Abstract

We followed the immediate effect of sensorimotor training on postural stability in patients with spinocerebellar ataxia (SCA). We have tried to explain the possible mechanisms of adaptation to change COP, motor learning and neuroplasticity in the field of neurodegenerative changes in the cerebellum.

Research Methods: A total of 10 patients with spinocerebellar ataxia (6 men, 4 women) aged 34-71 years, with an average disease duration of 11.6 years participated in the measurement of postural stability. First, we measured the patients with SCA before and after a 15-minute sensorimotor-training exercise, then this group underwent another day of the same measurement without sensorimotor training. As a second control group of 10 healthy subjects served a similar age, who also underwent sensorimotor training. Then we compared the results of posturographic measurement.

Results: In the group of SCA patients, sensorimotor training was found significantly lower values in the monitored parameters LENGTH (t stat = 3,537731 > t krit = 2,262157), VELOCITY (t stat = 3,537731 > t krit = 2,262157) and energy to sustain COP (t stat = 2,715085 > t krit = 2,262157), measured on a foam pad with eyes closed. Measurement without making sensorimotor training produced no significant improvement in the results of monitored parameters. Similarly, in healthy subjects, no significant changes are seen after a single execution sensorimotor training.

Conclusion: In patients with SCA on foam pad with the exclusion of the visual field we found an immediate improvement in postural stability. The decrease we observed parameters means an increase in stability of the patient and testifies to improve motor strategy, which has consequences for them in everyday life. However, there are still lacking of more informations about the mechanisms, by which adaptation occurs.