

medial temporal gyrus, right cuneus, left inferior parietal lobule and left parieto-occipital arcus) at 6 years. The effect of preterm birth in the right junction of paracentral lobule and the precuneus and in the right transverse temporal gyrus shows statistically significant differences between groups ( $p=0.001$ , positively correlated with thickness at 6 years in the IUGR group and negatively correlated in the non-IUGR group).

**Discussion/conclusion** Our results indicate that the regional structural reorganization of cerebral cortex after preterm birth differs in IUGR and non-IUGR subjects. Preterm birth affects the higher order association areas with increased thickness or less thinning in IUGR than non-IUGR born children. These cortical changes might underlay the specific functional deficits observed in these children.

### 196 IMPROVED DETECTION OF INTRACRANIAL HEMORRHAGE IN TERM AND PRETERM NEONATES USING SUSCEPTIBILITY WEIGHTED IMAGING

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**Background and aims** Magnetic resonance imaging (MRI) at term age has been reported to be superior to cranial ultrasound (cUS) in detecting white matter abnormalities. The aim of this retrospective study was to compare sensitivity of MRI using SWI (susceptibility weighted imaging) and cUS in the detection of intracranial hemorrhage.

**Methods** 68 consecutive term and preterm neonates, who received 3 Tesla MRI of the brain with SWI (Magnetom Skyra, Siemens Healthcare, Erlangen, Germany) around term and serial cUS (Acuson sequoia 512, Siemens Healthcare) during neonatal care, were included in this study between 05/2011 and 02/2012. MRI was performed using a MR-compatible incubator with compatible head coil (LMT nomag, Luebeck, Germany) under sedation. MRI were analyzed by two radiologists independently. Inter-rater agreement was estimated by Cohen's kappa coefficient.

**Results** MRI and cUS were feasible in all 68 neonates (38 girls, 30 boys, mean gestational age at birth 31.9±4.5 weeks (range 23.3–40.7 weeks). MR imaging was done at 40.3±3.0 weeks (range 30.7–55.7 weeks). Both radiologists independently identified (post-)hemorrhagic alterations in 20 of 68 infants by SWI (inter-rater agreement: K=1). In 10 this was in agreement with cUS, but in 4 of them additional intraventricular and/or parenchymal hemorrhagic components were diagnosed by MRI. All patients with suspected intracranial hemorrhage by cUS were confirmed by SWI.

**Conclusions** We found improved detection of intracranial hemorrhage with high inter-rater agreement by MRI using SWI compared to cUS in term and preterm infants. All hemorrhages diagnosed by cUS could be confirmed by MRI.

### 197 SERIAL DIFFUSION TENSOR IMAGING DEMONSTRATES: WHITE MATTER MICROSTRUCTURE IN THE PRETERM PERIOD IS NOT RELATED TO GESTATION AT BIRTH

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**Background and aims** We have previously shown a dose-dependent effect of prematurity on white matter (wm) microstructure at term

equivalent age (TEA). The aim of this study was to determine whether the degree of prematurity at birth is associated with FA values in the early neonatal period.

**Methods** Inclusion criteria: Preterm birth < 33 weeks gestational age (GA), serial MRI and DTI, first scan ≤ 33 weeks post-menstrual age (PMA), second at TEA.

We studied 52 preterm infants, with a median GA at birth of 27+1 (24+3 – 32+6) weeks. DTI data were analysed using tract based spatial statistics (TBSS). Voxel based statistics was performed to assess the correlation between GA at birth and FA, corrected for PMA at scan.

**Results** Scan 1: 31 (25+2 – 33) weeks PMA.

There were no significant correlations between GA at birth and FA in any WM region.

Scan 2: 41+1 (38+6 – 44+1) weeks PMA.

GA at birth was significantly linearly correlated with FA values in the corpus callosum, internal and external capsule, optic radiation, cerebral peduncles, cingulum and inferior longitudinal fasciculus.

**Conclusions** These data suggest that diffuse wm injury is not an inevitable consequence of preterm birth, and imply there may be a window of opportunity between birth and term equivalent age where intervention with appropriate treatments may ameliorate the adverse effects of prematurity on wm development.

### 198 TRANSPLANTATION FOR PHT IN EARLY CHILDHOOD

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Compared to older children, where Cystic Fibrosis is the most common indication, pulmonary vascular disorders, either related to congenital heart disease or idiopathic pulmonary hypertension, make up 40–50% of the population of patients undergoing lung transplantation before 6 years of age. Lung transplantation of infants and young children is complicated by challenges in several domains including technical (i.e. airway complications), monitoring (transbronchial biopsies are more difficult to obtain and lung function testing requires sedation), developmental (in particular when oral motor development is delayed) and most importantly level of illness (more than 50% of infants and young children undergoing lung transplant require mechanical ventilation and/or extracorporeal support prior to transplant. Although improving in recent years, early outcomes lag behind older children and adults (70% compared to >80%). However 3 and 5 year survival is comparable (65% and 50% respectively), perhaps due to a lower incidence of acute and chronic rejection. Many children transplanted in infancy face developmental delays, most likely due to pretransplant insults. Nonetheless, excellent long term outcome is possible and should become increasingly likely with improvements in pretransplant support and management of posttransplant complications.

### 199 A HYBRID GENOME-KINOME HIGH-THROUGHPUT SCREEN REVEALS NOVEL MITOTIC TUMOR SUPPRESSOR SIGNALING AXIS

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Faithful cell division maintains genomic stability and prevents cancer. Our cells employ well-orchestrated signaling cascades to ensure meticulous segregation of the genome during mitosis. Failure of these checkpoint mechanisms jeopardizes genome integrity and promotes evolution of cancer cells.