ID: 177
TITLE: FEEDING DURING RED CELL TRANSFUSION: A PILOT RANDOMISED CONTROLLED TRIAL
AUTHORS: Tim Schindler 1,2; Kee Thai Yeo 3; Srinivas Bolisetty 1,2; Joanna Michalowski 1; Alvin Tan 4; Kei Lui 1,2
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CONTENT:
Necrotising Enterocolitis (NEC) is a devastating neonatal disease associated with high risks of death and disability. The pathogenesis of NEC is incompletely understood but a temporal association between red cell transfusion and NEC has been recognised. There are also certain feeding practices that have an impact on the chances of a preterm infant developing NEC. As a result, there have been concerns about the effects of feeding during transfusion. We aimed to assess the effect of enteral feeding on splanchnic oxygenation in preterm infants receiving red cell transfusions and hypothesised that enteral feeding would have no effect on splanchnic oxygenation.

This was a pilot randomised controlled trial of three different enteral feeding regimes during a single red cell transfusion. Preterm infants <35 weeks gestation were randomised to either: (1) Withholding enteral feeds for 12 hours from the start of the transfusion or; (2) Continuing enteral feeds or; (3) Restriction of enteral feed volume to 120 ml/kg/day for 12 hours. The primary outcome was a comparison of mean splanchnic-cerebral oxygenation ratio (SCOR) and mean splanchnic fractional oxygen extraction (FOE) before (1 hour prior), during (1 hour into transfusion) and after (end of transfusion; 12 and 24 hours post) transfusion. A sample size of at least 16 transfusion episodes in each group was required to detect a 10% change in mean oxygenation with 80% power at 0.05 level.

There were 60 transfusion episodes (20 transfusion episodes in each group) included in the analysis. 41 infants with a median gestational age at birth of 27 weeks (range 23-32 weeks) were enrolled. The median postnatal age was 43 days (range 19-94 days) and the median pre-transfusion haematocrit was 0.27 (range 0.22-0.32). All three groups were similar at baseline. There were no differences in mean SCOR and mean splanchnic FOE at any of the pre-specified time points (see figure). There were also no differences in clinical outcomes. There were no episodes of NEC in any infant involved in the study. Across all groups the mean SCOR increased from the start to the end of each transfusion (0.97 [CI95% 0.96-0.98] vs 1.00 [CI95% 0.99-1.01]; p=0.04) and the mean FOE decreased from the start to the end of each transfusion (0.22 [CI95% 0.21-0.23] vs 0.17 [CI95% 0.16-0.18]; p<0.001).

Inherently limited by a low background incidence of NEC, this pilot study did not demonstrate any physiological differences in splanchnic oxygenation when enteral feeds were either withheld, continued or restricted during a transfusion. However, the successful conduct of this study suggests that a large, adequately powered trial is achievable to answer this important clinical question.

IMAGES:
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Figure. Mean splanchnic-cerebral oxygenation ratio (SCOR) and mean splanchnic fractional oxygen extraction (FOE) before (1 hour prior), during (1 hour into transfusion) and after (end of transfusion; 12 and 24 hours post) transfusion.

COI: None declared
ID: 277

TITLE: ADHERENCE TO NEONATAL HYPOGLYCAEMIA SCREENING GUIDELINES: A RETROSPECTIVE COHORT STUDY

AUTHORS: Jane Marie Alsweller1,2, Leanora Gomes2, Tess Nagy1, Catherine Anne Gilchrist1, Joanne Elizabeth Hegarty2

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CONTENT:

Neonatal hypoglycaemia is common and associated with neurodevelopmental impairment. Guidelines recommend screening infants with risk factors for neonatal hypoglycaemia, including small for gestational age (SGA) and large for gestational age (LGA). Without calculated birth weight centiles, usually required to identify SGA and LGA infants, clinicians may not identify infants at-risk of neonatal hypoglycaemia. We aimed to determine if the introduction of routine calculation of birth weight customised centiles in all infants improved adherence to a neonatal hypoglycaemia guideline and if adherence to the guideline was associated with the identification of neonatal hypoglycaemia in at-risk infants.

