Electrical Versus Mechanical Vestibular Stimulation on Balance in Stroke Patients

Islam Mahmoud Abdallah Al-Azab
Dr. Moshera Hassan Darwesh and Dr. Mohamed Soliman El-Tamawy

Abstract

Background: The aim of this work was to investigate the efficacy of electrical galvanic vestibular stimulation versus mechanical vestibular stimulation on balance in hemiparetic stroke patients. Subjects and Methods: sixty male hemiparetic stroke patients represent the sample of this study. The patients’ ages ranged from 45 to 61 years. They were assigned randomly into three equal groups; the control group G3 treated by selected therapeutic physical exercise program. The study group G1 treated by the same program of treatment as the control group in addition to galvanic vestibular stimulation (GVS). The study group (G2) treated by the same program of treatment G3 in addition to mechanical vestibular stimulation on BIODEX system for balance training. The duration of treatment was three months, three times per week. The different aspects of dynamic balance (overall stability, anteroposterior stability and mediolateral stability’ indices) were assessed pre and post treatment objectively by Biodex balance system and clinically by Short Form of Berg Balance Scale (SFBBS) in all groups. Results: Comparison of each variable pre and post treatment in each group revealed a significant improvement in all different parameters in study groups (G1 & G2) P ≤0.05; however the control group showed a significant improvement only in anteroposterior stability index. Comparison of post treatment results of the three different groups showed that GVS used in study group G1 showed significant reduction in muscle tone than groups two and three (G2 & G3). Conclusion: GVS and Biodex balance system have significant effect on treatment of balance disorders in stroke patients.

Keywords: Stroke; Galvanic vestibular stimulation; Dynamic balance; Biodex balance system.