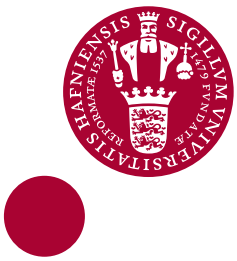

Formula composition determines sensitivity to necrotizing enterocolitis (NEC) in preterm pigs

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Weaning off PN was achieved in 51% of the patients of the whole cohort over the period. Among SBS patients, 75% of those weaned off PN had at least 40 cm remnant bowel. The mortality strongly decreased in group 1 (2.5% death rate) as compared to group 2 (9%). Fifteen patients (7%) received intestinal +/− liver transplantation (ITx/ILTx) vs 4% in group 2. The incidence of CRI was 1.6/1000 PN days. The prevalence of LD was 43%, and patients with CE (73%) and extreme SBS (54%) appear to be high-risk populations.
Conclusion: Long-term PN and ITx are the treatments of irreversible IF. The outcome of children depending on long-term PN is improving. However, PN-associated LD remains a threatening complication which may lead to plan ITx/ILTx. Children with IF on long-term PN should be referred to reference centre.

Disclosure of Interest: None declared

PP421

ASSESSMENT OF THE LEVEL OF THE STRESS IN FAMILIES TAKING CARE OF THE CHILDREN BELOW 3 YEARS OF AGE ON HOME PARENTERAL NUTRITION (HPN)

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Rationale: Chronic gut failure and long term HPN affects the patient's and his/her family's quality of life in most daily activities. We assessed psychosocial functioning of the family caring for a child on HPN.
Methods: This assessment on the basis of The Family Strain Questionnaire. Data were collected from 6 paediatric HPN centres (Poland, France, Netherlands, Italy, Czech Republic). This HPN group (n = 57) was compared with control group of families with healthy children in the same range of age (n = 50). The test chi-square was used for analysis of material.
Results: Statistical differences between these two groups concerned: resignation from work to care for a child (HPN group 82% vs. control group 17%), changes in family's life style (88% vs. 57%; more diverse constraints not present in the control group) and psychological problems in HPN group. Child's chronic disease has induced a feeling of illness in 71% of mothers. In spite of: family's, friends' assisstance (89% vs. 64%), in the HPN group some depressive symptoms were found: a sense of permanent danger (67% vs. 0%), strong feelings of stress (53% vs. 2%), feeling of powerless in the face of the disease (65%), sleeplessness, indigestion, headache, chronic fatigue (53% vs. 16%), pessimistic feeling about the future (21% vs. 0%).
Conclusion: Most parents/caregivers taking care of the children on HPN are chronically stressed because of feeling of permanent danger caused by child's illness (in many of them incurable) and by responsibility for the nutritional treatment. This level of stress is not decreased despite of family's or friends' assisstance. To identify the early phase of excessive stress or depression the Family Strain Questionnaire may be useful. In our material more than 50% of parents/caregivers caring for children on long term HPN need psychological support.

Disclosure of Interest: None declared

PP422

FORMULA COMPOSITION DETERMINES SENSITIVITY TO NECROTIZING ENTEROCOLITIS (NEC) IN PRETERM PIGS

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Rationale: Preterm birth and the introduction of enteral nutrition predisposes for the development of necrotizing enterocolitis (NEC). Breast milk has been found to protect against NEC but when mother's milk is not available, formula feeding is required. The optimal formula composition remains unclear, however we have previously documented that lactose is superior to maltodextrin in NEC protection in our preterm pig model of preterm infants (Thymann et al., Am.J.Physiol. 297: G1115–1125, 2009). In this study, we aimed to improve our standard formula on a series of non-carbohydrate nutritional variables (increased vitamin and mineral levels, whey protein and medium chains fats supplemented with casein and long chain fats, respectively).
Methods: Newborn preterm pigs were assigned to 3 days of total parenteral nutrition (TPN) followed by 2 days of enteral formula with standard formula (STD, n = 39) or the supplemented formula (SUP, n = 39). After 2 days of formula feeding, intestinal tissue was collected for enzyme analyses and macroscopic NEC evaluation (1 = normal, 2 = hyperaemia, 3–4 = local haemorrhagic and necrotic areas, 5–6 = extensive transmural necrosis).
Results: NEC incidence was significantly decreased in the SUP versus the STD pigs (19% vs 56% $p < 0.05$) with markedly lower NEC severity in the stomach (score 1.8 vs 2.8, $p < 0.01$) and colon (score 1.7 vs 3.3, $p < 0.001$). Brush border enzyme activity in the proximal small intestine was increased for: aminopeptidase A, amino-peptidase N, lactase and sucrase ($p < 0.05$). The dry mucosa percentage tended to increase in the SUP group ($p = 0.08$).
Conclusion: The data show that nutritional composition of formula markedly influences NEC sensitivity in preterm neonates. It remains to be shown in more detail, how the many nutritional constituents in artificial formulas

can be manipulated to mimic the well-known beneficial effects of colostrum and mothers's milk on the immature intestine.

Disclosure of Interest: None declared

PP423
TYPE AND INTAKE OF NUTRITION ON DAY 4 AT THE PICU: PREDICTOR FOR OUTCOME?