Retrospective audits of adherence to the neonatal hypoglycaemia guideline in a tertiary maternity hospital in Auckland, New Zealand in a randomly selected cohort of newborn infants at risk of neonatal hypoglycaemia before (2011) and after (2015) the introduction of routine use of calculated birth weight centiles for all infants. Inclusion criteria were newborns at-risk of hypoglycaemia: infants of diabetic mothers (IDM), late preterm, SGA and LGA infants. The primary outcome was adherence to the guideline, defined as (i) blood glucose concentration screening in the first 48h after birth, (ii) the initial measurement taken 1-2h after birth, and (iii) at least three consecutive blood glucose concentrations \(\geq 2.6 \text{mmol/L} \), over 12h, prior to cessation of screening.

The records of 400 infants (200 each in 2011 and 2015) were included. The proportion of infants with any blood glucose concentration screening was greater in 2015 (106/200 (53%) v 167/200 (84%), \(p<0.001\)). Adherence improved from 2011 to 2015 (59/200 (30%) v 95/200 (48%), \(p<0.001\), with the largest improvement in LGA infants (7/50 (14%) v 25/50 (50%), \(P=0.001\)). Guideline adherence was more likely for IDM than infants with other risk factors (IDM, 63/100 (63%), Preterm 33/100 (33%), SGA 26/100 (26%), LGA 32/100 (32%), \(p<0.001\)). Adherence to the guideline was higher in infants born by caesarean section than in infants born by vaginal delivery (caesarean 79/161 (49%) v vaginal 75/239 (32%), \(p<0.001\)). Screened infants whose care was adherent to the guideline had a higher incidence of hypoglycaemia detection (adherent, 64/154 (42%) versus non-adherent, 34/246 (14%), \(p<0.001\)).

Routine use of calculated birth weight centiles was associated with improved adherence to the neonatal hypoglycaemia guideline and increased detection of neonatal hypoglycaemia in at-risk infants. Thus, identifying practices that improve guideline adherence may improve the detection of hypoglycaemia in asymptomatic at-risk infants.

COI: None declared
ID: 471

TITLE: OUTCOME IN NEWBORN INFANTS MANAGED WITH OPEN ABDOMEN. A SINGLE-CENTER EXPERIENCE

AUTHORS: Loizos, Henriette 1; Palleri, Elena 2; Wester, Tomas 3; Svenningsson, Anna 4; Bartocci, Marco 5

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CONTENT:

The open abdomen (OA) is a surgical technique used in critically ill patients where the abdomen is deliberately left open without fascial closure. In neonates and infants the technique is used to treat or prevent a high intra-abdominal pressure and it also makes it possible to visually monitor the intestinal viability in the post-operative (PO) phase. There are few studies on OA in newborns and knowledge about the factors influencing the outcome of these patients is limited. The aim of this study was to analyze the mortality and morbidity in newborn infants managed with OA.

This was a retrospective, descriptive, single-center study of newborn infants treated with OA between January 2009 and October 2018 at Karolinska University Hospital, Stockholm, Sweden. Demographic, diagnostic, clinical and surgical data were obtained from the patient’s medical record. The study was approved by the regional ethics review board (Dnr 2017/1237-31).

Sixty-seven infants were treated with OA after acute laparotomy. The median gestational age was 25 weeks and 5 days (23-41 weeks) and the median birthweight was 770 grams (490-3920 grams). Necrotizing enterocolitis was the most common indication for surgery (n=55, 82%). The median postnatal age at OA was 11 days and the abdomen was closed after a median of 8 days. The PO period was complicated by infection, defined as a positive blood culture, in 6% of the patients (n=4). Most of the infants required high frequency oscillatory ventilation (n=55, 82%). The mortality rate was high: 51% (n=34) of the infants died before discharge from the hospital. Of these, 59% (n=20) died within 7 days of the initial laparotomy. There was a significant decrease in the mortality rate during the study period. A total of 72% of the infants died between 2009–2013 compared to 43% between 2014–2018 (p=0.033)

Newborns managed with OA are at high risk of post-operative mortality. Special strategies regarding the clinical management after surgery must be considered when treating newborn infants with OA. Close collaboration between pediatric surgeons and neonatologists is essential to reduce mortality in this high-risk group.

