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Trigger Point as Important Predictor for Dental Clinical Practice

Guilherme Furegatti Moni¹, Jéssica Mayara Marques¹, Carolina Almeida Rodrigues¹, Vera Lúcia Bernardes¹, Taylane Soffener Berlanga de Araújo¹, Ana Carolina Bernardes Vanzella¹, Idiberto José Zotarelli Filho^{2*} and Juliana dos Reis Derceli¹

¹University Center of the Educational Foundation of Barretos (UNIFEB), SP, Brazil

²Institute of Biosciences, Humanities and Exact Sciences (Ibilce), São Paulo State University (Unesp), Campus São José do Rio Preto, Brazil

*Corresponding author: Idiberto Jose Zotarelli Filho, Institute of Biosciences, Humanities and Exact Sciences (Ibilce), São Paulo State University (Unesp), Campus São José do Rio Preto, Brazil, Tel: 5517-981666732; E-mail: m.zotarelli@gmail.com

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Abstract

Introduction: Trigger Points are manifestations usually founds in clinical practice, related to muscle tone alterations e to the miofascial pain syndrome and when active can induce pain, both in the point of origin and in distant places to specific areas (referred pain). They are sensitive points present in tense musculatures, which mechanics stimulations tease an answer which is pain. Among the treatments to the desactivation of this point, there is the dry needling, that consists in acupuncture needles injections in the point, aiming its deactivation.

Objective: This study objective is a literature review relative to dry needling.

Methods: To the realization of this study, it will be collected scientific articles of database and books, both physical and in Portable Document Format (PDF) and then, this data will be organized and exposed.

Conclusion: According to the literary findings, the technique of dry needling presented significant statistical results in most of the studies, being an important tool for the treatment of the trigger point.

Keywords: Trigger points; Etiology; Diagnosis; Needling

In our study line, there are orafacial pains that affect the areas of dentistry, face and mouth [2]. It is all pain related to the soft and mineralized tissues of the face (including the oral cavity), such as skin, bones, teeth and muscles. This pain may have its origin in the head and/or neck region, and may be referred to or even associated with primary headaches, rheumatic diseases, rheumatoid arthritis and fibromyalgia [3].

The most probable causes of orofacial pain are: odontogenic problems, neurogenic pathologies, musculoskeletal, psychogenic pain, infections, trauma; temporomandibular disorders and the presence of myofascial trigger points (TP) [3].

According to Simon et al. [4] TP may manifest pain in the person (when active), in addition to increased sensitivity and autonomic phenomena such as localized constriction vessel, sweating, coryza, lacrimation, salivation, pilomotor activity, proprioceptive disorders such as vertigo, tinnitus and perceptual changes, with associated dysfunction.

There are several treatments for the deactivation of TPs, among them: ischemic pressure, dry needling, wet needling, massage, ultrasound and laser therapy [5]. Dry angulation is a technique similar to acupuncture, and is extremely effective in relieving pain by increasing the pain threshold and range of motion, Hsieh et al. [6], showed in their studies evidence that this treatment was successful, inactivating primary TPs. For Cumming et al. [7] wet needling is not therapeutically superior or dry, making dryness the first treatment option, and it is less invasive.

The objective of the present study was to review the literature on dry needling of trigger points, evidencing also its etiology, probable causes, diagnosis and other inactivation methods.

Methods

For the accomplishment of this study, scientific articles will be collected from databases such as PubMed, Teses USP and

Introduction

Quality of life is one of the major concerns of the World Health Organization (WHO) and pain is one of the main causes of its decrease, having a physical, psychological and personal impact. Froriep, discussed the fact that there are tense and painful areas on the muscular surface, areas that, according to Strauss, no work could explain with success [1].

Scielo; books are also being used, both physical and in Portable Document Format (PDF). Then, the data will be organized and exposed as a literature review.

Mesh terms

The words were included "Trigger points" "Etiology" and "Diagnosis". For further specification, the "anterior maxilla" description for refinement was added during searches. The literature search was conducted through online databases: Pubmed, Periodicos.com and Google Scholar. It was stipulated deadline, and the related search covering all available literature on virtual libraries.

