



ORIGINAL ARTICLE

Effects of osteopathic manipulative treatment on hand function, disease symptoms and functional status in systemic sclerosis: a series of single-case studies in working women



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KEYWORDS

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Abstract *Background:* Some studies involving manual techniques combined with exercises have shown encouraging results in reducing disability in patients with systemic sclerosis (SSc). There is a paucity of data on the effect of osteopathic manipulative treatment (OMT) for this population.

Objective: Our aim was to explore the effects of OMT on hand function, disease symptoms and functional status in patients with SSc.

Methods: A series of single-case studies was undertaken. Six female SSc participants with hand contractures and self-reported limitations in vocational activities received 9 weekly semi-standardized OMT sessions targeting the upper limbs, thorax and cranial base. The outcomes of interest were hand stiffness, range of motion of the fingers, distal upper limbs skin score, disease symptoms (pain, dyspnea and fatigue), hand and global disability, work disability and health-related quality of life.

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Results: All participants (n = 6/6) improved in hand stiffness and in range of motion of the fingers, and most improved on distal upper limbs skin score (n = 4/6). Disease symptoms improved (pain: n = 6/6, dyspnea: n = 3/4, fatigue: n = 4/6) as did functional status (global disability: n = 5/5, work disability: n = 4/6, health-related quality of life, physical (n = 6/6) and mental (n = 4/6) components). When comparisons were possible, almost all observed improvements were greater than minimal clinically important differences suggested for this population.

Conclusion: These findings suggest that OMT can be effective in relieving symptoms and reducing disability in SSc.

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Implication for practice

- This is the first study specifically designed to examine OMT in SSc.
- The results suggest that semi-standardized OMT may improve hand function, disease symptoms and functional status in SSc.
- Most of the observed changes were clinically important.
- OMT may have advantages over other types of rehabilitation interventions, including less frequent sessions and not requiring concomitant exercise.

Introduction

Systemic sclerosis (SSc) is a rare, multisystem, chronic rheumatic disease characterized by immune dysregulation, vascular alterations and progressive fibrosis of the internal organs and skin.^{1,2} After an oedematous phase³ the fibrosis proliferates from the skin to subcutaneous tissues, fasciae, tendons, ligaments and joint capsules of the fingers, then to the hand.^{1,2,4} Hand contractures are common and occur early in the disease process.⁵ These contractures lead to hand mobility impairment and loss of function,⁶ contributing to global disability,^{7,8} and work limitations.⁹ Therapeutic approaches in SSc are essentially pharmaceutical in nature, focusing on organ involvement and survival; however, none are curative.^{10,11} The number of musculoskeletal rehabilitation studies in SSc is limited; nonetheless, the few studies that have focussed on manual techniques (i.e. connective tissue massage, joint manipulation,

lymphatic drainage) yield encouraging results in improving hand function and reducing disability in SSc.^{12–15}

Apart from one case report,¹⁵ all studies found in a comprehensive literature search (AMED, CINAHL, MANTIS, MEDLINE and PEDRO, from 1990 to 2014) were conducted by Maddali Bongi et al.^{12–14} In a small, randomized controlled trial of a group of SSc patients with hand contractures, this team demonstrated that nine weeks of upper limb connective tissue massage and McMennel joint manipulation combined with a home exercise program resulted in improvement in finger flexion, hand mobility and function, global function and health-related quality of life (HRQoL).¹² Participants of the control group, who received only the home exercise program, had improvement only in finger flexion. Since the manual intervention was combined with other forms of intervention, this study does not show the effect of the manual treatment alone. In a subsequent randomized clinical trial performed by the same group on twenty SSc participants, it was shown that five weeks of upper extremity manual lymph drainage resulted in decreased hand volume, decreased self-reported oedema and pain, increased hand mobility, and better global function and HRQoL.¹⁴ No significant differences were observed in the control group, which received no intervention. The third study by Maddali Bongi¹³ focused on the effects of a tailored rehabilitation program. Participants with hand contractures underwent upper limb connective tissue massage plus McMennel joint manipulation; participants with facial involvement underwent connective tissue massage plus Kabat's neuro-rehabilitation technique and physical therapy for the face; and participants with oedema of the hands underwent lymphatic drainage of the upper limbs. All participants in these experimental groups received their specific manual intervention twice a week for 1 h. They also had an additional hour of hydrotherapy or exercises, including breathing

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