IMAGES:
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Image 1: Preterm newborn with post-operative open abdomen.

COI: None declared.
ID: 499  
TITLE: GUT TISSUE BIOMARKERS IN PRETERM INFANTS – WHAT IS NORMAL?  
AUTHORS: Claire Howarth 1,2; Christian Mifsud 3; Simon Eaton 3; Jayanta Banerjee 4,5; Joan Morris 6; Narendra Aladangady 1,2  
AFFILIATIONS: 1 = Homerton University Hospital NHS Foundation Trust, London, England  
2 = Queen Mary University of London, London, England  
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4 = Imperial College Healthcare NHS Trust, London, England  
5 = Imperial College London, UK  
6 = St George’s, University of London, London, England  

CONTENT:  
We previously established normal ranges of Near Infrared Spectroscopy (NIRS) measurements of regional tissue oxygenation in preterm infants. Measurement of tissue biomarkers of gut injury could predict antecedent Necrotising Enterocolitis (NEC). Although small observational studies have elucidated the importance of these tissue biomarkers, there is a paucity of data on normative values in preterm infants. We aimed to establish normal ranges of tissue gut biomarkers for preterm infants over the first 7 weeks of life.

We examined 48 infants <30w gestation admitted to our tertiary level NICU (after ethical approval and informed consent) from Oct 2016 to May 2018. Exclusion criteria: birthweight ≤2nd centile, abnormal antenatal Dopplers, major congenital anomalies or Twin to Twin Transfusion Syndrome. Weekly urinary intestinal and liver fatty acid binding proteins (I-FABP, L-FABP), Trefoil Factor 3 (TFF3) and stool Calprotectin were measured and weekly clinical status recorded. 332 urine samples and 324 stool samples collected for biomarker analysis. I-FABP, L-FABP and Calprotectin were measured using ELISA Kits. Creatinine was measured to standardise I-FABP, L-FABP and TFF-3 to account for changes in urine concentration between samples.

Median birthweight 884g (460-1600), median gestational age 26+3 weeks (23+0-29+6) and 52% female. The geometric mean and 95% CI of values for each biomarker over the study period are in table 1. Over the first 7 weeks of life no biomarkers were affected by presence of PDA, enteral feed volumes and haemoglobin. I-FABP and TFF showed no significant differences for each gestational age. L-FABP was significantly higher in 23-27 week gestation infants compared to 28-29 week gestation infants and in male infants. No other biomarker was affected by gender. Calprotectin significantly reduced in 24-26 week gestational age group infants as postnatal age increased.

Our results show a wide variation in normal ranges for urinary I-FABP, L-FABP, TFF-3 and stool calprotectin in preterm infants less than 30 weeks gestation which may limit their utility as clinical prognostic biomarkers. As far as we know normative ranges for these potential biomarkers in preterm infants have not been studied before.

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https://www.eiseverywhere.com/eselectv3/v3/events/351149/submission/files/download?fileID=06c312249fbbf5709b19f4918c222f32a-MjAxOS0wNSM1Y2UyNyY2Yzc2NGEx

Table 1: Gut tissue biomarkers values for preterm infants <30 weeks gestation in the first 7 weeks of life.

COI: none declared
ID: 509

**TITLE:** SURVEY OF BREAST MILK FORTIFIER PRACTICES IN A CONVENIENCE SAMPLE OF EUROPEAN TERTIARY NEONATAL UNITS 2016-18.

**AUTHORS:** Caroline King

**AFFILIATIONS:** Imperial College Healthcare NHS Trust London

**CONTENT:**

Breast milk fortifier (BMF) use is extremely prevalent within tertiary neonatal units to help improve the growth of preterm babies. However, there are no international guidelines on its use. To develop guidelines, it is important to know current practice.

