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Intermittent negative pressure applied to the lower limb of patients with multiple sclerosis and its impact on symptoms

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Introduction: Spasticity and pain are common symptoms in patients with Multiple Sclerosis (MS). A novel non-invasive medical device applying intermittent negative pressure (INP) to the lower leg increases blood flow, interacts with the veno-arterial reflex, and may stimulate other sensory receptors in the treated leg. INP treatment relieve symptoms in patients with peripheral artery disease, however, off-label use has shown promising effects on spasticity, cramps, and pain in patients with MS.

Objectives: To assess whether INP treatment could have a positive effect on spasticity related symptoms in patients with MS.

Methods: Patients with MS and spasticity related symptoms were interviewed by a neurologist via video link following treatment with INP at home for one hour per day for 2 weeks and up to 6 months. A predetermined list of questions was used to systematically interview the patients to assess the clinical status before the INP treatment, and the impact that the INP treatment had on spasticity, cramps, and pain. All patients were provided with a written summary of their response for their approval after the interviews were performed.

Results: In total 7 patients were interviewed, 6 patients reported that they had spasticity, 4 patients had pain and 3 patients had problems with cramps before the start of the treatment. After treatment with INP, 4/6 patients reported an improvement in spasticity, 4/4 patients reported an improvement in pain, 2/3 patients reported a reduction in cramps. Of the 5 patients reporting sensibility disturbances, 4 patients reported an improvement after INP treatment. All 4 patients with poor sleep quality reported an improvement after INP treatment. Several patients also reported an effect on the contralateral leg or a reduction in the overall stiffness in the body. One patient reported no effect of the treatment at all. No side effects or adverse events were reported.

Conclusion: This case series suggests that MS patients with spasticity and pain may benefit from treatment with INP. INP treatment seems to be safe with few side effects in this patient population. Further controlled clinical trials and mechanistic studies are needed to understand the potential clinical benefit and mechanism of action of INP in patients with MS.

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