

Conclusion Arterial Spin Labeling MR imaging can be used to evaluate (luxury) perfusion in the stroke area after PAIS. In the future, relations between ASL imaging findings and outcome should be drawn.

337 CEREBROSPINAL FLUID FLOW QUANTIFICATION OF THE CEREBRAL AQUEDUCT IN CHILDREN AND ADULTS WITH TWO-DIMENSIONAL CINE PHASE-CONTRAST CINE MR IMAGING

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Background and Aims Cerebrospinal fluid (CSF) is known mainly involved in the intracranial homeostatic balance. Disruption of CSF flow may cause distinctive diseases. Therefore, the characterization of normal CSF flow dynamics in children and adults can provide pathophysiological information on diseases affecting CSF circulation. However, available measurements of CSF dynamics are too invasive and the data of children are limited. To quantify differences of CSF dynamics between children and adults, a non-invasive and powerful technique, cine phase-contrast MRI with high temporal and spatial resolution, is used for the quantification of the CSF flow.

Methods Aqueductal area was selected for the quantification of CSF flow using cine-phase contrast MRI. CSF flow parameters, including peak velocity and net stroke volume, were analyzed between child-age group and adult-age group.

Results 20 children (16 male, 4 female; 7 months to 6 years) with initially under clinical suspicion of atypical febrile seizure and finally proved normal by CNS imaging and clinical investigations were enrolled. The peak CSF flow velocity in the cerebral aqueduct of children were 200.02 ± 66.64 ul/s, and the mean net stroke volume is 15.07 ± 17.42 ul/heart beat. Comparing the results in 10 normal adults (5 male, 5 female; 23 to 56 years) with the mean peak velocity of 100.86 ± 18.13 ul/s and the net stroke volume of 5.09 ± 0.56 , data in children are significantly higher than that in adults.

Discussion The value of these flow parameters in children is significantly different from that in adults. Therefore, the age of a patient should be taken into consideration while interpreting these parameters.

338 NUTRIENT FOR NEUROPROTECTION: MRI ASSESSMENT OF LACTOFERRIN SUPPLEMENTATION AFTER HI INJURY IN THE P3 RAT BRAIN

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Background Animal models of preterm brain injury can be achieved by Hypoxia-Ischemia (HI). Lactoferrin (Lf) is an iron-binding glycoprotein with anti-oxidant, anti-inflammatory and anti-infectious activities. In rodents, after oral administration, Lf is rapidly transferred from the intestine into the brain.

Aim The aim of this work was to assess the neuroprotective effect of Lf supplementation through lactation after P3 HI brain injury by using MRI.

Methods At birth, rat pups were divided in 3 groups: The dams of the HI-Lf group (n=6) received Lf-enriched food, HI-Iso received a

diet isocaloric to the Lf (n=6) and a Sham group (n=3). At P3 pups from HI-Lf and HI-Iso groups underwent HI injury. At P25, T₂W images, 1H-MRS and DTI were performed. A Mann-Whitney test was used to compare values between the different groups.

Results When compared to HI-Iso group, the number of rats injured (51% vs. 61%), the percentage of injured cortex at P3 ($4.9 \pm 3.6\%$ vs. $15.0 \pm 7.1\%$, $P=0.02$) as well as the percentage of cortical loss at P25 ($4.6 \pm 4.8\%$ vs. $16.7 \pm 11.9\%$, $P=0.09$) were reduced in the HI-Lf group. At P25, using 1H-MRS, brain metabolites of HI-Lf rats is almost normalized with [Glu+Gln] only remaining decreased whereas the Iso-HI group showed also decreased levels of [Asp] and [totalNAA]. With DTI, white matter FA values tend to be higher in the HI-Lf group than in the HI-Iso group and were comparable to Sham.

Conclusion This study shows a potential neuroprotection from maternal nutritional supplementation with Lf after HI in the developing brain of progeny.

339 SPONTANEOUS CORTICAL AROUSALS IN HEALTHY TERM NEWBORN INFANTS DURING QUIET SLEEP

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Background and Aims Arousal from sleep is an important survival mechanism. During sleep-EEG monitoring in healthy term infants we observed that the majority had frequent spontaneous jerky movements (SJM), resembling a Moro reflex, during quiet sleep (QS) followed by periods of marked EEG attenuation. This phenomenon was considered a spontaneous cortical arousal (SpCA). In this study we describe and quantify the observed phenomenon, and investigate factors that influence it.