During 2016 to 2018 a convenience sample of consultant neonatologists working in tertiary neonatal units from mainland Europe were surveyed by email or face to face as to their practices around BMF, a validated proforma was used.

Thirty one units responded from 11 countries. Poland 6, France 4, Sweden 4, Germany 3, Norway 3, Spain 2, Italy 1, Turkey 1, Slovenia 1, Serbia 1, Slovakia 1, Greece 1, Denmark 1, Netherlands 1.

The lowest volume milk per kg BMF was started (number of units) was; 50 (2), 60 (3), 70 (6), 80 (9), 100 (7) 120 (2) (97% response rate).

Sixty-four % reported babies to be 5-10 days old and 36% 11-15 days old when starting BMF (60% response rate).

Sixty % increased incrementally according to tolerance, and 40% started at full strength (90% response rate).

Sixty-five % stored fortified breast milk for 24-30 hours, 35% used it immediately (85% response rate).

Of the units storing milk 24-30 hours 58% had a milk kitchen.

Seventy eight % sometimes used a protein supplement, 22% never did (70% response rate).

Fifty five % never used an energy supplement, 45% occasionally did (55% response rate)

Although BMF was usually started at volumes below 100ml/kg, most units increased incrementally and cautiously according to tolerance. Most units which stored fortified milk 24-30 hours used a dedicated milk kitchen. Many units use protein supplements in addition to fortifier suggesting current fortifiers are not considered to contain sufficient protein, however an energy supplement was rarely needed.

**COI:** none declared
Poster Presentations Abstracts

ID: 548
TITLE: THE EFFECT OF POSTNATAL CORTICOSTEROID ON BROWN ADIPOSE TISSUE IN NEONATAL RAT
AUTHORS: Yu-Shan Chang1,2; Shun-Yun Hou2; Shin-Yu Tsai2; Ying-Yi Chen2; Chyi-Her Lin1; Yau-Sheng Tsai2
AFFILIATIONS: 1 Department of Pediatrics, National Cheng Kung University Hospital, Tainan, Taiwan
2 Institute of Clinical Medicine, College of Medicine, National Cheng Kung University, Tainan, Taiwan

CONTENT:

Corticosteroids have been used to prevent or treat bronchopulmonary dysplasia in preterm infants. Early postnatal exposure to dexamethasone (Dex) has been shown to increase the risk of adverse neurodevelopmental outcomes. Dex was also shown to disrupt brown adipose tissue (BAT) thermogenesis in adult mice. The effect of immediate postnatal exposure to Dex on brown adipose tissue in neonatal rat is not known.

Rat pups were administered Dex or normal saline (Con) on postnatal day (PD) 1 to 3. Body weight, BAT weight, BAT histology and UCP1 protein levels were examined on PD4. BAT function was evaluated by cold exposure under 12°C for 6 hours. The impact of Dex on BAT mitochondrial morphology, membrane potential, fusion and fission were also analyzed.

Dex-treated rat pups, compared with Con, showed growth retardation, whitening of interscapular BAT, and higher mortality rate under cold environment. The expression of UCP1 protein was not significantly different between Con and Dex groups. Dex-treated BAT mitochondria showed decreased membrane potential. Under electron microscope, mitochondria were elongated in shape, showed electron-increased density and loss of normal cristae pattern. The expression of both mitochondria fission (DRP1 and MFF) and fusion proteins (OPA1, MFN1, and MFN2) were increased after Dex treatment. Dex treatment also increased translocation of fission (DRP1, MFF, and FIS1) and fusion proteins (OPA1 and MFN2) to the mitochondria. These results suggest that Dex treatment has a great impact on mitochondrial dynamics.

Postnatal exposure to Dex led to alternation of morphology and impairment of function of BAT mitochondria, resulting in BAT whitening and cold intolerance. Whether these effects persisted into adulthood and led to metabolic derangements requires further researches.

