

Extracorporeal Shock Wave Therapy versus Functional Electrical Stimulation on Spasticity, Function and Gait Parameters in Hemiplegic Cerebral Palsy

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Abstract : Background: About 75% of children with spastic hemiplegic cerebral palsy walk independently, but most still show abnormal gait patterns because of contractures across the joints and muscle spasticity. Objective: The purpose of this study was to investigate and compare the effects of extracorporeal shock wave therapy (ESWT) versus functional electrical stimulation (FES) on spasticity, function, and gait parameters in children with hemiplegic cerebral palsy (CP). Methods: A randomized controlled trial was conducted for 45 children with hemiplegic CP ranging in age from 6 to 9 years. They were assigned randomly using opaque envelopes into three groups. Physical Therapy (PT) group consisted of 15 children and received the conventional physical therapy program (CPTP) in addition to ankle foot orthosis (AFO). ESWT group consisted of 15 children and received the CPTP, AFO in addition to ESWT. FES group also consisted of 15 children and received the CPTP, AFO in addition to FES. All groups received the program of treatment 3 days/week for 12 weeks. Evaluation of spasticity by using the Modified Ashworth Scale (MAS), function by using the Pediatric Evaluation Disability Inventory (PEDI) and gait parameters by using the 3-D gait analysis was conducted at baseline and after 12 weeks of the treatment program. Results: Within groups, significant improvements in spasticity, function, and gait ($P = 0.05$) were observed in both ESWT and FES groups after treatment. While between groups, ESWT group showed significant improvements in all measured variables compared with FES and PT groups ($P < 0.05$) after treatment. Conclusion: ESWT induced significant improvement than FES in decreasing spasticity and improving function and gait in children with hemiplegic CP. Therefore, ESWT should be included as an adjunctive therapy in the rehabilitation program of these children.

Keywords : cerebral palsy, extracorporeal shock wave therapy, functional electrical stimulation, function, gait, spasticity

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