongst preterm and/or low birth weight neonates [24 studies; n=4447].

CI = confidence interval; ES = estimate

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CI = confidence interval; ES = estimate

None declared

ID 843. TIMING OF INTERVENTION IN POSTHAEMORRHAGIC VENTRICULAR DILATATION OF PREMATURITY AND ITS IMPACT IN NEURODEVELOPMENT AT 2 YEARS OF AGE

Doctor Luísa C. Silva[1], Professor Claudia C. Faria[1,2], Professor André M. Graça[1,3]
[1]Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal, [2]Serviço de Neurocirurgia, Departamento de Neurociências, Centro Hospitalar Universitário de Lisboa Norte, Lisbon, Portugal, [3]Serviço de Neonatologia, Departamento de Pediatria, Centro Hospitalar Universitário de Lisboa Norte , Lisbon, Portugal

Background: Posthaemorrhagic ventricular dilatation (PHVD) is a major complication of preterm birth and an important cause of impaired neurodevelopment and long-term disability. There is still significant variation in its management. Recent evidence recommends intervention as soon as ventricular index (VI) is above the 97th percentile + 4mm, which was shown to improve neurodevelopmental outcome and reduce ventriculoperitoneal shunt (VPS) requirement.

Methods: A retrospective, single centre study was conducted, comprising very preterm infants born between 2014–2020, diagnosed with peri–intraventricular haemorrhage (PIVH) and developing PHVD. Ventricular dilatation was quantified measuring VI on cerebral ultrasounds (cUS) available in the workstation. Details of CSF drainage procedures, including lumbar punctures (LP), ventricular reservoir and ventriculoperitoneal shunt (VPS), were obtained from clinical records. Neurodevelopmental outcome at 2 years was categorized into 3 groups: no sequelae, sequelae and death.

Results: 110 infants were diagnosed with PIVH of any grade, 20% (22/110) developed PHVD. 32% (7/22) of infants died and 59% (13/22) required CSF drainage. cUS

images were available for 85% (11/13) of patients, all initially intervened after crossing the 97th centile+4mm of Levene index (mean 7,5mm above the 97th centile), at a mean postmenstrual age (PMA) of 31,5 weeks (±2,7). Ventricular stabilization occurred after LPs in 23% (3/13); 15% (2/13) died after temporizing neurosurgical procedures; 62% (8/13) required a VPS, at a median PMA of 38,9 weeks (IQR 37,0–41,3). Follow–up records were available for 13 of survivors. Outcome was significantly better in those not requiring CSF drainage ($p<0,05$). In contrast, no significant difference was found between ventricular width at first intervention and the need for VPS or outcome.

Conclusions: In this cohort, treated before revision of the international guidelines, infants were intervened later than what is now recommended. Infants needing intervention had a significantly worse outcome than those not requiring intervention. However, no significant difference was identified between the ventricular size at first intervention and VPS implantation or neurodevelopmental outcome. Actively considering intervention as soon as the VI surpasses the 97th centile will certainly allow lowering the intervention threshold to not more than the p97 + 4mm, as currently recommended.

None declared

ID216. HOW TO ESTIMATE THE BIOLOGICAL SIGNIFICANCE OF POTENTIAL BIOMARKERS: LESSONS FROM A REVIEW OF CSF BIOMARKERS IN THE NEWBORN PERIOD

Dr. Zhongjie Shi[1], Dr. Kehuan Luo[1], **Professor Sidhartha Tan**[1]

[1]Wayne State University, Detroit, United States

Background

Traditional null hypothesis significance testing has limitations when evaluating biomarkers of clinical outcome. Statistical significance seldom ensures biological significance. The size of the effect is sometimes more important in evaluating biomarkers. Using the example of hypoxic–ischemic encephalopathy (HIE) and its antecedent of perinatal asphyxia, we investigated biomarkers in CSF that could be harbingers of possible brain injury. The CSF biomarkers reviewed were in three mechanistic categories: cell adhesion/proliferation, oxidants/antioxidants and cell damage.

Methods

The estimation approach was used to identify the best biomarkers after emphasizing biological significance. Seventeen case control studies were found suitable for review using a priori criteria from a literature search in PubMed/EMBASE. Statistical analysis used the Mantel–Haenszel model for dichotomous data. The delta difference between the upper and lower bounds of the confidence intervals (CI) of the normal and damaged brain groups respectively was expressed as a percentage of the mean for scoring biomarkers.