Methods Video-EEG recordings of healthy term infants, aged 1 to 36 hrs, were examined for the presence of SpCAs associated with SJMs. Bursts of EEG activity associated with a SJM (B_{SJM}) and subsequent lower voltage periods (LV_{SJM}) of EEG attenuation were identified and labelled on each recording. These were compared to a similar pattern of bursts (B) and lower voltage (LV) periods of "normal" Tracé Alternant (TA) with no SJMs. An arousal index (AI_{QS}) was calculated as the number of SpCAs per hour of QS. Factors that influenced the AI_{QS} were investigated.

Results Eighty-seven video-EEGs were analysed. SJMs occurred during bursts of TA and were followed by significant EEG amplitude attenuation (median amplitude of $LV_{SJM} = 7.8$ μ V versus $LV = 12.8$ μ V, $p < 0.001$).

The median AI_{QS} was 23.9. A significant negative correlation was observed between the AI_{QS} and infant's birth weight ($p=0.015$). A trend towards a lower AI_{QS} was observed with increasing gestational age ($p=0.06$).

Conclusion SJMs followed by periods of EEG attenuation signify SpCAs in healthy term newborn infants and may represent a normal developmental phenomenon.

340 PRETERMS \leq 32 WEEKS HAVE MORE FAT TISSUE AT 35 WEEKS CORRECTED AGE THAN NEAR TERMS BORN AT 35 WEEKS

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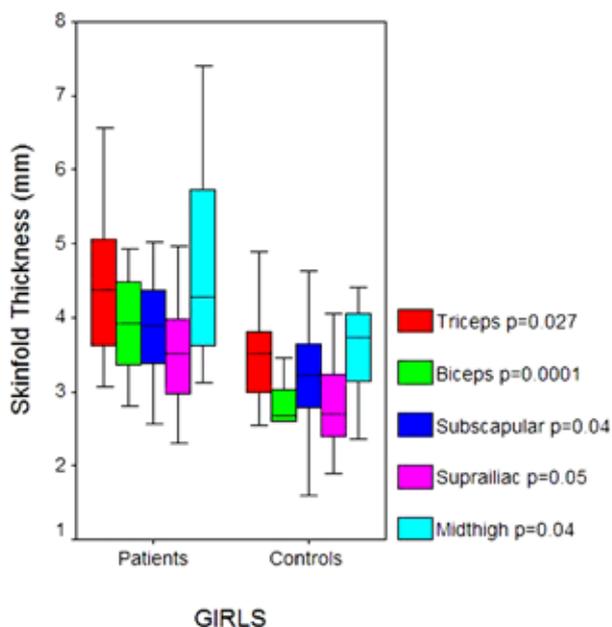
Background Early aggressive nutrition followed by enriched preterm style enteral feeding is considered the standard of care in neonatal intensive care units (NICU) and results in good neurological

outcome. However there are concerns whether preterms accumulate excess fat during NICU stay.

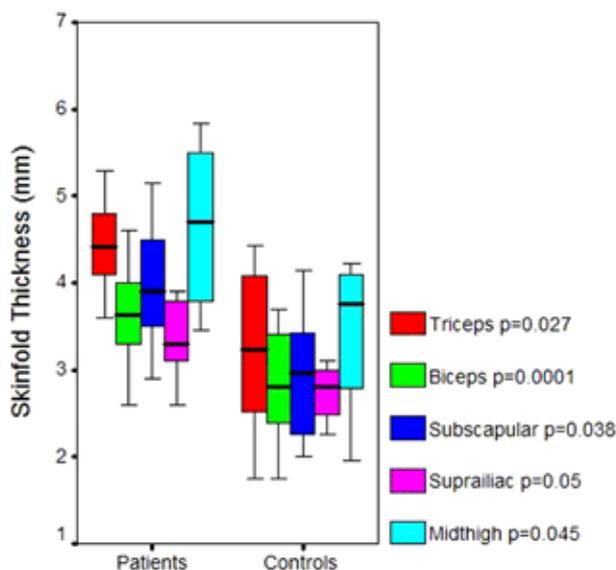
Aim Aim of this study was to compare skinfold thickness of preterms when they reached 35 weeks corrected age (CA) with that of 35 week born controls.

