A Multimodal Approach for Myofascial Pain Syndrome: A Prospective Study

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Abstract

Objective: The purpose of this study was to analyze pain intensity in patients with myofascial pain syndrome (MPS) following a multimodal rehabilitation protocol.

Methods: A prospective study was carried out following the Template for Intervention Description and Replication criteria. Patients were recruited from the rehabilitation unit of a university hospital in Spain between 2009 and 2013. Patients were included if they had a medical diagnosis of MPS in any of the following regions: cervicobrachial (n = 102), lumbosacral (n = 30), elbow (n = 14), ankle and foot (n = 10), and temporomandibular jaw (n = 1). The multimodal rehabilitation protocol included myofascial trigger point dry needling, spray and stretching, Kinesio taping, eccentric exercise, and patient education. The protocol was applied for 4 weeks (5 sessions) for the active and/or latent myofascial trigger points in each body region. Pain intensity was measured by using the visual analog scale (VAS) immediately before beginning of the study and 1 week after completion of the protocol.

Results: The study sample comprised 150 patients (mean ± standard deviation age, 51.5 ± 1.19 years). Statistically significant differences were obtained for reduction in pain intensity (4 ± 2.03; $P = .002$). Clinically relevant reductions (VAS ≥30 mm; $P < .001$) were obtained in 78.7% of the interventions. Four treatment sessions reduced the VAS score by 10 mm in 83.55% of the sample. There were no statistically significant differences ($P = .064$) for reduction in pain intensity in the different body regions.

Conclusions: A multimodal rehabilitation protocol showed clinically relevant differences in the reduction in pain intensity in different body regions in patients with MPS. (J Manipulative Physiol Ther 2017;40:397-403)

Key Indexing Terms: *Myofascial Pain Syndromes; Musculoskeletal Disorders; Musculoskeletal Pain; Rehabilitation; Trigger Points*

Introduction

There is a high rate of musculoskeletal pain among the general adult population (26%), general older adult population (39%), and workers (86%).[1] Myofascial pain syndrome (MPS) is a condition prevalent in patients who report spinal and upper and lower limb pain.[2-4] The prevalence of MPS in people with musculoskeletal pain varied from 30% in primary care to 85% to 93% in specialized pain units.[5] Indeed, 48.9% of medical specialists and physical therapists treat more than 4 patients with MPS per week and estimate a prevalence of active myofascial trigger points (MTrPs) in 46.1% of the general population and 52.8% of their patients. A higher rate is reported by clinical professionals who attend pain conferences (55.4% and 63.4%, respectively).[6] As a possible consequence, 60% of the cost of treating pain in the Spanish public health system is spent on ineffective treatments.[7]

Signs and symptoms recorded at MTrPs may generate sensory, motor, and autonomic conditions. On the one hand, MTrPs produce spontaneous and recognizable pain when they are active; on the other hand, they produce nonrecognizable local or referred pain upon stimulation when they are latent.[8-10] Nevertheless, MTrPs are hyperirritable spots in a taut band of muscle fibers, which may be

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identified with palpation (distinguishing subjects with pain from subjects with no pain),[11] analysis of the biochemical milieu (distinguishing MTrPs from muscular tissue with no-MTrPs),[12] sonoelastography,[13] electromyography,[14] thermography,[15] and magnetic resonance elastography.[16]

Both invasive and conservative interventions have been proposed for the treatment of MTrP.[17] Among the invasive treatments, MTrP dry needling (MTrP-DN) is recommended to relieve pain immediately or in the short term.[18] Studies by Mayoral et al. have shown a medium-term analgesic effect of MTrP-DN against placebo under anesthesia.[19,20] Deep, fast in-and-out techniques with multiple rapid insertions trigger a regenerative process (6-7 days) and reduced acetylcholine in the motor end plate that are affected by peripheral and central pain modulation mechanisms.[20-24] Active and latent MTrP-DN could reduce pain and mechanosensitivity in patients with MPS.[25-27] Additional conservative interventions include spray and stretching, which reduces postneedling soreness in the short term (<6 hours),[28] and Kinesio taping, which modifies MTrP pain, stiffness, and contraction amplitude.[29-31] In addition, eccentric exercise and an MPS educational program could be combined with MTrPs-DN to decrease pain.[32-35]

