

Influence of Spinal Manipulation on Muscle Spasticity in Cerebral Palsy Patients

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Background

Muscle spasticity is a significant clinical syndrome in Cerebral Palsy (CP) resulting from upper motor neuron lesion and its reduction is an important therapeutic target in the attempt to optimize motor performance

Due to limited efficiency of “traditional” treatments a wide range of complementary and alternative therapies are used for muscle tone management in patients with Cerebral Palsy including chiropractic spinal manipulations (SM).

Spinal manipulations in CP treatment could be used as a separate intervention, and also as a part of integrated treatment program called Intensive Neurophysiological Rehabilitation System (INRS) including different treatment modalities: physical and occupational therapy, extremity joints mobilization, reflexotherapy, body massage, mechanotherapy.

Objective

The aim of the study was to evaluate influence of one spinal manipulation and two-week treatment course according to INRS on wrist muscle spasticity.

Methods:

Design - case series. Group of 29 children with spastic forms of Cerebral Palsy, without fixed contractures of the wrist, aged 7-18 years were evaluated before the treatment, after one spinal manipulation (SM) and in the end of two weeks treatment. Treatment program along with daily SM, included physical therapy, massage, reflexotherapy, extremity joint mobilization, mechanotherapy and rehabilitation computer games with 3 - 4 hours duration.

Spasticity of wrist muscle was measured quantitatively using Neuroflexor device, that calculates Neural Component (NC) of muscle tone that represents true spasticity, excluding non-neural components, caused by altered muscle properties: elasticity and viscosity.

Results

Substantial decrease of spasticity after SM was noted in all patients groups. The average NC values decreased for 1.65 newtons (from 7.6 ± 6.2 to 5.9 ± 6.5) after one SM. After two weeks treatment course small further decrease for 0.5 newtons was noted.

In the group of patients with minimal spasticity, the decrease of NC after the first SM was almost twofold – from 3.93 ± 2.9 to 2.01 ± 1.0 .

In cases of moderate spasticity significant NC reduction was noted only after the two weeks intensive treatment course.



Fig.1 The Neuroflexor device for measuring muscle tone components

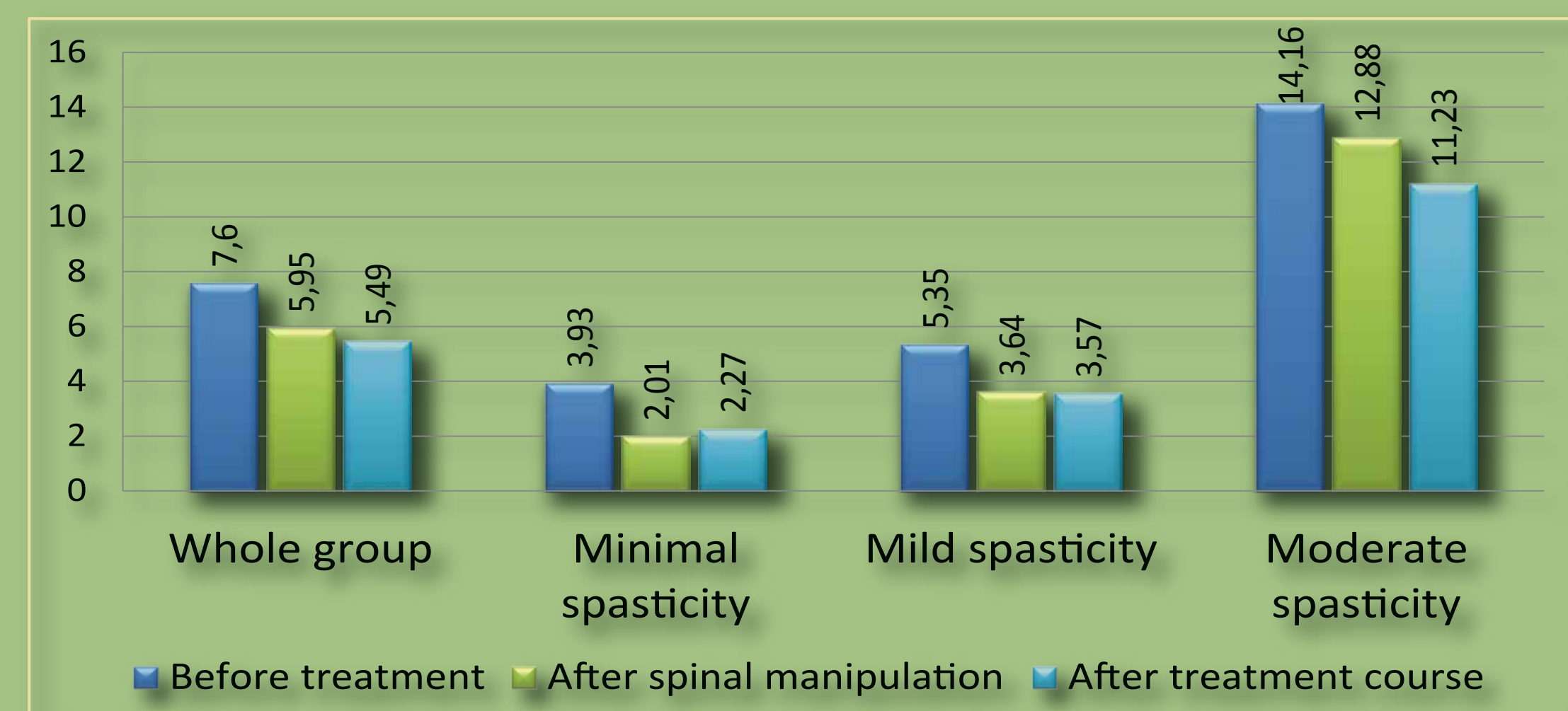


Fig 2. Values of neural component before the intervention, after one Spinal Manipulation and after the treatment course.

Conclusion

Study indicates that spinal manipulation may be decreasing spasticity of wrist muscles in patients with Cerebral Palsy. Further studies, including randomized control trials are required.

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