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Effect of Shock Wave Therapy on Muscle Spasticity in Children with Cerebral Palsy

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Aim of the study is to evaluate the effect of radial shock wave therapy on reducing muscle hypertonia in plantar flexor muscles in children with cerebral palsy.

Material and methods: Eleven children with spastic plantar flexor muscles as a result of cerebral palsy were included in the study: 7 boys and 4 girls, age range 2-7, mean age 3.54 ± 1.013 . Radial shock wave therapy was applied to the gastrocnemius and soleus muscle (BTL-5000 shock-wave series): 1000 shots to each gastrocnemius and soleus muscle.

Clinical and instrumental methods were used for the evaluation of the results: Passive range of motion, Modified Ashworth Scale, pedobarometry before the treatment, immediately after it, 2 and 4 weeks later.

Results: After a single shock wave stimulation a significant increase in passive range of motion (with 17.13° , $t=8.81$, $p<0.05$) and a significant decrease in the Ashworth Scale (from baseline mean 2.81 SD (0.65) to 2.11 SD (0.33) ; $t=6.19$, $p<0.05$) were observed immediately after treatment. This effect was persistent two weeks later. The increase in passive range of motion was with 15.95° , $t=5.22$, $p<0.05$. The decrease in the Ashworth Scale was preserved 2.11 SD (0.33) ($p<0.05$). After placebo stimulation no significant difference was observed.

Conclusion: Radial shock wave therapy could be appropriate adjuvant treatment for reducing muscle spasticity in plantar flexors in children with cerebral palsy. These are preliminary results and further study is needed to follow the long-term effect.

References:

[1] Amelio E, Manganotti P. Effect of shock wave stimulation on hypertonic plantar flexor muscles in patients with cerebral palsy: a placebo controlled study. J Rehabil Med 2010; 42: 339-343

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