



Abstract O-011 Figure 1
mean ASL values in ml/100g/min

used. Exclusion criteria were: congenital abnormalities, brain lesions, meningitis, scan artefacts. Measurement sites were cerebellar hemispheres, vermis, basal ganglia, thalamus and all lobes, using a postprocessing tool.

Results Perfusion values of thalami and basal ganglia appeared fairly constant at different ages. An increase of perfusion was noted in the cerebellar hemispheres from 3 years of age. The cerebellar vermis showed a relative high perfusion in all ages. A slight progressive increase of perfusion was seen at the level of the temporal and occipital lobes without a specific peak. A progressive increase of perfusion was noted at the level of the frontal lobes and parietal lobes. In general, we found a considerable inter-individual variability, without significant variations between genders.

Conclusions ASL shows an age dependence of cerebral perfusion. This normative data can help to identify abnormal cerebral perfusion, which may lead to diagnoses or a better understanding of the neurological presentation of a child.

¹ Biagi *et al.* 2007.

Brain and Development Experimental

O-012 INTRAVENTRICULAR HAEMORRHAGE GRADE 1–2 IN EXTREMELY PRETERM INFANTS DOES NOT IMPAIR NEURODEVELOPMENTAL OUTCOME AT 2.5 YEARS: THE EXPRESS COHORT STUDY

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Background Extremely preterm infants (EPI) risk impaired neurodevelopmental outcomes. About one third of EPI develop intraventricular haemorrhage (IVH), a complication that increases the risk of impaired neurodevelopmental outcome in preterm infants. The outcome for EPI with IVH grade 1–2 remains unclear.

Aims To determine the impact of IVH grade 1–2 in EPI on neurodevelopmental outcome at 2.5 years of corrected age (CA).

Methods In this prospective population based cohort study the participants consisted of 707 EPI born alive before 27 weeks of gestation; EPI without IVH, EPI with IVH grade 1–2 and 3–4 respectively, and 701 full term controls. They were assessed and compared according to the Bayley scales of infant and toddler development, 3d edition (BSITD) and at 2.5 years of CA.

Results 70% of the live-born infants survived until the follow-up at 2.5 years of CA. The estimated marginal means (EMM) BSITD scores for EPIs with IVH grade 1–2 were not significantly lower than for EPIs without IVH in cognitive ($p = 0.32$, EMM = 86.8, CI = 82.5–91.1), language ($p = 0.25$, EMM = 88.8, CI = 82.0–95.6) or motor ($p = 0.2$, EMM = 78.8, SE = 3.8, CI = 71.308–86.376) functions.

Conclusions Although extremely preterm birth alone is a risk factor for impaired neurodevelopmental outcome, IVH grade 1–2 does not significantly increase that risk.

O-013 LACTOFERRIN IN INFLAMMATORY NEONATAL RAT BRAIN INJURY: A NUTRIENT FOR NEUROPROTECTION?

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Introduction Lactoferrin (Lf) is an iron-binding glycoprotein secreted in milk with anti-oxidant, anti-inflammatory and antimicrobial properties. The aim of this work was to assess the neuroprotective effect of Lf in P3 rat pup brain exposed to Lypopolysaccharide (LPS) using high-field (9.4 T) ¹H-MR Spectroscopy. **Materials and methods** At birth, dams received either a Lf-enriched food (1 g/kg/day) or a diet isocaloric (iso) to the Lf during lactation. Rat pups received Lf through breastfeeding. P3 pups were then divided in 4 groups: sham-iso, LPS-iso, sham-Lf and LPS-Lf ($n = 10/\text{group}$). P3 pups from LPS groups were injected in the subcortical white matter with 0.5 μL saline containing LPS (10 μg) and the sham groups with vehicle. Metabolic profile was measured by ¹H-MRS in the Hippocampus (Hp) and Striatum (St), 24 h (P4) and 21 days (P24) after LPS. A Mann-Whitney test was used to compare values between the different groups (significance: $p < 0.05$).

Results At 24h, no evidence for ventriculomegaly was observed. At P24 LPS-Iso and LPS-Lf presented significant ventriculomegaly, but ventricle volumes of the LPS-Lf rats ($25 \pm 2 \text{ mm}^3$) tended to be lower than the one of the LPS-Iso group ($34 \pm 3 \text{ mm}^3$) (mean \pm SEM) At 24 h, LPS groups (i.e. -Lf and -Iso) exhibited altered metabolism compared to sham groups involving modification of [Glc]-energy source, [Glu+Gln]-neurotransmission and [GPC+PCho]-components of cell membranes. In addition, LPS-Iso group presented also changes in [Mac]-tissue integrity marker, [GABA]-neurotransmitter, [NAA+NAAG]-neuronal marker and [PCr]/[Cr]-energy metabolism compared to sham groups. Interestingly LPS-Iso group presented also differences with the LPS-Lf group: [Mac], [PE]-cell membranes and [Cr+PCr]-energetic metabolism. At P24 the brain metabolism of LPS-exposed rats continued to be disturbed but in a lesser extent for LPS-Lf rats. Further MRI derived data (volumetry and diffusion MRI) are under investigation.

Discussion and conclusion Supplemented in the food during the lactation, Lf appears to have a neuroprotective effect: this result could be of high interest for preterm's brain neuroprotection.