Results:

We categorized the biomarkers: score >100% strong, 50%—100% moderate, 0.5%—50%. weak If the Cis overlapped, the score was defaulted to zero. Many laboratory tests were statistically significant when comparisons were made between perinatal vs no asphyxia, asphyxia+HIE vs asphyxia without HIE, asphyxia+HIE vs, no asphyxia, term vs. preterm HIE+asphyxia, but had scores of 0. The strong biomarkers in CSF for prognostication especially for the severest HIE were in order of strength creatine kinase, xanthine oxidase, vascular endothelial growth factor, and neuron specific enolase. Moderate biomarkers were superoxide dismutase and lipid peroxidation products. The strength of the biomarkers was more in the severest HIE compared to moderate or mild HIE. A poll of neonatologists found the acceptable level of false–positive and false–negative rate at 14.5% and 5.1% respectively (average).

Conclusions

The overlap of the two study populations for a positive score is <0.0625%. Although the scoring minimizes false–positive more than false–negative rate, for strong biomarkers the chance of both become very low. We present a score based on the estimation approach that illustrates the strength of a biomarker and may provide a method to choose the most effective and promising biomarkers.

None declared

ID 675. Retrospective cohort study on morbidities in moderate and late preterm infants in the first 5 years of life: The Alkmaar MLPTI Cohort Study

Mr Mark Bosch[1], Mrs Anne Lafeber[1], Dr. Bart Boersma[1], Prof. Dr. Hans Van Goudoever[2], Dr. Femke De Groof[1]

[1]Northwest Clincs, Alkmaar, Netherlands, [2]Amsterdam UMC, Amsterdam, Netherlands

Rationale

Lately, more studies report impaired long-term outcomes in moderate and late preterm infants (MLPTI, Gestational Age 32 to 35+6 weeks). Nevertheless, morbidities in these children have scarcely been studied and their follow-up period after hospital discharge is short. Therefore, this study aimed to identify the morbidities, feeding difficulties, and developmental delays these children suffer from in the first 5 years of life.

Methods

A cohort study was performed on MLPTI born in the North-West Clinics, Alkmaar, The Netherlands, between 2014 and 2016 (Trial register number NL-5429). Data were analysed retrospectively after the children's 5th birthday on all morbidities which led to a referral to the hospital.

Results

A total of 192 MLPTI were included. Since all births were in a second line hospital, the cohort consisted of relatively healthy children. After hospital discharge, 26% of these MLPTI were admitted to the hospital in the first year of life. 18.8% of the children were admitted between the age of 1 and 5 years. Before the age of 5 years, feeding difficulties occurred in 37% of the children and 12% had a motoric developmental delay. Delays in speech and language development occurred in 8.9% of the children,

which might be related to the high rates of recurrent otitis media (18.2%). A rare but severe disease was cerebral palsy, which occurred in 2.1% of the MLPTI.

Conclusions

Compared with literature of full–term children, MLPTI have more hospital admissions, feeding difficulties and developmental delays in the first five years of life. Although these morbidities occur less frequently in MLPT than in very and extreme preterm children, a longer follow–up programme should be considered for all moderate and late preterm children and more awareness could lead to earlier detection and interventions of these morbidities.