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(A) Experimental design, IP: intraperitoneal (B) Body weight and body length (C) BAT weight (D) Morphology of interscapular BAT (E) H&E staining (upper row) and UCP1 IHC staining (lower row) of BAT (F) Skin temperature change over time under cold environment (12°C) (G) Infrared thermo-imaging (H) Survival curves of Dex and Con groups under cold exposure (I) TMRM fluorescence staining (J) Mitochondria of interscapular BAT under electron microscope (K) Western blot of BAT mitochondria fission proteins (L) Western blot of BAT mitochondria fusion proteins (M) Mitochondria and cytosolic fractions of BAT mitochondria fission and fusion proteins

COI: None declared
ID: 622

**TITLE:** PREDICTORS OF GROWTH PARAMETERS IN PRETERM INFANTS AT DISCHARGE

**AUTHORS:** Kenneth Tan 1; Clare Hellyer 2; Caitlin Watson 3; Pramod Pharande 4

**AFFILIATIONS:**
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**CONTENT:**

A recent unit feedback report from the ANZNN showed unsatisfactory 18 months growth for our infants <28 weeks gestation. Inpatient growth is predictive of growth and developmental outcomes in early infancy, circa 18-22 months. We aim to investigate discharge growth parameters (weight, head circumference (OFC) and length) of our infants <32 weeks gestation and identify risk factors. This is to assist in the development of nutritional intervention of this most vulnerable group of infants for growth failure. We aim to identify risk factors for poor growth for infants <32 weeks gestational age in our NICU.

The cohort of infants from 2014-2016 <32 weeks admitted to our NICU was identified and clinical and anthropometric data was abstracted. Infants were categorised into 3 GA bands (23-27, 28-29, and 30-31 weeks). The Fenton Z-scores for weights, OFC and length were calculated using the LMS method. The differences in z-scores at admission and at discharge for all three the parameters were calculated. Statistical software Stata 14 was used for analyses. T-test was used to compare change in z-scores of the growth parameters. Paired Multiple (linear) regression models was used to identify significant predictors.

635 infants (355 males) admitted, BW 1.3 ±0.4 kg, GA 28.4±2.2 weeks who stayed median 42(19-82) days. Z-score change (95% CI) in parameters shown in table below.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>23-37 weeks</th>
<th>28-29 weeks</th>
<th>30-31 weeks</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δ weight z-score</td>
<td>-1.3 (-1.4, -1.1)*</td>
<td>-0.8 (-1.0, -0.7)*</td>
<td>-0.8 (-0.8, -0.7)*</td>
<td>-0.9 (-1.0, -0.9)*</td>
</tr>
<tr>
<td>Δ OFC z-score</td>
<td>-0.9 (-1.1, -0.8)*</td>
<td>-0.8 (-1.0, -0.6)*</td>
<td>-0.6 (-0.7, -0.5)*</td>
<td>-0.8 (-0.8, -0.7)*</td>
</tr>
<tr>
<td>Δ length z-score</td>
<td>-1.4 (-1.6, -1.1)*</td>
<td>-0.8 (-1.0, -0.6)*</td>
<td>-0.6 (-0.7, -0.4)*</td>
<td>-0.9 (-1.0, -0.8)* * p&lt;0.001</td>
</tr>
</tbody>
</table>

Significant independent predictors (coefficient, 95%CI) for the two of the three parameters were:

- Weight: IUGR -0.27(-0.43, -0.1) surgery -0.11 (-0.19, -0.03) NEC -0.3 (-0.43, -0.06)
- Length: IUGR -0.29 (-0.52, -0.05) TPN exposure -0.14 (-0.25, -0.02).

We could not fit a model for head circumference z-score change.

Every growth parameter z-score in our very preterm population were negatively affected at discharge, especially in the group <28 weeks gestation. Intrauterine growth restriction, NEC, surgery and need for TPN are important predictors for poor growth.

