

## REGIONAL CORTICAL THICKNESS DEVIATIONS RELATE TO IQ IN VERY-LOW-BIRTH-WEIGHT (VLBW) YOUNG ADULTS

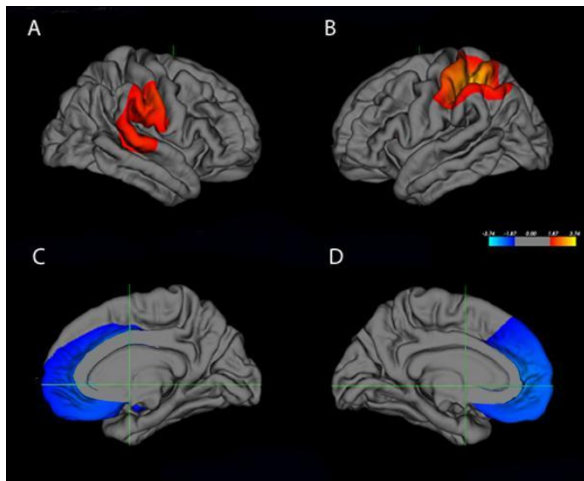
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**Background and aims:** Computational automated morphometric MRI methods have detected correlates between regional cortical thickness / subcortical nuclei volumes and cognitive task performance in healthy individuals and in different patient groups. Perinatal brain injury leading to neurocognitive deficits is common in VLBW children. Aim of study was to investigate the relationship between cortical thickness and cognition in preterm born VLBW young adults.

**Methods:** 49 preterm VLBW (BW  $\leq$  1500 grams) and 59 control participants were examined at age 19 with an automated MRI technique at 1.5 Tesla for morphometric analyses of cortical thickness. Cognitive assessment was performed with Wechsler Adult Intelligence Scale WAIS-III. Differences between groups and structural-functional relationships were explored.

**Results:** In the VLBW group regional cortical thinning was seen in temporal and parietal regions, while cortical thickening was found in frontomedial areas compared with controls. Full IQ was associated with thicker frontal areas and with parietal thinning in the VLBW group. IQ indices that corresponded the most to the associations were the Perceptual Organization Index with the temporo-parietal thinning (A and B) and the Processing Speed Index (C) and the Working Memory Index (D) with the frontal thickening (Figure 1).



[Figure 1]

**Conclusions:** Cognitive deficits in young adults born with VLBW are associated with cortical thickness changes indicating perinatal brain injury resulting in deviant cortical development affecting regional cortical thickness.