Methods Appropriate for gestational age (AGA) preterms born ≤ 32 weeks gestational age (GA) had skinfold thickness measured from 5 body sites by using Holtain caliper at 35 weeks CA as well as weight, length, head circumference (HC) and ponderal index (PI), results were compared with gender matched AGA near term controls born at 35 weeks gestation with nonparametric tests. Data are expressed as median and range.

Results 26 preterms (10 males GA:30.5 w (28–31), BW: 1500g (1040–1700)), 16 females GA:29 w (25–32), BW: 985g (610–1800)) were compared to 20 controls (10 males BW:2175g (1837–2356), 10 females BW: 2115g (1815–2362)).Skinfold thickness measured from triceps, biceps, subscapular, suprilliac and midhigh regions were significantly higher in patients compared to controls both in girls and boys (Figure 1.2). However weight, length, HC and PI were similar.



Abstract 340 Figure 1 Girls



Abstract 340 Figure 2 Boys

Conclusion Enriched feeding with increased protein and calories is essential for preterms during NICU stay however the way we do it does not seem to lead to in utero body composition which is considered ideal.

341 CHOLESTEROL BIOSYNTHESIS IN PRETERM INFANTS ON PARENTERAL NUTRITION WITH A LIPID EMULSION CONTAINING 10% FISH OIL (FO): A PILOT STUDY

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Background and Aims Limited data are available on the metabolic effects of intravenous fish oil (FO) in premature infant. We reported on the plasma cholesterol lowering effect of an intravenous lipid emulsion containing 10% FO or FMS (10% FO, 50% MCT, 40% soybean oil-SO) when compared with MS (50% MCT, 50% SO) (D'Ascenzo et al. JPediatr 2011). Aim of this study was to ascertain if the lower plasma cholesterol concentrations resulted from reduced biosynthesis or enhanced clearance.

Methods Eighteen premature infants were randomised to receive FMS (n=9, GA 199±17 days, BW 983±138 g) or MS (n=9, GA 202±17 days, BW 992±178 g). The IV lipids were increased to 2.5 g·kg⁻¹·d⁻¹ in the first week of life. On day 7 patients received an oral dose of deuterated water for the measurement of cholesterol and palmitate biosynthesis. The incorporation of deuterium from water into cholesterol (cholesterol biosynthesis) was measured by Gas Chromatography and Combustion Isotope Ratio Mass Spectrometry (GC-C-IRMS). Fractional and Absolute Synthesis Rates (ASR) were obtained and compared by Mann-Whitney Test.

Results Plasma free cholesterol concentrations were significantly lower in FMS than in MS (53±5 vs 64±9 mg/dl, p=0.01). ASR were 8.5±3.4 vs 8.4±2.6 mg/kg/d in FMS and MS respectively (p=0.93).

Conclusions Intravenous FO in preterm infants has marked cholesterol lowering effect but cholesterol biosynthesis was not reduced. Measurements of cholesterol catabolism are in progress.

342 MATERNAL PREDICTORS OF HUMAN MILK INTAKE IN EXTREMELY PRETERM INFANTS

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Background and Aims Mother's own breast milk (MBM) is the most advantageous enteral food for extremely preterm infants (EPIs). Mothers of EPIs are at risk for inadequate expression of breast milk but determinants of MBM production are not well identified. The aim of the study was to investigate maternal predictors for MBM intake in EPIs during the neonatal period and at discharge.

Methods The sample consisted of 109 mothers and their 117 EPIs born at Karolinska University Hospital from 2005–2009. Maternal data was retrieved from prenatal and obstetrical medical charts. In infants, birth data and information on enteral intake was collected from neonatal charts during the first 6 weeks of life and at discharge.

Results Mean maternal age was 31.3 years. Mean infant gestational age and birth weight were 26+0 weeks and 850 grams. Only mothers with high MBM production at 3 weeks (MBM >90% of total enteral food intake) maintained their lactation over time. Predictors of low neonatal MBM production were unemployment, use of nicotine, low educational level, non-Swedish origin, non-cohabiting status