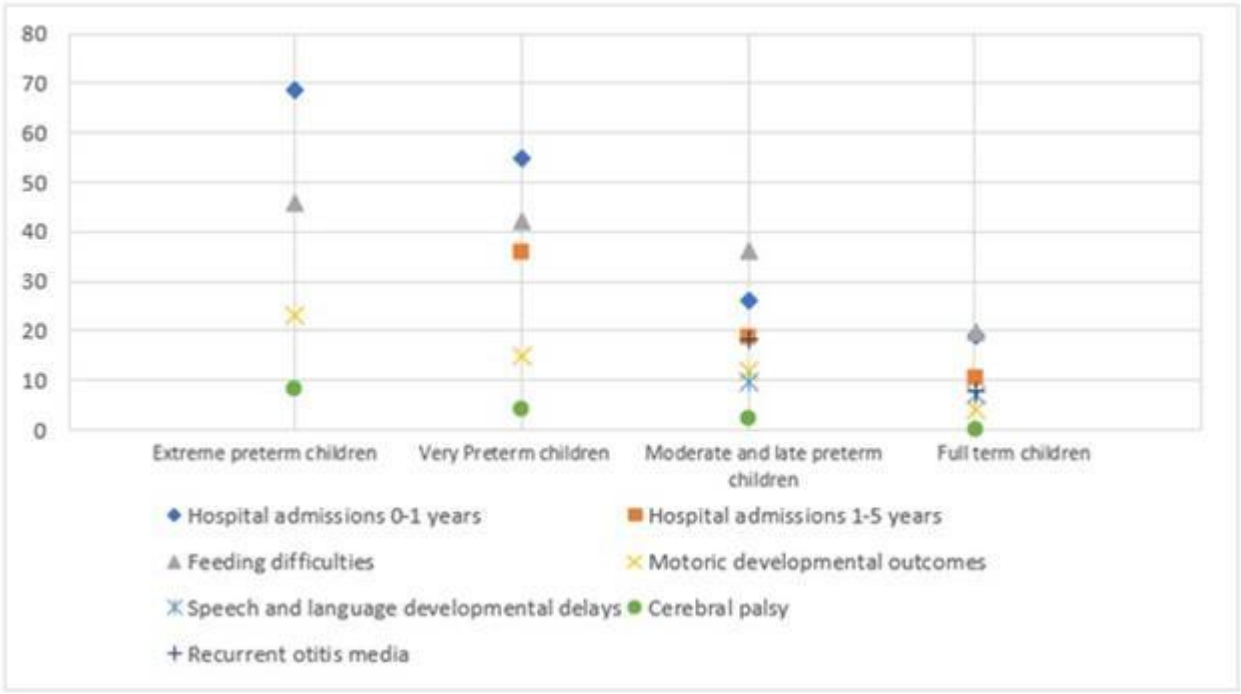

Figure 1: Percentages of morbidities at different gestational ages

Figure 1: Percentages of morbidities at different gestational ages

None declared

ID 670. Babies in Glasses (BiG): a parallel group, open-label, randomised clinical feasibility trial to assess the effectiveness of early spectacle intervention on visual outcomes in babies at risk of cerebral visual impairment.

Mrs Raimonda Bullaj[1], Prof. Kathryn Saunders[2], Prof. Anna Horwood[3], Dr Caroline S Clarke[4], Prof. Neil Marlow[4], Prof Naomi Dale[1], Ms Helen St Clair Tracy[5], Dr Catey Bunce, Ms Catherine Williams[6], Dr Subhabrata Mitra[7], Dr Leigh Dyet[7], Mr Richard Bowman[1]

[1]Great Ormond Street Hospital, London, United Kingdom, [2]Ulster University , Ulster, United Kingdom, [3]University of Reading , Reading, United Kingdom, [4]University College London, London, United Kingdom, [5]University of St Andrews , Scotland, United Kindom, [6]University of Bristol , Bristol, United Kingdom, [7]University College London Hospital, London, United Kingdom

Background

The leading cause of childhood visual impairment in high–income countries is cerebral visual impairment (CVI), commonly seen in children at risk of perinatal brain injury. Reduced accuracy of accommodation (focussing on a near object) is common in these children with the potential to affect wider learning. Previous research on CVI has focussed on children aged between 5–15 years however it is well recognised that early intervention for childhood visual impairment is essential because neuroplasticity progressively diminishes during early life. This study aims to establish the feasibility and acceptability of conducting a randomised controlled trial to test the effectiveness of early near vision correction with spectacles in babies at risk of visual dysfunction.

Methods

This is a parallel group, open–label, randomised controlled feasibility study to assess visual outcomes in children at risk of perinatal brain injury when prescribed near

vision spectacles compared to the current standard care – waiting until a problem is detected. Eligible infants (n=75, with either hypoxic ischaemic encephalopathy (HIE) or <29 weeks pre-term) will be recruited and randomised to one of three arms, group A (full visual assessment at 8 weeks corrected gestational age (CGA), no spectacles), and two intervention groups: B1 or B2. Infants in both intervention groups will be offered glasses with +3.00DS added to the full cycloplegic refraction and prescribed for full time wear with their first visit at either 8 or 16 weeks CGA respectively. All infants will receive a complete visual and neurodevelopmental assessment at baseline and a follow-up visit at 3 and 6 months after baseline visit.

Results

Recruitment has shown to be feasible with percentage recruited (total recruited/total approached) at 100% and 76.5% in the HIE and prem cohort respectively (T=55 infants). Of the 55 infants recruited, 15 became ineligible due to decline in health, 4 withdrew consent and 1 infant deceased therefore 35 infants have completed the study.

Conclusion

The study indicates that a trial is feasible therefore we will proceed to apply for funding to conduct a definitive RCT to provide high quality evidence within a short time frame and help children across the UK and beyond.