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Rationale: Critically ill children are extremely vulnerable to develop malnutrition during stay on the intensive care. Aim of the study is to evaluate the type of nutrition and nutritional goals for protein and energy intake on day 4 of admission in relation with outcome.

Methods: All children admitted to the PICU between 2008 and August 2009 aged 0–18 yrs with various diagnoses were analyzed. Minimum energy need was set at resting energy expenditure + 30% and minimum protein need was set at >1.8 g/kg/d for children aged 0–1 yr and >1.2 g/kg/day for children older than 1 yr. Malnutrition was defined as Z-score for weight for age (WFA) <–2. Length of stay (LOS) was defined as outcome parameter. Descriptive statistics and non parametric tests were used to determine predictors for outcome.

Results: Of the 332 patients, 189 were males (57%) and 47 deceased (14%). Median age upon admission was 1.5 months and median LOS was 11 days. Malnutrition was present in 21% with the highest incidence in age groups 1 month–1 yr (41%) and 6–12 yr (39%). Energy and protein intake was met by 67% and 63% respectively. The percentage of children who met their energy- and protein-intake was significantly lower in the malnourished group 25% vs 75% ($p = 0.01$). Nutritional status and intake had no effect on LOS. Twenty percent received total parenteral nutrition (PN), 46% a combination of PN and enteral nutrition (EN) and 33% received only EN. A significant higher percentage of children met their energy intake, when they were only fed by EN than by other types of nutrition (78% vs 62%; $p = 0.01$).

Conclusion: Prevalence of malnourished children at the PICU remains high. On day 4 roughly 65% of the children met their energy and protein intakes. Malnourished children met significantly less the goals for energy- and protein intake. Nutritional status and intake on day 4 were not predictors for length of hospital stay. Enteral support is superior to meet nutritional goals.

Disclosure of Interest: None declared

PP424
COMPARISON OF HIGHER TO LOWER PARENTERAL AMINO ACID INTAKE IN PRETERM INFANTS: POSSIBLE ADVANTAGES ON SHORT TERM GROWTH

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Rationale: Poor growth is one of the most common problems to face in the care of the preterm newborn. Our study was designed to assess if an early administration of higher intakes of amino acids (4 g/kg/c
intakes (2.5 g/kg/die), in parenteral nutritio
and whether it could provide growth advant
Methods: The peak parenteral amino a
provided daily to the two groups were 2.5 g
lower L), and 4 g/kg/d (group higher H) while on the same non-proteic energy intake. The anthropometric parameters (weight, length and head circumference) were assessed at birth and weekly up to 36 weeks of gestational age (GA). Tolerance was assessed through emogasanalysis and blood samples (urea, creatinine and protein concentration) at birth and at days 7, 21 and 28. We used SPSS 13.0 for statistical analysis ($p < 0.05$).

Results: We enrolled 47 patients for group L (birth weight [BW] 887.23±219.96 g; GA 27.32±2.30 weeks) and 46 for group H (BW 917.37±190.30 g; GA 27.61±1.80 weeks); there were no differences between the two groups at birth ($p > 0.05$). Anthropometric measurements showed a growth advantage for the group H with values significantly higher at 36 weeks GA (weight 1741±285 g vs 1900±296 g groups L and H; $p < 0.05$). In group H, on day 7 the level of blood urea was temporary higher (10.17±5.39 vs 12.76±4.84 mmol/L in groups L and H; $p < 0.05$); no statistically significant differences were found for creatinine and protein concentration, diuresis and pH.

Conclusion: Our results suggest that patients who received higher protein intakes in early life, could benefit from growth advantage in the short period. Further studies will verify the impact on long term growth.

Disclosure of Interest: None declared

PP425
A COMPARATIVE STUDY ON THE FERRIPRIVE ANEMIA IN THE ADMITTED INFANTS AND TODDLERS

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Rationale: We carried out a comparative study on ferriprive anemia (FA) in the 2nd Pediatric Clinic/Emergency County Hospital Craiova in 2009 in 2 groups: G1 – infants (0–12months) and G2 – toddlers (1–3 years).

Methods: To process the data regarding the values of Hb, Ht, and sideremy we used the arithmetic mean (Am), standard deviation and the Student test (t).

Results: G1: FA (Hb < 10.5 g%) was registered in 162/793 admitted infants. G2: FA (Hb < 11 g%) was registered in 206/556 admitted toddlers. Distribution according to sex M/F: G1 – 95/67, ratio = 1.4; G2 – 126/80, ratio = 1.6. According to environment U/R: G1 – 60/102; G2 – 62/144. Causes of FA in G1 – insufficient Fe deposits at birth in 38 (premature 35, gemelarity 3); prolonged feeding with cow milk in 32, incorrect diversification 83, severe anorexia 8; congenital heart defects in 7; feeding difficulties due to mouth defects in 2. Causes in G2 – prolonged and excessive feeding with cow milk in 63, excess of flour products in 42, late diversification in 31, other mistakes 25, rebel anorexia due to parasitoses in 21; neglected anemia in the prematurely born infants (28), twins (3); chronic blood loss due to hemophilia in 3, increased needs due to