**COI:** None declared
ID: 738

TITLE: GASTROCHISIS AND THE PRE-FORMED SILO (PFS): EARLY PHYSIOLOGICAL PARAMETERS AND OUTCOMES

AUTHORS: Rebecca Lee 1; Niyi Ade-Ajayi 2, Theodore Dassios 3, Ann Hickey 4

AFFILIATIONS: King's College Hospital, London, UK

CONTENT:

Validated severity of illness and risk-adjusted scores of morbidity and mortality often require collection of physiological data that may not be available or relevant in early care of babies born with gastroschisis (GS). The relationship between commonly recorded early physiological parameters and short-term outcomes has not previously been described in a cohort of GS babies, exclusively managed with gradual surgical reduction using a PFS as the intended choice of closure. Aims: To describe a population of infants with GS managed with PFS’s, and investigate the association between individual early physiological parameters with length of stay (LOS) and days of PN (parenteral nutrition).

A retrospective cohort study of babies with gastroschisis born between 1st January 2008 and 31st December 2017 in a single tertiary NICU was undertaken. Babies managed with a PFS were included in full analysis. Routinely measurable physiological parameters including pH, base excess, lactate and toe-core gap were recorded over the first 24, 48 and 72 hours. Total length of stay and TPN days were selected as outcome measures. Babies were stratified into ‘complex’ and ‘simple’ gastroschisis groups, and whether they had an episode of blood culture positive sepsis. Data presented as medians (IQR), or counts (%). Non-parametric analysis, correlation coefficient and chi-squared statistical analysis was utilised. Multivariate linear regression assessed the independence of confounding variables.

100 babies were identified of whom 91 underwent closure with PFS. Complete records for 77 infants were included for full analysis [38 male, gestation 36+6(35+3 – 38+0), birthweight 2458(1993 – 2757)g]. Survival was 100%. The worst median lactate was 4.2 (IQR 3.0 – 5.8), base excess -7.0 (IQR -5.55 – -9.35), and ‘toe-core’ gap was 3.4oc (IQR 3.0 – 4.2oc) over the first 72 hours. Metabolic acidosis (pH <7.26 and BE -8.5 or greater) was present in 30% of infants. There was no correlation between individual physiological parameters and outcomes in all babies with gastroschisis, or in the complex / simple or sepsis / no sepsis groups. PN days and total LOS were higher in infants with complex gastroschisis and blood-culture positive sepsis, p= <0.001 respectively.

In a population of gastroschisis patients that were managed exclusively with PFS, early physiological parameters and blood measurements were not associated with a longer stay or duration of parenteral nutrition. Simple and complex gastroschisis stratification provides clearer early prognostication.

IMAGES:
https://www.eiseverywhere.com/eselectv3/v3/events/351149/submission/files/download?fileID=108e2b427cc03d58cf549cee1d9cdba4-MjAxNzIyNjY2Q1OWU5

Early physiological parameters and outcomes in patients with gastroschisis managed with Pre-formed Silo as choice of surgical closure.

COI: None declared.
ID: 765

TITLE: NEONATAL HYPERINSULINISM. PATIENT DEMOGRAPHICS AND THE NEED FOR DIAZOXIDE.

AUTHORS: Sai-Kalyani Kanchagnany 1, Dushyant Batra 2

AFFILIATIONS: Neonatal unit, Nottingham University Hospitals NHS trust, Nottingham, UK

CONTENT:

Hypoglycaemia in neonates is a common reason for neonatal unit admission. Persistent, severe and recurrent hypoglycaemia can lead to long term neurological sequelae due to brain injury. The presence of high levels of insulin results in hypoglycaemia, prevention of gluconeogenesis, suppression of fatty acid oxygenation and ketogenesis. Thus depriving the brain of its alternative fuels, resulting in cell damage. Several risk factors have been suggested. We conducted this study to find out the incidence of neonatal hyperinsulinism in our neonatal population and to assess the associated demographic factors.

Neonatal unit admission databases and laboratory databases were used to retrospectively identify patients who underwent hypoglycaemia screens in Nottingham, between January 2014 and January 2019. The criteria for hypoglycaemia screens were based on our local neonatal hypoglycaemia guideline (persistent hypoglycaemia, neuroglycopaenia or blood glucose < 1mmol/l). The diagnosis of neonatal hyperinsulinism was made when a neonate had detectable insulin levels (>2mU/L) in the presence of hypoglycaemia (blood glucose level <2.6mmol/L).

