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REVIEW: EVIDENCE-INFORMED REVIEW

An evidence-informed review of the current myofascial pain literature — January 2015

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Summary This article provides an up-to-date review of the most recent publications about myofascial pain, trigger points (TrPs) and other related topics. We have added some commentaries where indicated with supporting references. In the Basic Research section, we reviewed the work by Danish researchers about the influence of latent TrPs and a second study of the presence and distribution of both active and latent TrPs in whiplash-associated disorders. The section on Soft Tissue Approaches considered multiple studies and case reports of the efficacy of myofascial release (MFR), classic and deep muscle massage, fascial techniques, and connective tissue massage. Dry needling (DN) is becoming a common approach and we included multiple studies, reviews, and case reports, while the section on Injection Techniques features an article on TrP injections following mastectomy and several articles about the utilization of botulinum toxin. Lastly, we review several articles on modalities and other clinical approaches.

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Introduction

In the first review article in the new section on "Clinical Reviews", we have focused on the myofascial pain literature published mostly in 2014. Included publications originated from many countries, including Australia, Brazil, Columbia, Denmark, Italy, Iran, Israel, Japan, New Zealand, Qatar, South Korea, Spain, Turkey, the United Kingdom, and the United States, which reflects the widespread interest in myofascial pain.

Basic research

Ge, H.Y., Monterde, S., Graven-Nielsen, T., Arendt-Nielsen, L., 2014. Latent myofascial trigger points are associated with an increased intramuscular electromyographic activity during synergistic muscle activation. J. Pain., 15, 181–187.

Ge and colleagues examined the influence of latent TrPs in the upper trapezius with electromyography (EMG) at rest and at 25% maximum voluntary contraction during shoulder abduction. Fifteen patients were included in the study. A needle was inserted either into a latent TrP in the upper trapezius or in normal muscle. They performed EMG recordings at rest and at 90° shoulder abduction. Surface EMG was concurrently monitored at the middle and lower trapezius, middle deltoid, and distal portion of the upper trapezius. Three outcome measures were utilized: maximum pain intensity after needle insertion, maximum pain intensity after muscle contraction, and referred pain from the needle insertion. Results revealed that EMG activity of the upper trapezius is higher at rest and during abduction in the upper trapezius when a latent TrP is present compared to normal muscle. There were no significant changes observed with the surface EMG recordings when compared to latent TrPs or normal muscle in the upper trapezius. Although the sample size was small, the study demonstrated that latent MTrPs are related to higher intramuscular synergistic muscle activity. As the authors suggested, the presence of latent TrPs may alter muscle strategies and contribute to the development of pain, which is consistent with other studies of the effect of latent TrPs in muscle activation (Lucas et al., 2010).

Castaldo, M., Ge, H.Y., Chiarotto, A., Villafane, J.H., Arendt-Nielsen, L., 2014. Myofascial trigger points in patients with whiplash-associated disorders and mechanical neck pain. Pain Med., 15, 842–849.

Whiplash-associated disorders (WADs) and mechanical neck pain (MNP) feature typical symptoms including neck pain and stiffness, headache, shoulder pain, arm pain or numbness, paresthesia, weakness, dysphagia, and difficulty concentrating (Hogg-Johnson et al., 2009). In addition, 40% of those with WAD report persistent pain and 50% of patients report headache and dizziness up to 1 year following a motor vehicle accident (Dommerholt, 2005; Kamper et al., 2008). The development of chronic pain in WAD is associated with central and peripheral sensitization that can cause hypersensitivity and lowered pain thresholds (Sterling et al., 2003; Koelbaek-Johansen et al., 1999). The presence and distribution of both active and latent TrPs were assessed in a group of patients with WADs and compared to MNP with manual palpation of the suboccipital, upper trapezius, levator scapulae, temporalis, supraspinatus, infraspinatus, deltoid, and sternocleidomastoid muscles. A significant greater number of active TrPs was noted in subjects with WAD (mean 6.71 $\pm$ 0.79) compared to the MNP group (3.26 $\pm$ 0.33) ($p < 0.001$), however, the latent TPs were not significantly different between groups (3.95 $\pm$ 0.57 and 2.82 $\pm$ 0.34 respectively; $P > 0.05$). Furthermore, the current pain intensity and pain distribution was significantly correlated to the number of active TrPs for subjects in the WAD group. This study is in agreement with prior research noting a significant higher prevalence of active TrPs in the cervical and shoulder musculature of WAD patients as compared to both healthy and MNP patients (Fernandez-Perez et al., 2012; Fernandez-de-las-Penas et al., 2007). Active TrPs influence central sensitization via peripheral nociception and therefore contribute to hypersensitivity to mechanical and electrical stimulation as well as lower pain thresholds in injured tissues. Due to the prevalence of TrPs in the cervical musculature of WAD patients, the evaluation and management of TrPs should be considered as a way to effectively treat the pain and sensitization.

Soft tissue approaches

Ajimsha, M.S., Binsu, D., Chithra, S., 2014. Effectiveness of myofascial release in the management of plantar heel pain: a randomized controlled trial. Foot (Edinb), 24, 66–71.

Several myofascial pain studies published in the past few months explored the efficacy of soft tissue techniques, including myofascial release (MFR), classic and deep muscle massage, fascial techniques, and connective tissue massage. Ajimsha and colleagues, for example, studied the effectiveness of MFR in the management of plantar heel pain in a double blind RCT. The main aim of this study from Qatar was to investigate whether MFR to the gastrocnemius, soleus and plantar fascia reduces the pain and functional disability associated with plantar heel pain (PHP) in comparison with a control group receiving sham ultrasound therapy. Sixty-six patients, with a clinical diagnosis of PHP were randomly assigned to an MFR group or a control group and given 12 sessions of treatment per client over 4 weeks. The primary outcome measures were the Foot Function Index (FFI) and pressure pain thresholds (PPT) assessed over the affected gastrocnemius, soleus muscles and the calcaneus. Patients in the MFR and control groups reported a 72.4% and 7.4% reduction, respectively, in their pain and functional disability in week 4 compared with that in week 1, which persisted as 60.6% in the follow-up at week 12 in the MFR group compared to the baseline. The results of this RCT are encouraging and point to the use of MFR as an alternative adjunct to routine physical therapy for plantar fasciosis. Some of the limitations of this RCT as identified by the researchers were short follow up with reduced investigation of long-term effects of the