

Summary:

Title: Stability disturbances in patients with hereditary motor and sensory neuropathy

Objective: To objectify the effect of individual physiotherapy on stability of patients with Charcot-Marie-Tooth disease (CMT).

Patient file: 41 patients with electromyographically-confirmed CMT diagnosis. 15 patients received out-patient rehabilitation and 13 received in-patient rehabilitation. The control group consisted of 13 CMT patients who did not receive any type of rehabilitation during the course of the monitored time.

Methods: The entry examination consisted of both the Charcot-Marie-Tooth Neuropathy Scale (CMTNS) assessment, designed to determine the stage of the disease, and also a standardized clinical examination, which consisted of a 10-metre walking test and 5 tests on the Balance Master computerized posturography device. Individual physiotherapy consisted of extremity mobilization and relaxation techniques according to Lewit, activation of the stabilization system of the spine according to Kolar, balance strategy and stability training, and body awareness training with a special focus on lower extremities. Standardized clinical examinations were again performed upon completion

of the individual physiotherapy program (3 weeks for the in-patient group and 6 weeks for the out-patient group). A final, third standardized examination was then performed 3 months later for each group, respectively. Patients were then instructed in self-treatment and instructed to exercise at home at least 3 times weekly for a 3-month period. Subjective effects of rehabilitation were evaluated by means of anonymous questionnaire. The control group of patients, without any type of rehabilitation, underwent the same protocol of examination as the rehabilitated group. A second examination was carried out 2 months after the first, i.e. entry one and 3rd examination 5 months after the entry examination.

Results: A positive effect of individual physiotherapy for CMT patients' stability and locomotion has been found. In a group of all rehabilitated patients significant improvement in 20 from 28 monitored stability parameters and in 10-metre walking test were identified. We have not observed a significant deterioration in any of monitored parameters. In-patient rehabilitation was more effective than out-patient. Self-treatment had a positive effect on CMT patient's stability and locomotion, but less significant than individual physiotherapy. Significant improvement was observed in 12 from 28 monitored stability parameters and in 10-metre walking test (comparing to entry data) after the 3 months self-treatment period. 24 of 28 exercised patients found our rehabilitation protocol to be effective, 26 patients reported

improvement of at least one CMT symptom as a result of individual physiotherapy. In the control group, we have found significant improvement in 2 parameters of stability on second examination and in 4 parameters on third examination, although on third examination significant deterioration in 2 parameters comparing to entry data was also identified. There were no significant changes in 10-metre walking test in the control group. When comparing CMTNS group I, i.e. group of less affected patients (1-10 CMTNS points) and CMTNS group II, i.e. group of more affected patients (11-21 CMTNS points) we observed significantly better results in 4 Balance Master® stability tests and in 10-metre walking test in a CMTNS group I. The only test which did not correlate with the CMTNS was the step up/over test, where no significant differences between the two CMTNS groups were identified.

Conclusion: The study confirms the positive effect of individual physiotherapy for stability and locomotion of CMT patients.

Key words: Charcot-Marie-Tooth disease, postural stability, posturography, rehabilitation, individual physiotherapy