



Short Communication

Effects of osteopathic manipulative treatment on patients with multiple sclerosis: A pilot study



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ABSTRACT

Objectives: To describe the effects of osteopathic manipulative treatment in patients affected by Multiple Sclerosis (MS).

Design and setting: This is a pilot study involving 20 MS patients attending the IRCCS Neurolesi "Bonino-Pulejo", Messina, Italy.

Intervention: The clinical evaluation was performed before starting rehabilitation treatment (T0) and after 8 weeks of treatment (T1). The CG sample undergo a conventional rehabilitation training (CRT), 5 times/week for 60 min (for a total of 40 sessions), the EG performed the same CRT (but with a different frequency, i.e. 3 times/week, for a total of 24 sessions) and a specific OMT 2 times/week for 60 min (for a total of 16 sessions).

Main outcome measures: We analyzed the scores recorded in the following main scales: Expanded Disability Status Scale (EDSS), 10 m walking test (10mWT), Hamilton anxiety rating scale (HRS-A), and the Fatigue severity scale (FSS).

Results: Our data showed a reduction in the FSS score for the EG ($40 \pm 1,41$ at T0 vs $37 \pm 2,32$ at T1; $p = 0,04$) but not in the CG ($41 \pm 2,41$ at T0 vs $39 \pm 2,6$ at T1) with an intergroup difference $p < 0,00$. An improvement of HRS-A and 10mWT was also detected in the EG.

Conclusions: Our data raise idea that OMT might be useful in rehabilitative setting in MS patients, with particular regard to anxiety and fatigue.

1. Introduction

Multiple sclerosis (MS) is a condition that can affect the brain and/or spinal cord, causing a wide range of potential symptoms, including problems with vision, arm or leg movement, sensation or balance. Several relatively new pharmacological therapies have been shown to reduce the frequency of episodes and delay the progression of impairment in a substantial number of patients with MS.¹

On the other hand, various treatment modalities can improve the symptoms related to MS, including spasticity, pain and fatigue. Some researchers have speculated that the natural history of MS can be altered with lifestyle and dietary modifications or with maintenance of one's general health and well-being to decrease the effects of natural stressors on the body.² Unfortunately, validated quantitative evidence for these speculations is lacking. For this reason, many patients explore the use of complementary and alternative medicine (CAM), which has been defined as "unconventional medicine," and the term generally

refers to forms of treatment not typically available in hospitals.

Currently, to our knowledge, there is no consensus in the medical community regarding which therapies are considered alternative, complementary, or unconventional (such as acupuncture, osteopathy massage, prayer, diet, biologic products.....).

There is evidence in literature that 70% of patients with MS had a lifetime use of at least one alternative medicine and a percentage between 54% and 81% is directed towards massage or manipulation therapies.³ Osteopathy is a way of detecting, treating and preventing health problems by moving, stretching and massaging a person's muscles and joints. It is based on the principle that the wellbeing of an individual depends on their bones, muscles, ligaments and connective tissue functioning smoothly together.

Clinical research on the effects of osteopathic manipulative treatment (OMT) on viscerosomatic and somatic dysfunctions adds to a growing body of knowledge.⁴

Aim of our study was to evaluate the effect of osteopathic training in

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Table 1
Demographical description of the sample at the beginning of the study.

	Age (m ± DS)	Sex (M:F)	EDSS (m ± DS)	Disease Duration
EG	465 ± 5,27	4:6	4,05 ± 1,2	8 ± 3,2
CG	457 ± 46,35	5:5	3,9 ± 1	9 ± 5,2
p-value	0.9	0.7	0.5	0.6

patients with MS, with particular regard to fatigue, pain and anxiety.

2. Methods

This is a pilot study (performed according to the CONSORT checklist) carried at the Robotic Neurorehabilitation Unit of the IRCCS Neurolesi “Bonino-Pulejo” (Messina, Italy), conducted according to the Declaration of Helsinki.

Fifty-five consecutive outpatients with relapsing-remitting MS attending our Research Unit from January to September 2017, were invited to participate in the study, and were screened for study eligibility.

Inclusion criteria were: i) relapsing remitting MS form, according to Polman criteria⁵; ii) age 18–65 years; iii) mild to moderate walking disability with Expanded Disability Status Score (EDSS)⁶ between 3.0 and 5; iv) Montreal Cognitive Assessment score ≥ 24 ; v) absence of concomitant neurological or orthopedic conditions that may interfere with ambulation⁷; vi) stable pharmacological therapy for at least 6 months. Exclusion criteria were: i) MS relapse during the three months prior to recruitment; ii) use of antidepressant therapy or treatment for chronic fatigue; iii) botulinum toxin injections within the previous 12 weeks; iv) cardiorespiratory instability and/or other medical illness potentially interfering with the training.

