Myofascial Trigger Points: Pathophysiology and Evidence-Informed Diagnosis and Management

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Introduction by the Series Editor

Other than a summary mention of myogelosis as a possible palpatory finding that might be relevant when choosing from among massage techniques, I remember no discussion of pain of myofascial origin as part of my entry-level degree in physical therapy in the Netherlands. And although at least one of the required texts for the postgraduate degree in manual therapy that I completed in Belgium discussed the topic quite in depth,[1] clinical diagnosis and management of myofascial trigger points similarly was not dealt with in class during this degree program. During further postgraduate study in orthopaedic manual therapy in the United States, myofascial trigger points were either not discussed or were summarily dismissed as a nonexistent condition.[2] When I served as a physical therapy clinical instructor while working in the United States, I insisted that my interns provide some convincing evidence or otherwise stop wasting their time (and more importantly, their patients' time) on unproven concepts and instead concentrate on the tried-and-true articular dysfunction as the main cause for most patients' complaints. I considered any myofascial abnormality I found in my patients to be secondary to

the primary articular dysfunction and was quite convinced that such minor issues would disappear once I had adequately dealt with the dysfunctional joint.

Of course, I could deny some of the responsibility for my past joint-centered convictions by stating that the account above is just reflective of earlier and simpler times. However, to some (certainly not minor) extent this primacy of the articular dysfunction remains at the core of many educational programs in orthopaedic manual therapy available to physical therapists today. For me personally, myofascial trigger points only entered into my clinical reasoning process as a relevant construct after completing a course in dry needling. It was not that I agreed with the hypothesis of a radiculopathic etiology for all chronic myofascial pain presented there.[3] Rather it was the admittedly anecdotal evidence of clinical effects I observed in my patients once I incorporated dry needling into my existing approach of education, manual therapy, and specific exercise interventions. Perhaps even more important was the fact that I started considering myofascial trigger points as a possible primary or at least contributory dysfunction rather than solely as an almost irrelevant secondary problem. Based both on the literature and on my own clinical experience, I started considering myofascial trigger points in the differential diagnosis for a great variety of patients, including those with radiculopathy, intervertebral disk dysfunction, joint dysfunction, tendinopathy, craniomandibular dysfunction, headaches (including migraine, tension-type, and cluster headache), whiplash-associated disorder, pelvic pain and other urologic syndromes, postherpetic neuralgia, fibromyalgia, and also complex regional pain syndrome.[4–6]

However, even as I eagerly incorporated myofascial trigger points into my everyday clinical practice I realized that there were a lot of questions that remained to be answered. The expanded integrated trigger point hypothesis has been proposed to explain trigger point

pathophysiology. Centering on endplate dysfunction and a cascade of associated biochemical changes, this elegant hypothesis has the potential to guide both clinical management and ongoing research.[7] In fact, recent microdialysis studies of the local chemical milieu of active myofascial trigger points seem to support the hypothesis.[8] A multitude of genetic abnormalities have been described that can lead to the endplate dysfunction that is central to this hypothesis.[9] The integrated hypothesis also allows us to almost seamlessly integrate emerging knowledge in the area of pain neurobiology on the role of central and peripheral sensitization, as have been shown to occur in chronic myofascial pain states. But how does this hypothesis relate to suggestions seemingly plausible in some of my patients that neuropathic changes of the nerve root or peripheral nerves might be responsible for the clinical signs and symptoms that we commonly associate with myofascial trigger points?[3,10]

Questions also remain with regard to diagnosis and management. With equivocal opinions on the relevance of the electrodiagnostic findings of endplate noise proposed to be specific to trigger points,[8,11] recent research into magnetic resonance elastography[12,13] is promising from a research perspective, but it hardly has the potential to provide us with a readily accessible clinical gold standard test. Many interventions have been described for myofascial trigger points, but research support often barely exceeds the anecdotal level. Dry needling can serve as an example. Although preliminary evidence exists for its use in patients with chronic low back pain,[14] a recent meta-analysis[15] could not support that it is superior to other interventions or even to placebo. However, this might be due less to actual effect size of this intervention and more to lack of study homogeneity, which, considering the multitude of treatment and interaction-related variables, may not come as a surprise.[16] Similar problems occur when studying other proposed interventions.

This book does not purport to answer all of the questions surrounding myofascial pain and myofascial trigger points. And admittedly, there are many. In fact, on many occasions it will provide the reflective clinician with new and unexpected questions. It is also not meant as a comprehensive or uncritical resource on all things myofascial. Rather, with its combination of research, clinical experience and expertise, suggestions relevant to everyday clinical practice, critical analysis, and the presentation of hypotheses, it intends to serve solely as an introduction for those clinicians willing to look beyond the joint-centered paradigm that is still so central in many schools of thought within orthopaedic manual therapy and thereby perhaps provide some suggestions for managing patient problems not adequately addressed under that paradigm.

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