

Neurophysiology and Molecular Genetics of Charcot-Marie-Tooth Type 1 Neuropathy in Croatian Children: Follow-up Study

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Aim. Longitudinal assessment of clinical and neurophysiological abnormalities in childhood and adolescence and incidence analysis of tandem Charcot-Marie-Tooth disease type 1A gene duplication in Croatian children with Charcot-Marie-Tooth type 1 neuropathy.

Methods. Eight Croatian children with Charcot-Marie-Tooth type 1 neuropathy, aged 4-19 years, were studied clinically, neurophysiologically, and neuropathologically during 1-11 years of follow-up. All children were examined at least once, and in 4 children the measurements were repeated.

Molecular genetic analysis was performed in all patients and their family members in order to determine the presence of the Charcot-Marie-Tooth disease type 1A duplication on chromosome 17p11.2-p12, using restriction fragment length polymorphic and short tandem repeat markers.

Results. Clubfoot was the most frequently observed clinical feature in children under 10 years of age, whereas muscle hypotrophy, scoliosis, and contractures developed in the second decade of life. All patients showed decreased motor nerve conduction velocity (7-30 m/s) and prolonged distal motor latencies on the first and follow-up examinations. Compound muscle action potential amplitude reduction (0.1-1.25 mV) was recorded in the first and second decade of life. In 6 out of 8 children, molecular genetic studies demonstrated the presence of the 1.5 megabase tandem Charcot-Marie-Tooth disease type 1A duplication in 17p11.2-p12, mostly of paternal origin.

Conclusion. Pronounced neurographic abnormalities and mild clinical features characterize Charcot-Marie-Tooth type 1 neuropathy in the first decade. There were no significant differences in neurographic abnormalities in the first or second decade of life between Croatian children with and without Charcot-Marie-Tooth type 1A duplication.

Key words: *adolescence; Charcot-Marie-Tooth disease; child chromosomes, human, pair 17 electromyography; genetics, biochemical neural conduction*

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