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Effect of Nitrogen-Based Cryotherapy on the Calf Muscle Spasticity in Stroke Patients

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Abstract : Background: This study aimed to know the effect of nitrogen-based cryotherapy on the spasticity of calf muscle in stroke patients. Patients were selected from the outpatient clinic of Neurology, Al-Mansoura general hospital, Al-Mansoura University. Subjects and methods: Thirty Stroke Patients of both sexes ranged from 45 to 60 years old were divided randomly into two equal groups, a study group (A) received a nitrogen-based cryotherapy, a selective physical therapy program and ankle foot orthosis (AFO), while as patients in control group (B) received the same program and AFO only. The treatment duration was three times per week for four weeks for both groups. We assessed spasticity of calf muscle before and after treatment subjectively using modified Ashworth scale (MAS) and objectively via measuring H / M ratio on electromyography machine. We also assessed ankle dorsiflexion ROM objectively using two dimensions motion analysis (2D). Results: After treatment, there was a highly significant improvement in the study group compared to the control group regarding the score of MAS, no significant difference in the study group compared to the control group regarding the readings of H / M ratio, highly significant improvement in the study group compared to the control group regarding the 2D motion analysis findings. Conclusion: This modality considers effective in reducing spasticity in the calf muscle and improving ankle dorsiflexion of the affected limb.

Keywords : ankle foot orthosis, nitrogen-based cryotherapy, stroke, spasticity
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