None Declared

ID 191. Anakinra (Il1 Receptor Antagonist) and Immune Dysfunction in Infants with Neonatal Encephalopathy

Doctor Aoife Branagan[1,2,3], Dr Claudia Stanciu[4], Dr Johana Isaza-Correa[1,2], Dr Lynne Kelly[1,2], Prof. Afif El-Khuffash[4], Prof. Martin White[3], Prof Jan Miletin[3], Dr Claudine Vavasseur[5], Prof. Eleanor J Molloy[1,2,3,6]

[1]Discipline of Paediatrics, Trinity College, The University of Dublin, Dublin , Ireland, [2]Trinity Translational Medicine Institute & Trinity Research in Childhood Centre (TRiCC), Trinity College Dublin, Ireland , [3]Paediatrics, The Coombe Hospital , Dublin 8, Ireland , [4]Paediatrics, Rotunda Hospital, Dublin , Ireland, [5]Paediatrics, National Maternity Hospital, Holles Street, Dublin, Ireland , [6]Neonatology and Paediatrics, Children's Health Ireland, Dublin, Ireland

BACKGROUND:

Neonatal encephalopathy (NE) describes abnormal neurological function in the newborn. Despite routine use of therapeutic hypothermia (TH), significant mortality and morbidity remains and therefore, there is an urgent need for novel therapies. The pathophysiology is based on immune dysregulation – inflammasome and interleukin-1 activation have been implicated. Anakinra (interleukin-1 receptor antagonist) is a short-acting recombinant interleukin receptor antagonist which has been safely used in neonates.

Our aim was to assess the impact of ex-vivo anakinra (IL1-Ra) treatment on immune function of infants with NE as a potential therapeutic agent.

METHODS:

We performed a prospective multicentre cohort study, recruiting infants with NE undergoing TH. Blood samples were taken on days 1, 3 and 7 of life, treated with anakinra, and compared with neonatal controls. Innate immune function was analysed

by flow cytometry for CD11b (cell activation, migration) and Toll–like receptor (TLR)–4 (recognition of lipopolysaccharide, LPS) in neutrophils (CD66b+) and monocytes (CD14/CD16). Samples were assessed by RT–PCR for markers of inflammasome activation (NLRP3), downstream signalling of TLR4 (MyD88) and proinflammatory cytokines (IL1β). Serum cytokine expression was measured by sandwich ELISA for 12 cytokines.

RESULTS:

Thirty–eight infants were recruited (NE =28; controls =10; total samples =60).

There were no significant differences seen in CD11b or TLR4 expression, or levels of NLRP3, MyD88 or IL1 β after treatment with anakinra. Anakinra significantly decreased TNFα on day 1 and 3 in infants with NE but caused no other significant changes in other cytokine measurements.

Neutrophil TLR4 was increased at all timepoints in infants with NE compared to control. Neutrophil CD11b, although initially suppressed, increased to baseline by day 7. PCR analysis showed increase in IL1–β in infants with NE, both at baseline and after stimulation. Increases in EPO, IL–10, IL–6 and IL–8 were seen which decreased towards control levels by the end of the first week. Both IFN–γ and TNF–α were decreased in infants with NE, returning towards baseline by the end of the first week of life.

CONCLUSION:

Ex–vivo treatment with anakinra does not alter immune function in infants with neonatal encephalopathy, and may not be a useful adjunctive therapy to TH.

None declared

ID 1008. MRI DETECTABLE BRAIN LESIONS IN VERY-LOW-BIRTH-WEIGHT (VLBW) BABIES WITH AND WITHOUT INTRAUTERINE GROWTH RESTRICTION (IUGR): INSIGHTS ON NEUROLOGICAL OUTCOME

Doctor Chiara Andreato[1,2], Doctor Andrea Calandrino[1,2], Doctor Maria Fay Cortella[2], Doctor Agata Zoia[1], Doctor Sara Uccella[3], Doctor Domenico Tortora[4], Doctor Andrea Rossi[4,5], Doctor Luca Antonio Ramenghi[1,2]

[1]Neonatal Intensive Care Unit, Department Mother and Child, IRCCS Istituto Giannina Gaslini , Genoa, Italy, [2]Department of Neurosciences, Rehabilitation, Ophthalmology, Genetics, Maternal and Child Health (DINOGMI), University of Genoa, Genoa, Italy, [3]Child Neuropsychiatry Unit, IRCCS Istituto Giannina Gaslini, Genoa, Italy, [4]Neuroradiology Unit IRCCS, Istituto Giannina Gaslini, Genoa, Italy, [5]Department of Health Sciences (DISSAL), University of Genova, Genoa, Italy

