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Myofascial pain syndromes and their evaluation

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This article reviews the available published knowledge about the diagnosis, pathophysiology and treatment of myofascial pain syndromes from trigger points. Furthermore, epidemiologic data and clinical characteristics of these syndromes are described, including a detailed account of sensory changes that occur at both painful and nonpainful sites and their utility for diagnosis and differential diagnosis; the identification/diagnostic criteria available so far are critically reviewed. The key role played by myofascial trigger points as activating factors of pain symptoms in other algogenic conditions – headache, fibromyalgia and visceral disease – is also addressed. Current hypotheses on the pathophysiology of myofascial pain syndromes are presented, including mechanisms of formation and persistence of primary and secondary trigger points as well as mechanisms beyond referred pain and hyperalgesia from trigger points. Conventional and most recent therapeutic options for these syndromes are described, and their validity is discussed on the basis of results from clinical controlled studies.

Myofascial pain syndromes (MPS) that originate from trigger points (TrPs) are among the most frequent pain conditions encountered in the general population. However, at the same time, they are most often under-diagnosed or misdiagnosed conditions [1], and this circumstance is mainly attributable to incomplete knowledge of their nature, the lack of internationally validated diagnostic criteria and frequent confusion/overlap of symptoms with those of other musculoskeletal pain disorders. Consequently, the treatment of MPS is often inappropriate and/or delayed, with severe negative

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consequences with regard to suffering and disability in afflicted patients. This issue is even more serious in view of the fact that, when properly identified, an MPS can be quite effectively treated with appropriate therapeutic interventions [2]. This article intends to provide updated information on the clinical identification, pathophysiology and treatment of MPS, and also refers to the crucial issue of the co-morbidity of TrPs with other pain conditions because these can pose problems for differential diagnosis and integrated treatment.

Definitions

Although the terms myofascial pain and musculoskeletal pain are often used interchangeably, they should, by no means, be confused with each other. Whereas musculoskeletal pain comprises all types of pain perceived at the muscular level, myofascial pain refers to a specific syndrome caused by the presence of TrPs within muscles or their fascia. In this regard, myofascial pain, although it is estimated to be the most common in this context, represents one of the many possible categories of musculoskeletal pain [2]. To date, the definitions originally provided by Simons remain the best definitions of MPS and of TrPs [3]. Simons described an MPS as a "complex of sensory, motor and autonomic symptoms that are caused by myofascial trigger points." In turn, TrPs were defined as "spots of exquisite tenderness and hyperirritability in muscles or their fascia, localised in taut, palpable bands, which mediate a local twitch response of muscle fibres under a specific type of palpation – called snapping – and, if sufficiently hyperirritable, give rise to pain, tenderness and autonomic phenomena as well as dysfunction in areas usually remote from their site, called *targets*." Myofascial TrPs can be either active or latent. Active TrPs are defined as those provoking spontaneous pain, and, thus, are responsible for MPS. Latent TrPs have all the other characteristics of TrPs (taut band, local twitch response (LTR), and possibly referred pain on compression) but are silent with regard to the spontaneous symptomatology. These latent TrPs should be regarded as constituting the pre-clinical phase of MPS; therefore, it is very important that they be identified promptly, in order to prevent their evolution, over time, into active TrPs. A TrP is designated as 'primary' if it is located in a muscle which is directly subjected to either acute or chronic overload or repetitive overuse, but it is called 'secondary' if induced in a muscle – neurogenically or mechanically – by the activity of a nociceptive focus in a different structure, either deep somatic or visceral [3,4,5].

Diagnostic criteria

Although recognised as a legitimate clinical entity, an MPS still lacks codified diagnostic criteria developed on the basis of international multi-center studies or expert consensus meetings, which is the case for other syndromes such as fibromyalgia or chronic fatigue syndrome (CFS) [2,6]. Various criteria recommended by expert investigators do, indeed, exist and appear to be variably applied in clinical practice as well as for research purposes. Among criteria that are most frequently employed are those re-defined by Simons et al. in 1999 [5], according to which an MPS can be diagnosed if five major criteria and at least one out of three minor criteria are satisfied. The major criteria include (a) localised spontaneous pain; (b) spontaneous pain or altered sensations in the expected referred area for a given TrP (target area); (c) a taut, palpable band in an accessible muscle; (d) exquisite, localised tenderness in a precise point along the taut band; and (e) a certain degree of reduced range of movement when measurable. Minor criteria include (a) reproduction of spontaneously perceived pain and altered sensations by pressure on the TrP; (b) elicitation of an LTR of muscle fibres by transverse 'snapping' palpation or by needle insertion into the TrP; and (c) pain relieved by muscle stretching or injection of the TrP.

However, the available data on the reliability of physical examination for TrPs are conflicting as yet, and this has been emphasised by Lucas et al. [7], who have recently reviewed the published literature (MEDLINE, EMBASE and other sources) on this topic. These authors found a limited number of studies (nine) considered eligible for inclusion, with none specifically reporting on the reliability of the identification of the location of active TrPs within the muscles of symptomatic participants. Reliability estimates varied for each diagnostic sign, for each muscle and across each study. The authors concluded that the reliability of TrPs diagnosis requires further investigation with high-quality studies.