Series of articles and eligibility

A total of 60 articles were found involving temporomandibular dysfunction. Initially, it was held the exclusion existing title and duplications in accordance with the interest described this work. After this process, the summaries were evaluated and a new exclusion was held. A total of 45 articles were evaluated in full and 38 were included and discussed in this study.

Literature Review

Pain: One of the major concerns of the World Health Organization (WHO) is the quality of life of the individual, pain is one of the main causes of the decrease of the quality of life, being of great personal, social, physical and psychological impact, is a subject of great interest in several areas of health [8].

Muscle pain, both its etiology and its prognosis and its treatment, has been a challenge for clinicians since the 19th century. Froriep discussed the fact that there are tense areas with presence of pain on the surface of the muscles [1].

Later, in 1898, Strauss in his study reported that no work was able to successfully explain the presence of these areas where there is connective tissue deposition, thus clarifying the presence of these tense and painful areas [1], which are described by patients as a perceptual and subjective sensation, with an extremely diverse etiology. It has the capacity to create functional and psychological problems, which can lead to a decrease in the patient's quality of life. Its location, duration and frequency are easily identified, since the intensity varies from patient to patient, depending on your personality and your pain threshold. Factors such as anxiety can potentiate pain, increase perception and decrease patient tolerance [9].

It is divided into four categories: deep somatic pain, a result of the activation of the nociceptors of the muscles, tendons, ligament and joints, presents difficulty in the definition of the place, being described as a deep pain, similar to cramp; superficial somatic pain, which unfolds from the nociceptive stimulation of the integument (a set formed by the skin and its attachments), presents as a pain with a stinging sensation, stinging, burning, is well localized and is caused due to trauma, such as burns or inflammation; visceral pain, results from the

stimulation of visceral nociceptors, has the same characteristics of deep somatic pain, accentuating itself in the affected organ; or referred pain is felt in a location far from its origin (site of the lesion or preceding the lesion) that shares nerves and nerve structures by the same nerve root as the origin [10].

It was only in the late 1950's that some equipment was developed for the quantification of symptoms, which assigns values through the subjective perception of the human being [11]. These include: the visual analogue scale (EVA), which is a numerical scale, ranging from 0 to 10 (0 when there is no pain and 10 when there is the worst pain); and the descriptive scale, ranging from "painless" to "unbearable pain" [10].

Orofacial pain

The term "orofacial pain" is a broad term, which directly affects structures from the mouth and face, typical of the dental area, including those historically known as "TMD dysfunctions" (TMDs) [2].

Orofacial pain encompasses several painful conditions, and the lack of accurate diagnosis is one of the main causes of treatment failure. Differential diagnosis includes craniofacial pain, cervical pain and, eventually, thoracic pain.

Orofacial pain is all pain related to the soft and mineralized tissues of the face (including the oral cavity) such as skin, bones, teeth and muscles. This pain may have its origin in the head and/or neck region, may be referred to or even be associated with primary headaches, rheumatic diseases, rheumatoid arthritis and fibromyalgia. The most probable causes of orofacial pain are: odontogenic problems, neurogenic pathologies, musculoskeletal, psychogenic pain, infections, traumas and temporomandibular disorders [3].

Trigger points

The trigger points manifest in the person pain, increased sensitivity and autonomic phenomena such as localized constriction vessel, sweating, coryza, lacrimation, salivation, pilomotor activity, proprioceptive disorders, such as vertigo, tinnitus and alterations of perception, with associated dysfunction [4].

Gustein et al. published articles in the period between 1940 and 1960, explaining and reporting the trigger points, the patient's behavior regarding palpation and referred pain [12]. Lange, in 1939, reported the places where the origin and pathology of these areas, which later, in 1959, were called trigger point, were found by Sterider [1].