Twenty out of 55 outpatients, who met inclusions criteria, were enrolled in the study and randomized into either the control (CG: n = 10) or the experimental study (EG: n = 10) groups. The patients were randomly assigned to one of two groups in order of recruiting. The clinical assessors (who were different from the physiotherapist who performed the training), and the statisticians were blinded to group allocation.

A more detailed description of the two groups is in Table 1.

The CG sample undergo a conventional rehabilitation training (CRT), 5 times/week for 60 min (for a total of 40 sessions), the EG performed the same CRT (but with a different frequency, i.e. 3 times/week, for a total of 24 sessions) and a specific OMT 2 times/week for 60 min (for a total of 16 sessions). Specifically, both the groups were submitted to the same amount of treatment.

Clinical outcomes consisted in the following scales: EDSS, Barthel Index (BI), 10 m walking test (10mWT), Hamilton anxiety rating scale (HRS), and the Fatigue severity scale (FSS, to quantify the chronic fatigue). All the clinical tests were performed by a blinded and skilled neurologist before (T0) and after (T1) each training.

The Local Ethics Committee approved the study and the procedures for gaining consent (study number registration 51/2017), and all the participants gave their written informed consent to the study.

The study used a within-subject, repeated-measures design to evaluate the effects of OMT and the exercise program over 8 weeks. Paired *t*-test (with Bonferroni correction for multiple comparisons) was used for all tests; significance was set at a *p*-value < 0.05 .

3. Results

There were no significant differences at baseline between the two groups regarding clinical data. Our data showed a reduction in the FSS score for the EG ($40 \pm 1,41$ at T0 vs $37 \pm 2,32$ at T1; $p = 0.04$) but not in the CG ($41 \pm 2,41$ at T0 vs $39 \pm 2,6$ at T1) with an intergroup difference ($p < 0.01$). A significant improvement in HRS ($22,1 \pm 1,4$ at T0 vs $15 \pm 2,5$ at T1) and 10mWT ($19,7 \pm 2,41$ at T0 vs

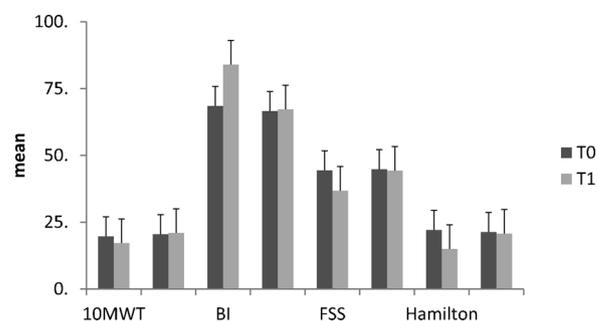


Fig. 1. shows the effect of the combined conventional physiotherapy plus osteopathy vs physiotherapy alone approaches on gait, global function, fatigue and anxiety.

$15,2 \pm 1,41$ at T1) was detected only in the EG (Fig. 1)

4. Discussion

Our data raise idea that OMT might be useful in rehabilitative setting in MS patients, with particular regard to anxiety and fatigue.

A recent review investigated concluded that there is scarce evidence for the efficacy of OMT in treating tension-type headache, migraine, cerebral palsy and Parkinson's Disease.⁸ Nonetheless, some studies showed that osteopathic manipulation may be an effective physical treatment in the management of movement deficits in patients with Parkinson's disease.^{9,10}

Moreover, OMT can provide benefits for MS patients suffering from musculoskeletal dysfunctions.¹⁰ Among the few published study on MS and OMT, Yates et al. found a significant increase in strength when both OMT and maximal-effort exercise were done twice weekly for 12 weeks.¹¹ Differently from this study, our work included also a CG and evaluated not only the gait disability but also fatigue and anxiety. In a recent study, Cordano and coworkers showed a significant improvement in fatigue and depression after OMT training in patients affected by MS. However, they evaluated only the chronic symptoms of MS, without any consideration of motor symptoms, while we assessed gait performance by means of 10MwT.

OMT is effective in managing pain caused by a variety of clinical conditions. Nevertheless, the physiologic mechanisms underlying the clinical improvement are poorly understood. In a recent paper carried out by means of transcranial magnetic stimulation technique, Ponzio and coworkers investigate the potential role of OMT in inducing cortical plasticity. On such basis, we can speculate that OMT therapy could enhance the neuroplasticity induced by traditional physiotherapy.

5. Limitations and conclusions

The limitation of this study may be the small sample size and the difficulty in performing a homogeneous well-structured OMT intervention. Larger sample studies are needed to support these preliminary results.

Conflicts of interest

The authors state neither conflicts of interest nor financial support.

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