We divided the population into two groups. Group 1 were all hyperinsulinaemic and required treatment with Diazoxide and Chlorthiazide. Group 2 responded to conventional treatment with increased feed volumes, increased frequency of feeds and intravenous fluids. Both patient and maternal demographics were collected from patient databases.

Incidence of neonatal hyperinsulinism requiring treatment with diazoxide, in our tertiary neonatal unit over the last five years was 1 per 10,000 live births.

In group 1, 59% had a z score for growth < -1.28 and 18 % had z scores above 1.28 (median -1.64, IQR 2.69). Birth gestation varied between 33-41 weeks. 28% of these neonates were born to mothers with pre-eclampsia. 50% were born to mums with British ethnicity while 27% to Indian or Pakistani ethnicity mothers. Median maternal BMI 24.5 (IQR 6.1). In group 2, 110 babies had hypoglycaemia screens sent, 55% were hyperinsulinaemic. 42% had a z score for birthweight < -1.28 (median -2.18, IQR 1.073). 15% had z scores >1.28 (Median 1.99, IQR 1.12). Birth gestation varied between 24-41 weeks. Only 26% were born to diabetic mothers and 19% to mothers with pre-eclampsia. 55% were born to British mothers and 20% to Indian or Pakistani mothers. Median maternal BMI 27.8 (IQR 8.5).

The Indian and Pakistani ethnicity was over-represented in both groups potentially indicating higher incidence (7.2% of live births Indian/ Pakistani ethnicity, ONS).

The incidence of Hyperinsulinism (HI) in our population is 1 in 10000 live-births. Babies born small for gestational age and of South East Asian ethnicity seem to be at higher risk.17% of our hypoglycaemic babies who underwent hypoglycaemia screen, needed treatment with Diazoxide and Chlorthiazide. Surprisingly few had significant maternal history to suggest they were at risk of significant Hyperinsulinism.

COI: None declared
ID: 852

TITLE: POST-SURGICAL RESIDUAL INTESTINAL ANATOMY AS A PREDICTOR OF INTESTINAL FAILURE IN NECROTIZING ENTEROCOLITIS

AUTHORS: Laetitia Bessalah1, Fabio Fusaro2, Roberto Tambucci1, Bénédicte Van Grambezen1, Dominique Hermans1, Antonella Diamanti2, Pietro Bagolan2, Olivier Danhaive1

AFFILIATIONS: 1 Saint-Luc University Hospital, Catholic University of Louvain, Brussels, Belgium
2 Bambino Gesù Children’s Hospital and Research Institute, Rome, Italy

CONTENT:

Besides acute mortality and morbidity during the neonatal period, necrotizing enterocolitis (NEC) can lead to chronic intestinal failure (IF) due to short bowel syndrome (SBS) following extensive intestinal resection, and requiring prolonged parenteral nutrition (PN). Despite this significant burden and its potential implication for care orientation during acute phase, there is a gap of knowledge in predicting the need for prolonged PN in post-NEC SBS, and a critical need for clinical predictors. We aim to assess to role of post-surgical residual intestinal anatomy in predicting long-term PN dependency.

Study design: retrospective cohort study in two level-4 pediatric institutions - St-Luc University Hospital (UCL), Bambino Gesù Children’s Hospital (OPBG) - during a 19-year period (1999-2018). Inclusion criteria: infants of any gestational age, advanced NEC (Bell stage IIIA/B) diagnosed at =6 weeks from birth to 6 months of age. We examined the correlation between post-surgery residual intestinal anatomy and PN duration. Clinical data were collected from local databases and medical records. In a representative prevalence sample (UCL), IF occurred in 3 infants, representing 8.3% of Stage III NEC (n=36) and 1.9% of all-stage NEC cases (n=160).