TPs are classified as active, when they cause pain even when the patient is at rest; or latent, which do not cause spontaneous pain, but may cause movement restriction and muscle weakness [13]. When TPs are active, they can cause increased pain and sensitivity, as well as autonomic phenomena such as localized vasoconstriction, coryza, sweating, lacrimation, increased salivation, proprioceptive disorders, pilomotor activity, among others [4].

They can also be classified into: primary, which develop independently; secondary, usually found in adjacent regions and muscle-antagonists to the primary; and satellites, which develop in the region where referred pain is found [14]. Travell and Simons [15] associated the etiology responsible for the onset of trauma, lack of vitamin (B1, B6, B12, C), fatigue, viral infections, emotional stress and deep pain [16].

Muscles with TPs tend not to work effectively, since the tension found at these points restrict muscle stretching, thus causing movement limitation, in addition to muscle weakness induced by muscle inhibition. In addition, they affect the coordination and reflex inhibition of muscle antagonist activity [17]. They can be found in any muscle, but more frequently in the head and neck, shoulders and lower back region. The vast majority of patients rapidly demonstrate a "jumpsign" or "twitch" reaction when pressed, which is a symptom / pathognomonic signal that reflects the hypersensitivity of this point [18].

The areas of irradiation of the trigger points are restricted and diverse, that is, each presents an area where it radiates pain, called the irradiation area, and may or may not follow a distribution related to the dermatome or the nerve root [19].

In order to arrive at a correct diagnosis, it is necessary to have reliability, which is achieved through accuracy, consistency, stability and consistency in the clinical examination, requirements that are met when the examiner has a manual ability and a good understanding of what they are the TPs and what to look for [20]. Biomechanical procedures can also be used to assess changes in muscle activity, especially electromyography (EMG) [21].

Myofascial TPs are usually found with a well-performed physical examination and palpation, requiring a physical examination, which should analyze the physical signs evidenced in the patient, such as the presence of tension on palpation in the musculoskeletal area, the presence of hypersensitive and painful nodules in this zone and a visible local contraction when palpating [22].

Temporomandibular disorders

The temporomandibular joint (TMJ) is described as biaxial (has two axes), synovial (lubricated by synovial fluid), capable of performing movements of depression, elevation, retraction, protrusion and laterality of the mandible [23]. It can undergo some changes, which can generate temporomandibular disorder (TMD), which is a syndrome that decompensates structures of the stomatognathic system and has several signs and symptoms [24].

TMD, when symptomatic, is seen as deep somatic pain, encompassing joint and muscular joint adversities, being considered the most common cause of orofacial pain of non-dental origin [25]. It has a heterogeneous nature of signs and symptoms, the main ones of which are: pain or discomfort in the TMJ region, in the ears, in the chewing muscles and headaches [26].

According to the Academy of Orofacial Pain, TMD is a term that covers temporomandibular joint related disorders, to chewing muscles, or both [5]. They cover craniofacial changes of multifactorial or biopsychosocial origin, and are more common in women [16]. It has a multifactorial etiology, can occur in the general population, and may be related to psychological factors, poor posture, muscular hyperactivity, occlusal problems (premature contact, lack of previous guides, etc.), traumatic injuries, bone problems, among other factors [27].

The pains of TMDs are classified according to their origin, being: articular, muscular and mixed (involve both muscular and joint); there are several subgroups of these categories [25]. According to Bell et al. [24], the subgroups are: myofascial pain syndromes (SDM) (where trigger points fit, which are essential in the diagnosis of a MPS), TMJ arthritis (joint problems), nocturnal parafunction, structural and systemic pain syndromes (fibromyalgia, rheumatoid arthritis).

Trigger point syndrome and orofacial pain syndrome

Orofacial pain syndrome (SDM) is a regional pain syndrome, which results from trigger points that can radiate pain to sites far from their points of origin, which can cause only pain and be asymptomatic at the origin. Patients with this syndrome complain of prolonged, deep pains that can cause physiological and motor impossibility, both in a muscle and in a muscle group; has variable intensity, and may or may not be throbbing, have a burning sensation, acute and stabbing. More often it is reported when in muscle activity; however, it may also occur in muscle rest [13]. The SDM may also affect the orofacial region, and is then called the Masticatory Myofascial Pain Syndrome (SDMM) [28].

