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

doi:10.1136/archdischild-2012-302724.0196

S Sirin, B Huening, A Stein, SL Goericke, A Krasny, UF Felderhoff-Müser, B Schweiger. Institute of Diagnostic and Interventional Radiology and Neuroradiology, Department of Neonatology, Division of Pediatrics I, University Hospital Essen, Essen, Germany

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 ± 3.0 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 MRI.

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

doi:10.1136/archdischild-2012-302724.0197

B Huening, L Pazderova, G Ball, N Tusor, N Merchant, T Arichi, JM Allsop, UF Felderhoff-Müser, M Rutherford, AD Edwards, SJ Counsell. Centre for the Developing Brain, Department of Perinatal Imaging, Division of Imaging Sciences & Bioengineering, King’s College London, London, UK; Division of Pediatrics I, Neonatology, University Children’s Hospital, Essen, Germany

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+4 (24+3 – 32+2) 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 (25–3 – 33) weeks PMA.

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

Scan 2: 41+2 (38+4 – 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.

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

doi:10.1136/archdischild-2012-302724.0199

G Nalepa, J Barnholtz-Sloan, AS Lehmann, FC Yang, J Renbarger, DW Clapp. Indiana University School of Medicine, Indianapolis, IN; Case Western Reserve University Comprehensive Cancer Center, Cleveland, OH, USA

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.