MTrP-DN,[18] spray and stretching,[28] Kinesio taping,[29-31] eccentric exercise,[32-34] and education[35] may modulate the pain intensity after MPS treatment of latent and active MTrPs. Nevertheless, there are controversial studies reporting that pain relief after the inclusion of MTrP-DN in a multimodal therapy program depends on the body regions affected.[36,37] Therefore, the aim of this study was measure pain intensity following a multimodal rehabilitation protocol for MPS in different body regions.

Methods

Design

A prospective longitudinal experimental study was carried out in the hospital rehabilitation service in Madrid Spain from October 2009 to June 2013. The template for intervention description and replication (TIDieR) checklist and guide was followed.[38] The study was approved by the Clinic Research Ethics Committee of the Princess University Hospital, Madrid (Spain). A signed informed consent document was obtained from each patient before the study. The ethical standards of the Declaration of Helsinki were followed.[39]

Subjects

A convenience sample of 164 patients was recruited over 4 years (October 2009 to June 2013). Inclusion criteria were a diagnosis of MPS and a recommendation by the rehabilitation physician for MTrP-DN for the body regions affected by various subacute and chronic musculoskeletal conditions, including cervicobrachial (MPS in the infraspinatus, middle deltoid, levator scapulae, and trapezius; infraspinatus tendon rupture and tendinopathy; complete rotator cuff rupture and tendinopathy; supraspinatus tendinopathy and rupture; cervicobrachialgia; neck pain; shoulder pain; calcific tendinitis; capsulitis; contusion; subacromial syndrome; acromioclavicular dislocation; subscapularis tendinopathy; and subacromial bursal calcification), lumbosacral (piriformis syndrome and MPS; trochanteritis; disc herniation and protrusion; lumbar sciatic and back pain; MPS in the gluteus medius and maximus; and spondylolisthesis), elbow (lateral and medial epicondyle tendinopathy and wrist tendinopathy), foot (plantar fasciitis), and temporomandibular joint regions. Exclusion criteria were as follows: need for more than 5 protocol-based treatment sessions; neurological, visceral, inflammatory, and acute conditions in the medical records; cognitive deficits; previous surgery; conservative or invasive physical therapy (during the previous 6 months or follow-up); infiltration (corticosteroid or local anesthetic during the previous year or follow-up); current medication (antiplatelet agents, anticoagulants, analgesics, or anti-inflammatory drugs 1-week before treatment or during follow-up); and needle phobia.[8,19,26-28]

Outcome Measures

At each session, the data recorded were sociodemographic data (age and gender), medical diagnosis (body region) before the start of the study, and treatment (number of sessions and muscles treated).

Pain intensity was measured using a visual analogue scale (VAS) before the beginning of the study and 1 week after the treatment protocol had finished (1-5 treatment sessions). The minimum clinically significant difference (MCSD) in VAS was considered to range from 4 to 18 mm (95% confidence interval [CI]) with no differences in the severity of pain (mild pain, ≤30 mm; moderate pain, 31-69 mm; and severe pain, ≥70 mm), age, or gender.[40] The VAS is a reliable and valid scale with excellent reproducibility.[41]

Procedures

The multimodal intervention protocol (1-5 treatment sessions) was applied for 1 to 4 weeks. One week was maintained between each treatment session to allow for the MTrP-DN regenerative process (6-7 days).[21] The first session (beginning of the study), second session (at 1 week), third session (at 2 weeks), fourth session (at 3 weeks), and fifth session (at 4 weeks) comprised diagnosis of MPS, MTrP-DN, spray and stretching, Kinesio taping, eccentric exercise, and patient education for all patients in each treatment session. If the VAS score was ≤10 mm at the beginning of each treatment session, the review by the rehabilitation physician was performed before the fifth session, and the maximum number of sessions was not carried out.