Objective The aim was to investigate the influence of perinatal asphyxia on peripheral oxygenation and perfusion in neonates in a prospective observational study.

Methods Neonates with over 34 weeks gestational age and birth weight >2000g without sepsis or connatal malformations were included. Neonates with an umbilical artery pH of (UapH) ≤ 7.15 and 5 minute APGAR score ≤ 6 were investigated. Neonates with an UapH ≥ 7.15, and 5 minute APGAR score ≥ 7 served as control group.

Peripheral muscle near infrared spectroscopy (NIRS) measurement in combination with venous occlusion was performed once in the first 48 hours after birth. Tissue oxygenation index (TOI), mixed venous oxygen saturation (SvO2), fractional oxygen extraction (FOE), haemoglobin flow (Hbflow), oxygen delivery (DO2) and oxygen consumption (VO2) were assessed. Furthermore arterial oxygen saturation, heart rate, blood pressure and temperatures were measured. UapH was correlated to NIRS parameters.

Results Eight asphyxiated neonates were included. In the asphyxiated group significant correlations between UapH and DO2 (r=0.78), VO2 (r=0.80) and FOE (r=0.75) were found. The asphyxiated neonates were compared to 30 neonates in the control group. TOI (67.7±5.5%) and DO2 (29.0±14.2 µmol/100/L/min) were significantly lower in asphyxiated neonates compared to the controls (TOI 71.8±4.9, DO2 43.9±16.9 µmol/100/L/min), FOE was significantly higher (0.33±0.05) compared to the controls (0.28±0.06). No correlation of UapH with NIRS parameters was observed in the control group.

Conclusion Peripheral oxygenation and perfusion measured with NIRS is compromised in neonates with perinatal asphyxia with worsening of parameters with severity of asphyxia.

IMPACT OF SEVERITY OF PERINATAL ASPHYXIA ON PERIPHERAL OXYGENATION AND PERFUSION IN NEONATES

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G Pichler, N Tax, C Binder, M Pocivalnik, E Pichler-Stachl, W Müller, B Urlesberger. Medical University of Graz, Graz, Austria

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THE QUEST TO IDENTIFY BIOMARKERS OF LONG-TERM OUTCOME IN THE NEWBORN

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MJ Hyde, N Modi. Neonatal Medicine, Imperial College London, London, UK

We know that many events in the perinatal period have lifelong health implications. Work from animal models, and limited human data, suggest that deleterious long-term outcomes could be prevented by intervention in the neonatal period. While many studies of early life interventions are currently ongoing, outcome measures have to be in the short to medium term, even though the greatest impact of these interventions may not become apparent until well into adulthood. We are currently looking for biomarkers which can be measured non-invasively in the short term, but which have a strong association with long term outcome and may therefore provide indications of what the long-term effect of our experimental intervention may be. Methods currently being investigated include metabolomic technologies (using multi-component NMR/GCMS/LCMS platforms), genetic analyses using buccal swabs; in vivo magnetic resonance imaging and spectroscopy to measure metabolites in the liver and brain.

HEAD INJURIES

doi:10.1136/archdischild-2012-302724.0029

L Tume. PICU, Alder Hey Children’s Hospital, Liverpool, UK

This lecture will provide an overview of the pathophysiology of severe traumatic brain injury in children and the intensive care management of a child with severe TBI, focusing on the new WFPICS guidance (2012) and tiers of evidence. It will then present evidence for the nursing management of these children.

BIRTH AND REBIRTH - PARENTAL EXPERIENCES OF THEIR NEWBORN INFANTS TREATED WITH HYPOTHERMIA FOLLOWING PERINATAL ASPHYXIA

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S Kokkonen Nassef, M Blennow, M Jirwe. NICU, Karolinska University Hospital, Stockholm, Sweden; Department of Clinical Sciences, Intervention and Technology, Karolinska Institutet, Stockholm, Sweden; Department of Nursing, Division of Neurobiology, Care Sciences and Society, Karolinska Institutet, Stockholm, Sweden

The normal caring and nursing of newborn infants is to keep them warm and close to their parents. Fullterm newborn infants suffering from perinatal asphyxia are treated with induced hypothermia treatment (IHT) for three days at the Neonatal Intensive Care Unit (NICU) in order to prevent or decrease brain damages. The design of the study was a descriptive qualitative study. The aim was to describe and understand experiences of parents whose newborn infants were treated with IHT following perinatal asphyxia. A total of ten parents participated in the study, seven mothers and three fathers. Open-ended recorded interviews were conducted 4–12 months after the birth of their infants. Inductive content analysis

METABOLIC OUTCOMES OF CHILDREN AND ADULTS BORN PRETERM

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N Modi, A Singhal, M Fewtrell, M Hyde. Imperial College London; Institute of Child Health, London, UK

Babies below 37 weeks gestation now account for 9–12% of all births, and babies < 32 weeks gestation for 1–2%. Survival is also rising, and the expectation of life-long health. Preterm babies appear to be at substantially greater risk of features of the metabolic syndrome. For example it is estimated that currently 1 in 15 newly diagnosed hypertensives will have been born preterm. Early nutrition is the likely candidate mediator of long-term effects as well as a potential attenuator of aberrant trajectories of metabolic health. We will summarise research addressing childhood and adult metabolic health following preterm birth, the evidence that early nutrition and preterm growth affects risk for the metabolic syndrome. We will discuss methodological aspects of establishing causal relationships between infant feeding and later health outcomes, the pros and cons of observational versus randomized trials, practical issues in conducting infant nutrition studies/trials and performing long-term follow-up studies. We will provide an overview of the wide range of non-invasive technologies available for the identification of biomarkers in infants (including metabolomic technologies (using multi-component NMR/GCMS/LCMS platforms), genetic analyses using buccal swabs; in vivo magnetic resonance imaging and spectroscopy to measure metabolites in the liver and brain.