16 subjects were identified, with a male/female ratio of 57%, gestational age 24-38 weeks (median 31 – interquartile range 5), birth weight 675-2540 g (med 1554 - IQR 790). Chronic PN duration was 120-5338 days (med 331 - IQR 267). 1 infant died of late complications (sepsis) (4.4 months of life), 1 is currently on chronic PN (4.9 years at last follow-up), 14 were successfully transitioned to full enteral feedings at age 6.0-20.9 years (med 8.3 – IQR 9.8). Residual small bowel length was 3-95 cm (med 47.5, IQR 40.7). Regression analysis showed that residual small bowel length correlated with PN duration ($r^2 0.33$ – $p=0.011$) (figure). PN duration was 120-900 days (med 227, IQR 248) with preserved ileo-caecal valve (ICV+), and 240-1234 days (med 406, IQR 337 when absent (ICV-) ($p=0.32$). Association between colonic preservation and PN weaning could not be analyzed due to data heterogeneity.

Despite the limitation of this retrospective study, our data support that residual small bowel length is inversely correlated with PN duration. Future studies involving larger cohorts and longer follow-up are warranted in order to define and refine the prognostic value of residual intestinal anatomy for IF and digestive autonomy in NEC survivors.

IMAGES:
https://www.eiseverywhere.com/eselectv3/v3/events/351149/submission/files/download?fileID=59b4b509752a9fd89933619135a08b-MjAxOS0wNSM1Y2UyNjY2ZDBkNWJ2

Duration of parenteral nutrition (days, logarithmic scale) as a function of residual intestinal length (cm) in 16 NEC survivors with IF. Linear regression statistics performed with Origin software (www.originlab.com).

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TITLE: INFLUENCE OF TIME AND MATERNAL CHARACTERISTICS IN THE COMPOSITION OF VERY PRETERM HUMAN MILK

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CONTENT:

Very Premature Infants (VPI) frequently experience growth failure in early neonatal life, partially due to inadequate nutrient supply, which, after an initial period of parenteral nutrition, mostly depends on human milk. Variations in macronutrient content in breast milk related to maternal characteristics has been described in mothers of term infants and might play a role, helping to identify babies at higher risk. The aim of this study was to analyze milk macronutrient composition from mothers of Very Premature Infants during the first weeks of life and identify relationships between macronutrient concentration and maternal characteristics.

Mothers and Very Premature Infants were recruited if milk production was in excess of their baby feeding volumes. The present report represents a section of a broader study looking for influence of milk components on growth of Very Premature babies, and because of this major malformations, chromosomal diseases, congenital metabolic disorders or poor chance of survival were exclusion criteria. Aliquots from 24-hour milk pools were used to measure composition with the mid-infrared technique (MIRIS Human Milk Analyzer®, Uppsala, Sweden). Demographic, anthropometric, clinical, general health and obstetric data were collected from clinical charts or through maternal interview. The generated data were analysed with SPSS (Social Package for Social Sciences) v25.

103 mothers participated in the study. Of them, 31.9% were overweight or obese. Twenty one (20.4%) delivered twins and 20 (19.4%) had a diagnosis of IUGR. Mean gestational age (GA) was 28.5±2.5 weeks. A total of 590 milk samples were analyzed. Between weeks 1 and 6 carbohydrate concentration increased (7.1±0.6g/100mL vs 7.4±0.5, p<0.0001) and protein decreased (1.9±0.4g/100mL vs 1.3±0.2, p<0.0001). Milk from mothers with a BMI ≥25 had a higher protein content on week 4 (1.5±0.3g/100mL vs 1.3±0.2, p=0.008) but not on week 1. Fat (3.4±1.1 vs 4.2±1.3g/100mL) and energy were lower on week 1 in mothers of IUGR babies and protein was slightly lower (weeks 1 and 4) in mothers of multiples (1.7±0.2 vs 1.9±0.4g/100mL, p=0.026 and 1.3±0.1 vs 1.4±0.3g/100mL, p= 0.003). We found no differences in relation to other maternal or obstetric characteristics (GA, breast surgery, previous breastfeeding).

Very preterm milk changes composition along the first few weeks postpartum. Although our results are in line with previously reported average figures, individual variation in very preterm milk macronutrients is high and maternal health/anthropometric and obstetric characteristics can have an impact in the macronutrient composition of their milk. Awareness of these facts may help improve nutrient supply in premature nutrition.

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