Effect of radial shock wave therapy on muscle spasticity in children with cerebral palsy.

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Abstract

Extracorporeal shock wave therapy is a treatment of choice in patients with musculoskeletal disorders. The aim of this study was to investigate the effect of radial shock wave therapy (RSWT) on muscle spasticity of plantar flexor muscles in children with cerebral palsy. This was an open, controlled, observational study with one placebo treatment session, followed 4 weeks later by one active treatment session. Procedures and measurements were performed on inpatients of the Physical and Rehabilitation department of the Medical University Hospital, Plovdiv, Bulgaria. Twenty-five children, mean age 4.84±3.11 years, with spastic diplegia and hemiplegia participated in the study. They received a single session of RSWT to the plantar flexors of the foot. The following clinical methods were used for outcome assessment before, after, and 2 and 4 weeks later: passive range of motion, Modified Ashworth Scale. Baropodometric measurements were performed before and after the placebo and active session. After placebo application, no changes measured by clinical or instrumental methods were found. After RSWT, a significant increase in passive range of motion was observed: 47.00±2.29° versus 33.25±2.20° (P<0.001), which persisted at the second (46.87±2.08°, P<0.001) and fourth week (44.12±1.93°, P<0.001) after treatment. The Modified Ashworth Scale score decreased from 2.77 to 2.00 points (P<0.001), which persisted at the second (mean 2.05±0.07 points, P<0.001) and fourth week (2.15±0.76 points, P<0.001) after treatment. Baropodometric measurement showed a significant increase in the contact plantar surface area of the affected foot (from 81.32±6.14 to 101.58±5.41 cm, P<0.001) and in heel pressure (from 50.47±6.61 to 75.17±3.42 N/cm, P<0.001).

There is a significant reduction in the spasticity of plantar flexor muscles in children with cerebral palsy after a single session of RSWT and this improvement remains at the 4-week follow-up.

PMID: 23603803

[PubMed - indexed for MEDLINE]