Introduction:Magnetic Resonance–MR studies suggesting that white matter microstructure abnormalities investigated with Diffusion Tensor Imaging–DTI are the key to understand neurological problems of ex–VLBW babies with intrauterine growth restriction–IUGR. We focus on brain lesions diagnosed with conventional MR in IUGR babies as in the majority of studies brain lesions are mainly detected with ultrasound–US. MR is capable to diagnose minor forms of damage (low degree germinal matrix intraventricular haemorrhages–GMH/IVH and punctate white matter lesions–PWML) compared to US. IUGR may increase the risk of GMH–IVH: experimental models for IUGR showed germinal matrix pericytes with weaker microstructure making vessels more prone to rupture.

Methods:We studied VLBW preterms born between 2012–2018. Data concerning placental histology, MR imaging at term correct age and neurocognitive evaluation at corrected age of 3 years were obtained. MR included Susceptibility Weighted Imaging sequences able to identify even those minimal intracranial bleeding escaping US

diagnosis. Griffiths Mental Developmental Scales were used to assess neurological outcome. Diagnosis of IUGR was consistent with abdominal circumference <10th centile and a reduction of centiles higher than 40 centiles on serial US. Measurement of cut off values to define SGA(small–for–gestational–age) babies is evaluated according to Bertino tables.

Results:241 VLBW preterms were included, 28.2% were IUGR–infants. For all brain injuries and neurocognitive outcome, no significant difference emerged between the 2 groups. In the univariate analysis of the IUGR–population, the condition of SGA<3th centile represented a risk factor for adverse neurological outcome (OR 4,80; CI 1,17–19,75 p–value 0,03). In this population there was a significant difference compared to non–IUGRs for placental lesions: maternal vascular malperfusion (IUGR 88,2% VS non–IUGR 54,3%, p–value<0,001), fetal and maternal inflammatory response (respectively IUGR 5,9% VS non–IUGR 22,5%, p–value 0,01 and IUGR 5,9% VS non–IUGR 26%, p–value<0,001).

Conclusion:IUGR–babies had similar incidence of GMH, PWML and clinical outcome compared to non–IUGR VLBW babies. IUGR presented a higher incidence of placental histology abnormalities. SGA–IUGR babies were more severely impaired at the 3 years follow up. The lack of differences in brain lesions indirectly corroborates the microstructure alterations of white matter studied with DTI as the cause of more severe outcome impairments of such babies.

None declared

ID 52. PROGNOSTIC VALUE OF COLOR DOPPLER BRAIN SONOGRAPHY FOR THE NEURODEVELOPMENTAL OUTCOME IN TERM NEONATES WITH HYPOXIC ISCHAEMIC ENCEPHALOPATHY

Professor Emina Hadžimuratović[1], Professor Suada Branković[2], Professor Admir Hadžimuratović[1], Professor Vedran Djido[2], Dr Lejla Melunović[3]

[1]University Medical Center Sarajevo, Sarajevo – Centar, Bosnia and Herzegovina, [2]Faculty of Health Sciences, Sarajevo – Centar, Bosnia & Herzegovina, [3]Public Health Care Center, Sarajevo – Centar, Bosnia & Herzegovina

Background. The color Doppler brain ultrasonography in neonates allows assessing of cerebral blood along with brain morphology. We conducted this study with the aim to determine a prognostic value of cerebral blood flow parameters for the development of neurological sequelae in term neonates with HIE.

Methods. We reviewed the medical records of 47 term neonates with HIE who survived until the age of 12 months of life. According to the Sarnat and Sarnat clinical score neonates were divided into 3 groups: mild HIE, moderate HIE and severe HIE. All included neonates had the color Doppler brain sonography performed in the first 24 hours. The neurological assessment was done at the age of 12 months of life by using the Denver Developmental Screening Test (DDST). Logic regression analysis was performed using the color Doppler brain sonography parameters with the development of neurological impairment as the primary outcome.

Results. Out of 47 neonates, 19 (40.4 %) was with mild HIE, 17 (36.2 %) with moderate HIE and 11 (23.4%) with severe HIE. The values of cerebral blood flow parameters and resistance index (RI) significantlly correlated with the neurological impairment at the age of 12 months of life ($p<0.001$). The limit value of RI indicating the poor neurodevelopmental outcome was 0,81, sensitivity 80%, specificity 85.3%, positive predictive value 52.2% and negative predictive value 95.2%.

