EVALUATION OF 7-9 YEARS OLD CHILDREN'S MOTOR FUNCTION ACCORDING TO TOUWEN NEUROLOGICAL EXAMINATION

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Background: Lately there has been an increase in the number of children who come to physiotherapists without concrete diagnosis, but still have minor deviations in motor performance. Neurological examination according to Touwen (TowenNE) is detailed, standardized, age-specific examination, which takes into account the developmental aspects of rapidly changing nervous system. TowenNE allows for the differentiation into three neurological subtypes: children who have normal neurological condition, children who have simple minor neurological dysfunction (MND) and children who have complex MND.

Purpose: The aim of the study was to assess 7-9 years old children's neurological function according to TowenNE. The goals of the study were (1) to find out the prevalence of minor neurological dysfunction in children aged 7-9-years, (2) to find out the most affected units in Towen neurological examination in children aged 7-9-years, (3) to evaluate the correlations between prevalence of MND and gender, age, physical activity, emergence of walking, Apgar score, academic achievement and independence in activities of daily living.

Methods: 63 healthy 7-10-years-old children (32 males, 31 females; mean age 8,4 years ± 0,91) were studied. The most important exclusion criterion was diagnosed neuromuscular disease (CP, dystrophy). Firstly, parents answered a questionnaire about their child. Children's weight and height was measured. Every child underwent TowenNE. Results were documented, coded and analysed to find correlations between gender, age, activity, birth anamnesis, functional skills and outcomes of TowenNE. The Statistica 12 was used. For correlational analysis the Spearman Rank Order Correlation was used. P<0.05 was considered statistically significant.

Results: The prevalence of simple MND was 27% (n=17), complex MND 5% (n=3). The prevalence of MND was evenly divided between boys (n=10) and girls (n=10). Simple MND appeared more in girls (n=10) than boys (n=7), complex MND appeared only in boys (n=3). The most commonly affected unit in TowenNE was coordination. Prevalence of MND was correlated with age (lower prevalence, older age, r=-0,296, p< 0.05) and help needed with dressing (higher prevalence, more help, r=0,317, p< 0.05). Prevalence of MND did not correlate statistically significantly with gender, Apgar score, emergence of walking, activity and academic achievement. Dysfunction in coordination according to TowenNE was correlated with the help needed with dressing (r=0,289, p< 0.05) and dysfunction in fine motor was correlated with the help needed with shoelaces (r=0,266, p< 0.05).

Conclusions: The prevalence of simple MND in healthy 7-9-year-old children is 27% and of complex MND 5%. The prevalence of MND is correlated with age: simple MND appears less in older children. The most common dysfunctional units of TowenNE are coordination and fine motor. Higher need for help while dressing is statistically significantly correlated with the prevalence of MND and coordination problems.

Implications: TowenNE is a simple test that should be more widely introduced to physiotherapists. This 30- minute examination requires no special equipment and helps to select children, who need special assessment and attention.

Key-words: 1. children 2. neurological examination 3. minor neurological dysfunction

Funding acknowledgements: Project was funded by Haapsalu Neurological Rehabilitation Centre and Centre of Excellence in Health Promotion and Rehabilitation.

Ethics approval: Tallinn Medical Research Ethics Committee. Permission No 107

Session name:
Paediatrics (PO-38-Mon2)

All authors, affiliations and abstracts have been published as submitted.
Published in partnership with Elsevier publishers and the Physiotherapy journal.