Myofascial Trigger Point Therapy

Summary

Much of the acute and chronic pain in the musculoskeletal system originates in the muscles, where it is caused by myofascial trigger points (mTrPs) and associated fascia disorders (Travell and Simons 1999; Dejung 2009).

MTrPs pertain to solidly researched, scientific phenomena within the scope of neuromusculoskeletal medicine. The following have been pathophysiologically shown: local hypoxia in the center of mTrPs (Brückle et al. 1990); a modified EMG potential, interpreted as a sign of malfunction of the motor endplate (Travell and Simons 1999); and characteristic anomalies of the biochemical milieu with marked increase in the concentration of substance P, calcitonin gene-related peptide, and bradykinin among others, with a clearly decreased pH value (Shah et al. 2005, 2008). Rigor complexes within the core zone of the mTrPs (myosin and actin filaments persist in a maximally approximated position) have been histomorphologically documented with reactive overextension of the bordering sarcomeres (Travell and Simons 1999) and connective tissue changes (Feigl-Reitinger et al. 1998). It has also been documented that mTrPs have a significant effect on the muscle activation pattern and thus on the motor and musculoskeletal functions (and dysfunctions) (Arendt-Nielsen and Graven-Nielsen 2008; Ge et al. 2012, 2014; Ibarra et al. 2011; Ivanichev 2007; Lucas et al. 2004, 2010).

Basic clinical diagnostic criteria (taut band in a muscle, point of maximal tenderness within the taut band, reproduction of the symptoms) allow a skilled examiner to reliably diagnose mTrPs in everyday clinical practice (Gerwin et al. 1997; Licht et al. 2007).

MTrPs develop from overload or traumatic overstretching of the muscles, often leading to the formation of oxygen-poor zones in the muscle (hypoxia). Hypoxia results in a lack of adenosine triphosphate, and because of this the myosin and actin filaments in these areas are unable to separate from each other (rigor complexes), causing local reactive soft-tissue changes (contractions, adhesions). These small sites of affected muscle tissue can be palpated as mTrPs. Provocation by pressure triggers pain, which often irradiates to other regions of the body (referred pain). MTrPs can cause not only pain but also paresthesias, muscle weakness without primary atrophy, restricted range of motion, proprioceptive disturbances with impairment of coordination, and vegetative reactions. "Myofascial syndrome" is a term used to describe the sum of all symptoms caused by active mTrPs and associated fascia disorders. From experience, targeted trigger point therapy can usually eliminate these problems, even in the case of long-standing symptoms.

Manual trigger point therapy is a systematic, manual-therapeutic interventional strategy with the goal of deactivating the potential of the mTrPs to cause disturbances, treating the accompanying connective tissue changes and preventing recurrences. The form of trigger point therapy represented here involves a systematic six-step program (Swiss approach). This program utilizes four manual therapy techniques (techniques I–IV) to selectively deactivate the trigger points, and, especially in chronic pain patients, to stretch the reactively modified and shortened connective tissue. Home exercises for stretching/relaxing (technique V) break up the monotony of working postures and encourage the muscles to regenerate. Functional training (technique VI) supports the healing process through appropriate weight-bearing exercises and movements, which make the muscles more resilient while better ergonomics reduce failure load. In addition to local therapy of the mTrPs and the fascia disturbances, one must also identify the perpetuating factors and include them in the therapy in order to attain sustainable success in the treatment of chronic myofascial pain. Manual trigger point therapy in the form described here is a differentiated method and is performed by specially trained physical therapists and physicians.

Manual trigger point therapy combines mechanical, reflex, biochemical, energetic, functional, cognitive–emotional, and behaviorally effective phenomena (Gautschi 2008). Manual trigger point therapy thus influences not only the peripheral nociceptive pain but also, at the same time, intervenes in the body's pain processing and output mechanisms.

Myofascial trigger point therapy:

- Helps clarify (in terms of differential diagnosis) to what extent the muscles participate in the genesis and perpetuation of the pain and/or functional disturbance.
- Makes it possible to locate mTrPs and fascia changes which are relevant for myofascial pain and dysfunction.
- Releases (in a targeted manner) the muscular zones that are unable to decontract, thereby deactivating the potential of the mTrPs to cause disturbances.
- Stretches and releases connective tissue adhesions and pathological crosslinks (shortening of the inter- and intramuscular collagen tissue).
- Recognizes sustaining factors and integrates them into the treatment plan.
- Acknowledges the fact that the site of origin of pain often does not coincide with the site of its perception.