Friction et al. reported that MPS is characterized by the existence of PG, which presents hyperirritable focus within a tight range of muscle tissue and/or associated fascia. The presence of trigger points (PG) or trigger points (TP) is essential for the diagnosis of an SDM, these are described as a tense muscle tangle or palpable hypersensitive nodules, which can vary from 2 to 10 mm in diameter [7].

Trigger points treatments

There are several treatments for the deactivation of TPs, among them: ischemic pressure, dry needling, wet needling, massage, ultrasound and laser therapy [5]. Dry needling is a technique similar to acupuncture, and is extremely effective in relieving pain by increasing pain threshold and range of motion, Hsieh et al. [6] showed in their studies evidence that this treatment was successful, inactivating primary TPs.

According to Dommerholt et al. [29], the technique of dry needling emerged experimentally, coming from school and different conceptual models. Several models were developed, among them the model of radiculopathy (deep dry needling) and the myofascial trigger point model (superficial dry needling). It is a relatively new method in combating pain,

which began to be used after the Lewit Publication, ever since receiving scientific attention [30].

Dry needling is an invasive method with the use of acupuncture needles and has been increasingly used for the treatment of myofascial trigger points. It is called dry needling since no substance is infiltrated in the body [31].

According to Chaitow et al. [17], the needles used are generally made of stainless steel and sterilized, having a copper or aluminum cable, and must be flexible to avoid their fracture, which could cause muscle spasm after insertion, and before insertion, the area where the patient will receive the treatment must be previously cleaned with alcohol or other antiseptic material. Chaitow further emphasizes that it is necessary to check if there is any abnormality or defect with the needle before use, and if it does, it should be discarded.

The needle should be directed to the painful site or the TP, forming an angle of 20 to 30 degrees with the skin, without penetrating the muscle tissue, only being inserted into the subcutaneous layers; then the needle is moved smoothly and rhythmically from side to side for at least 2 minutes (varying according to the patient's reaction: in milder reactions the time should be decreased to 30-60 seconds) and must be withdrawn of the flexible tube, which remains in place. It should be a technique without pain, since the layer reached is the subcutaneous layer, which is little innervated [17].

The pressure is applied with the left mother's thumb, in an area immediately next to the insertion region, the needle must, concomitantly. Be insured by the cable, between the index finger and the right hand thumb, it is inserted and twisted, and can cause immediate pain when the needle penetrates the skin, but after that there should be only a sensation of volume or heat [17]. Dry needling has its efficacy dependent on the ability to accurately palpate the myofascial TP region, without this precision, it can be a rather random process [29].

According to Amirdehi et al. [32] and Vulfson et al. [25], the risks involved in dry needling exist, but they are minimal. These include: infection (reduced chance of using sterile needles), local bleeding (in cases where the patient makes use of medicines to tune the blood) and increased pain with stiffness and needle-induced pneumothorax.

According to the Parkinson's Association Madrid, in 2013, among the contraindications of dry needling some are: patients with cardiovascular problems who use blood-thinning drugs; allergy to the material with which the needle is produced; coagulation problems; immunosuppressed persons and patient who have withdrawn lymph nodes.

Other authors have carried out a systematic review of articles related to therapeutic interventions in PD, such as acupuncture (needle work), electrotherapy, postural exercises and manual therapy, combined with active exercises to reduce pain and improve mouth opening. There were significant improvements in pain with this combination, including in acupuncture [33,34]. The choice of physical therapy for the

treatment of PD allows easy self-management, since it is simple and not invasive [34].

According to the work of Cumming et al. [7], the nature of the substance injected into wet needling makes no difference in the final result, just as wet needling is not therapeutically superior to dry. And, furthermore, injection of substances into the needle can cause irritation in the region, or even anesthetize the area, masking the treatment result [35-38].

Conclusion

According to the literary findings, the technique of dry needling presented significant statistical results in most of the studies, being an important tool for the treatment of the trigger point.

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