Conclusion. The cerebral blood flow parameters mesured with Color Doppler brain sonography are good indicators of th severity of HIE and later neurodevelopmetal outcome.

Keywords: neonate, brain ultrasonography, Doppler, hypoxia–ischemia, prognosis

None declared

ID 707. LONG TERM FOLLOW-UP AFTER TRIALS USING A EUROPEAN PLATFORM OF PRETERM BIRTH COHORTS - THE 'LIFT-UP PRETERM' STUDY PROTOCOL

Doctor Andrei Morgan[1,2,3], Professor Gilles Cambonie[4], Mélanie Durox[1], Professor Corinne Alberti[5], Gonçalo Gonçalves[6], Professor Régis Hankard[7], Professor Samantha Johnson[8], Yannick Marcon[9], Doctor Morgane Michel[10], Artur Rocha[6], Professor Barthélémy Tosello[2], Dr Moreno Ursino[5], Aure Vanhecke[11], Aisling Walsh–Papageorgiou[12], Professor Jean–Christophe Rozé[13], Dr Jennifer Zeitlin[1]

[1]INSERM U1153 EPOPé – Obstetrical, Perinatal and Pediatric Epidemiology Team, Paris, France, [2]Department of Neonatology, Hôpital Nord, Association Publique – Hôpitaux de Marseille, Marseille, France, [3]Department of Academic Neonatology, EGA Institute for Women's Health, University College London, London, United Kingdom, [4]Hôpital Arnaud de Villeneuve, Montpellier, France, [5]INSERM CIC–EC 1426, Hôpital Robert Debré, Paris, France, [6]Human–Centered Computing and Information Science Centre, INESC TEC, Porto, Portugal, [7]INSERM – PEDSTART: The National Pediatric Clinical Research Network, Tours, France, [8]TIMMS, Department of Health Sciences, University of Leicester, Leicester, United Kingdom, [9]Epigeny, St Ouen, France, [10]INSERM UMR 1123, ECEVE, Hôpital Robert Debré, Paris, France, [11]INSERM Pôle de recherche clinique, Paris, France, [12]European Foundation for Care of the Newborn Infant (EFCNI), Munich, Germany, [13]Department of Neonatology, Nantes University Hospital, Nantes, France

Background: A European research infrastructure — RECAP Preterm — federating observational cohorts permits research about the aetiology, prognosis and care of very preterm (VPT) birth, but randomised controlled trials (RCT) are key for propelling advances; however, increasing feasibility constraints mean their numbers are decreasing. Long–term follow–up is essential for establishing safety and efficacy of interventions on health and neurodevelopment, including cognitive, pulmonary,

metabolic and quality of life outcomes. This study will use the RECAP Preterm platform to provide a foundation for innovation in RCTs in VPT populations. Objectives are to (1) develop new tools and methods within the RECAP Preterm platform to enable follow-up and integration of RCTs, and to allow data usage from observational population-based cohorts to enhance RCT analyses; (2) conduct a proof-of-concept study using the TREOCAPA (Prophylactic TREatment Of the duCtus Arteriosus in Preterm infants by Acetaminophen) trial, an on-going pan-European, multi-centre RCT; (3) elaborate an exploitation plan and roadmap for the sustainability and expansion of these tools, methods and infrastructure, with input from external experts and key stakeholders.

Methods: The RECAP Preterm platform will be expanded by creating a new data entry module and developing, integrating and testing methods for federated analyses of RCT and observational data. A Scientific Committee for Sustainability including project partners and other key stakeholders will oversee development of an exploitation plan and road map.

Results: Funding has been obtained for a 2-year follow-up of infants included in TREOCAPA, which tests the hypothesis of an increase in survival to hospital discharge without severe neonatal morbidity for infants born at 22-28 weeks' GA after exposure to prophylactic acetaminophen. Follow-up data collection will commence in autumn 2023. Assessment will include neurodevelopment and costs among survivors according to treatment group. Observational data from RECAP Preterm will provide the opportunity to optimise interpretation of the results of this trial, notably in terms of external validity.

Conclusion: This project will create innovative tools and methods to promote RCTs and bring together academic researchers, healthcare teams, parent representatives

and other stakeholders to generate knowledge for better health, development and quality of life for those affected by VPT birth.

None declared.