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was used as method of analysis. Four main themes emerged from the data:

i. emotional landscapes,
ii. adaptation to a new situation (with subthemes: creating control, external and internal support in a difficult situation, normalizing the abnormal and reconciliation to uncertainty),
iii. moments of rebirth and
iv. transformation of attitudes towards life and the existence.

31 CRANIAL NEUROSURGERY WITHOUT HAIR REMOVAL AND SHAMPOO CARE: RETROSPECTIVE ANALYSIS OF 450 CASES

S Pinotti, S Varga, Meyer Children Hospital, Florence, Italy

Background Trichotomy is a standard procedure in neurosurgery that aims at reducing infection rates. In children, psychological consequences associated to the whole head’s hair removal are remarkable. Over the past twenty years the risk of infection associated to neurosurgical procedures has been thoroughly analyzed. Two negative consequences are associated to trichotomy: the loss of the natural defences offered by hair, and multiple skin lesions that increase bacterial growth. Our hospital established a protocol consisting of head washes before and after cranial neurosurgery with antiseptic shampoo, followed by daily washes with neutral soap when the patient is discharged (“shampoo care”).

Goal. To assess infection rate in a population of children who underwent cranial neurosurgery without hair removal.

Methods Retrospective analysis of clinical records of children undergoing cranial neurosurgery with “shampoo care” during one year.

Results 450 children were included. 5.55% of them had a wound complication, with only two cases of infection (0.4%). Available literature was revised to assess the effectiveness of our protocol. Wound complications and infection rates found in our experience were lower than those reported in patients treated with a standard trichotomy.

Discussion Cranial neurosurgery without hair removal and “shampoo care” is an effective method to reduce infection rates. This results in a shorter hospital stay, better self-esteem and “shampoo care” is an effective method to reduce infection rates.

33 THE BLACK BOX OF PAIN ASSESSMENT IN EXTREMELY PREMATURE NEWBORNS REMAINS CLOSED

M van Dijk, D Root, I Reiss. Neonatal Intensive Care, Erasmus MC - Sophia Children’s Hospital, Rotterdam, The Netherlands

Background and aims In our NICU nurses assess the neonates’ pain with the validated COMFORTneo scale three times per day and additionally if they suspect pain. We treat more and more extremely premature neonates from 24 weeks gestation. In this study we explore if the COMFORTneo scale is valid for these extreme premature neonates.

Methods COMFORTneo scores and Numeric Rating Scale (NRS) scores for pain and distress from 2011 were extracted from the patient data management system. We selected scores assigned in the first 28 postnatal days and consider the gestational age ranges: extreme prematures: 23.6 to 27.0 wks, prematures: 27.1 to 35.6 weeks and term borns: 36 weeks and older.

Results We retrieved 9915 scores in 638 newborns. The median number of scores per patient was 41 (IQR 28 to 55) for 76 extreme premature; 0 (IQR 3 to 18) for 529 prematures; and 3 (IQR 1 to 9) for 253 term borns. 10.0% of scores for the extreme premature; 9.1% of scores for the prematures; and 15.8% of scores for the term borns suggested pain or distress (COMFORTneo score ≥ 14). Correlations between the COMFORTneo scale and the NRS pain ranged from 0.42 (extreme premature) to 0.53 (prematures); those between the COMFORTneo scale and the NRS-distress 0.76 (extreme premature) to 0.85 (term borns). Internal consistencies varied from Cronbach’s alpha 0.73 (in extreme premature) to 0.85 (in term borns).

Conclusions The COMFORTneo scale has acceptable psychometric properties for extreme premature but we should continue to study other assessment strategies.

34 PARENTAL VIEWS OF PAEDIATRIC INTENSIVE CARE TRANSFERS

F Bickell. PICU, Guy’s & St Thomas’ NHS Foundation Trust, London, UK

Background In 2001a study was performed exploring the parental experience of our combined retrieval service for critically ill children, (Colville, Orr & Gracey 2003). The results of this study changed the way the service was provided and introduced the opportunity for a family member to travel with their child in the ambulance for the transfer. Ten years on it was decided to repeat a questionnaire to gain an insight into how families perceived the current service and seek further ways to improve the parental experience at this stressful time.

Method Having gained approval from the Research and Develop team at the base hospital a questionnaire was given to all families whose child was transferred by the South Thames Retrieval Service to the Evelina Children’s Hospital during January 2012.