

Neuropsychological profile of diplegia spastica: predictability of neonatal ultrasound

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The study presents the results on neonatal cranial ultrasonography (US) and later neuropsychological assessments of 15 children with spastic diplegia. The study confined itself to children who had spastic diplegia due to periventricular leukomalacia (PVL) detected by neonatal US. The assessments were undertaken when the children were 5 to 12 years of age. Method: The infants were examined by cranial US at the ages of 2 and 3 days, and at 1 to 2 weeks intervals afterwards, using an Aloka SSD-900 mechanical sector scanner with a multifrequency transducer (7.5 MHz crystals). PVL was classified according to de Vries et al. (1993) as I (mild), II (moderate), and III (severe). Amount of assistance needed in gross motor functioning was classified as mild (I), moderate (II) and severe (III). The functionality of the upper extremities was classified as normal, immature, and deviant concerning muscle tonus, symmetrical use of the hands, and fine motor manipulation. The cognitive level was assessed with the WISC-III or the WPPSI-R. The neurocognitive assessment was made using a Developmental neuropsychological assessment (NEPSY; Korkman et al., 1998) which consisted of 16 tests that tap aspects of attention, language, sensorimotor and visuospatial functions, memory and learning.

Results: The children's IQ scores were at the lower end of the normal distribution. The NEPSY assessment revealed deficits within the Sensorimotor functions and Visuospatial processing. Language and memory/learning function scores were at or very close to norms, with the exception of the speeded naming task. In addition, deficits were found in the attention and executive function domain, including the tower test and visual attention and auditory attention tasks. No association was found between the neonatal cranial US findings and the IQ and neurocognitive scores. However, the cranial US findings strongly predicted functional motor limitations of the children.

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