

THE EFFECTS OF RHYTHMIC AUDITORY STIMULATION ON GAIT DISTURBANCE OF PATIENTS WITH CEREBELLAR ATAXIA

Mutsumi Abiru^{1,2}, Chizuru Nakano¹, Yutaka Kikuchi¹, Kouji Tokita¹, Yoshiko Mihara¹, Mikio Fujimoto¹, Ban Mihara¹, Hiroshi Yamane²

¹Institute of Brain and Blood Vessels Mihara Memorial Hospital, Gunma, Japan, ²Graduate School of Medicine, Kyoto University, Kyoto, Japan

Introduction: The effect of Rhythmic Auditory Stimulation (RAS) for hemiparetic stroke patients has already been reported¹⁾, however the effect of RAS for stroke patients with cerebellar ataxia is unknown. **Objectives:** We investigated the effect of RAS on gait disturbances of stroke patients with cerebellar ataxia. **Method:** Seven patients with cerebellar ataxia (six male and one female, aged 61.1±18.6, disease duration 36.6±10.5) were enrolled in this study. The type of stroke was 2 cerebral hemorrhages and 5 cerebral infarctions. The lesion site was localized by MRI (3 cerebellum, 2 ventral pons, 2 medulla oblongata). The mean score of Functional Independence Measure was 110.7±9.8 (motor: 77.3±8.7, cognitive: 33.4±1.6). The mean score of Trunk Impairment Scale was 17.1±5.1. In addition to conventional gait trainings (60 min/day, 7 times/week) by physical therapists, RAS gait trainings (30 min/day, 5 times/week) were applied for 22.2 days±13.2 days by music therapists. The cadence, stride length, step length (affected/unaffected side), velocity, and stride width were measured by 3-dimensional-motion analysis before and after RAS intervention. The analysis of previous RAS intervention was implemented to study the immediate effect of rhythm, and the analysis of after RAS intervention was implemented to study long-term effect of RAS. Wilcoxon signed-rank test was used for statistical analyses. All data were presented as mean ± SD. **Results:** The both immediate and long term effect, cadence, stride length, affected side of step length, unaffected side of step length, velocity, and single support phase were significantly increased respectively (p<0.05). Double support phase was significantly decreased (p<0.05). Stride width was not changed (p=0.09). **Conclusion:** The above data indicates that RAS for the stroke patients with cerebellar ataxia had beneficial effects on their gait. Furthermore, the combinations of RAS and conventional gait training have promising effects on their gait disturbance.

Reference:

- 1. Thaut MH, McIntosh GC, Prassas SG, & Rice RR(1993) The effect of auditory rhythmic cuing on stride and EMG patterns in hemiparetic gait of stroke patients. Journal of Neurologic Rehabilitation 7, 9-16