

reference group (OR: 5.1; 95% CI 3.7 to 7.1). For the preterms the rate of TDS90 was higher for those with moderate/severe NDD (27/37 vs. 27/116, adjusted OR: 8.09; 95% CI 3.2–19, and mild NDD 43/102 (adjusted OR: 2.2 (1.2–4.1). For preterms with no NDD TDS90 was more common than for the reference group (27/116 vs. 116/1089, OR: 2.5; 95% CI 1.6 to 4.1).

**Conclusion** Extreme prematurity was associated with increased risk of later mental health problems, particularly if they had other neurodevelopmental disabilities.

### 1252 EVALUATION OF PREMATURE CHILDREN BY VOLUMETRIC MAGNETIC RESONANCE IMAGING AND COGNITIVE TESTS

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Preterm children experience a high prevalence of long-term serious cognitive defects. Fetuses of 23 weeks of gestational age are now viable. Subsequent physiological stress can seriously disrupt the maturational processes that lay down this architecture. The ensuing abnormalities in brain may then contribute to the long term cognitive deficits. We aimed to measure regional brain volumes on the magnetic resonance imaging of prematurely born 9-year-old children and group matched term children. Nineteen nine year old preterm children and 21 term children recruited for the study. All subjects went under the volumetric magnetic resonance imaging. In the neurocognitive assessment, it was observed that preterm children had impairments in visuospatial functioning, three-dimensional thought ability, data processing and learning speed, executive function, complicated executive attention, perseveration, working memory, abstract thinking, installation replacement, focused attention. Volumes of cerebellum, right and left caudate nucleus, right and left putamen, right and left globus pallidus. Right and left hippocampus and corpus callosum were significantly smaller in preterm children. There was a correlation between cerebellar volume and executive function, harmony in social life, importance given to attention and detail, visuospatial disorder and verbal IQ, hippocampal volume and attention, arithmetics, verbal and performance IQ, bilateral caudate nucleus volume and full scale IQ score, vocabulary and speech skills, time in event processing, three dimensional thinking and verbal IQ scores.

Our data indicate that preterm birth is associated with regionally specific, long term reductions in brain volume, in turn lead to poorer cognitive outcome.

### 1253 FA-VALUES IN THE PLIC AT TERM EQUIVALENT AGE ARE ASSOCIATED WITH NEURODEVELOPMENTAL OUTCOME AT TWO YEARS CORRECTED AGE

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Microstructural changes in white matter (WM) can be detected by Diffusion Tensor Imaging (DTI). This study tests the hypothesis that Fractional Anisotropy (FA) in the posterior limb of the internal capsule (PLIC), as measured directly on the FA-maps in preterm infants ATE is correlated to neuro-developmental outcome at two years corrected age.

**Methods** MRI at term was performed in 66 preterm infants (GA < 32wks), Using colour-coded DTI maps, FA-values were assessed in the PLIC. Regions of interest (ROI's) were manually positioned in the PLIC bilaterally at the level of the foramen of Monro. FA-values

from these ROI's were assessed in relation to scores for cognition, fine and gross motor outcome measured with the Bayley Scales of Infant and Toddler Development (BSITD)-III. Correlations were corrected for clinical factors.

**Results** FA-values in the left PLIC were correlated with cognition ( $r=0.435$ ,  $p<0.05$ ), fine motor ( $r=0.335$ ,  $p<0.05$ ) and gross motor ( $r=0.337$ ,  $p<0.05$ ) outcome at two years corrected age. There was no such association for the right PLIC. After correction for gender, the correlation persisted only in boys. Postmenstrual age (PMA) and WMI were both significantly correlated with FA values in the left PLIC (resp  $r=0.253$ ,  $p<0.05$  and  $r=-0.368$ ,  $p<0.05$ ).

**Conclusion** FA-values measured by ROI-analysis ATE are significantly correlated with neurodevelopmental outcome at two years. This is in agreement with studies that used advanced post-processing techniques to measure diffusion parameters. These measurements in this study are easy to perform, reproducible and directly applicable on MRI data and therefore particularly eligible for use in clinical care.

### 1254 LANGUAGE DEVELOPMENT OF PREMATURELY BORN CHILDREN - BIOLOGICAL DETERMINANTS AND SYNTAX

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There are numerous findings of the literature about premature born children having a higher degree of risk for different types of communication, language, reading and writing difficulties, compared to children born at term. These problems may seem minor in early language development and they are generally not recognized in that period. As the rule of language grows, particularly through reading and writing abilities, the problems become more evident and recognizable, and can significantly affect the academic achievement of children, especially if they do not provide help and support.

These theoretical findings were the basis for setting the aim of the study: to compare the outcome of prematurely borns in the age of 10 years, with the outcome of children born at term on linguistic tasks, especially in syntactic knowledge. According to this, one of the goals of the study was to investigate the relationship between biological variables (gestational age, birth weight, Apgar score) and linguistic- syntactic knowledge. The characteristics of this relationship were also examined. 34 prematurely born children and 34 children born at term participated.

**Results** showed statistically significant differences between prematurely born children and children born at term on syntactic knowledge tasks: prematurely borns' performances were significantly poorer. Biological factors were predictive for the level of syntactic knowledge. The purpose of this paper is to emphasize the importance of systematic monitoring of communication, language and speech development in prematurely born children.

### 1255 FUNCTIONAL ALTERATIONS OF THE HIPPOCAMPUS IN IUGR

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**Introduction** Intrauterine growth restriction (IUGR) has been shown to relate to later neurodevelopmental problems. Recent studies suggest that deficits in spatial memory are the most prevalent among these individuals. The hippocampus, a key structure in spatial orientation, is susceptible to hypoxia or stress during pregnancy,