

Evaluation of psychomotor development of children after selective brain cooling application

Introduction: Equable or severe neonatal hypoxic – ischemic encephalopathy (HIE) is associated with a high incidence of deaths or motor and sensory disabilities in children. Children with encephalopathy are at risk of developing cognitive deficits even in the absence of functional deficits. Correct psychomotor development depends on the work of the central nervous system, which is responsible for maintaining body posture and developing motor skills. However, not all stages of development occur in children in the correct order and pace. Early diagnosis of abnormalities in psychomotor development in a young child and early therapeutic intervention in order to compensate for developmental deficits is essential. Various diagnostic scales serve this purpose, including the Munich Functional Developmental Diagnostics.

Objective: The main goal was to assess the psychomotor development of children, to detect disorders and deficits in the fields of movement, perception, speech, manual functions and social contacts in children treated with therapeutic hypothermia.

Material and methods: The study was conducted among 27 children treated with therapeutic hypothermia in the neonatal and pediatric intensive care unit. The research method was based on the analysis of the children's medical records and the assessment of psychomotor development based on the Munich Functional Development Diagnostics.

The children's parents were acquainted with the information about the study. The analysis of the research material was performed in the R for Windows software using the Mann – Whitney U test, Rhio – Spearman correlation, and Wilcoxon test. The level of significance was <0.05 .

Results: The analysis of medical records showed that 60% of the group were girls, and 40% boys. It was alleged that the assessment of the psychomotor development of children ($N = 5$) did not differ significantly from the developmental norm, with a slight retardation in speech. In the range of 2 - 3 year old children ($N = 5$), the results of the assessment showed retardations in the areas of perception, social age and speech understanding. The group of children > 4 years old ($N = 7$) presented the greatest delays in the function of independence, understanding numbers and logical thinking. There was also noted, in a lesser extent, a developmental delay of fine motor skills and visual intelligence. In relation to corrected age, the development of speech and general knowledge was best assessed.

Conclusions: Munich Functional Developmental Diagnostics is a scale that allows the detection of delays in one or more areas of psychomotor development in a simple and accurate

way. Moreover, it is a diagnostic tool that enables the introduction of early therapeutic intervention to compensate for developmental deficits.