The use of acupuncture versus dry needling in the treatment of myofascial temporomandibular dysfunction

O emprego de acupuntura versus agulhamento seco no tratamento da disfunção temporomandibular miofascial

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ABSTRACT

BACKGROUND AND OBJECTIVES: Orofacial pain is the pain felt in the oral cavity and the face, with a multifactorial etiology, being a representative of the temporomandibular dysfunction. Among the various possibilities for treatment are acupuncture and the dry needling. The objective of this study was to compare the effectiveness of these two therapies in the cases of myogenic temporomandibular dysfunction.

CONTENTS: A review of articles relating to the topic was conducted on the LILACS, Medline, Scielo and Pubmed database, cross-referencing the following descriptors: "acupuncture" OR "electroacupuncture" OR "dry needling" AND "orofacial pain syndrome" OR "orofacial pain" OR "temporomandibular dysfunction" OR "temporomandibular disorders", myofascial temporomandibular dysfunction or trigger points in last the 16 years. Clinical trials, systematic reviews, metanalysis, case studies involving human beings were included. The selected languages were English and Portuguese. Twenty-one articles were found that were carefully evaluated and tabulated. The present study identified that both acupuncture and dry needling were significantly important in the resolution of the signs and symptoms of the myogenous temporomandibular dysfunction, with adequate effectiveness.

CONCLUSION: It can be pointed out that dry needling seems to be more effective in the resolution of local pain on the myofascial trigger points than just using of acupuncture points at a distance. Acupuncture demonstrated positive influences in the general health quality and pain of patients with myofascial temporomandibular dysfunction. Therefore, the therapy of choice will depend on the professional's assessment of the clinical conditions of the patient and the therapeutic goals to be achieved.

Keywords: Acupuncture, Orofacial pain, Temporomandibular joint.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A dor orofacial é aquela que é experimentada na cavidade bucal e na face, e que apresenta uma etiologia multifatorial, sendo um representante a disfunção da articulação temporomandibular. Dentre as várias formas de tratamento, tem-se a acupuntura e o agulhamento seco. O objetivo deste estudo foi comparar a efetividade dessas duas terapias nos casos de disfunção da articulação temporomandibular miogênica.

CONTEÚDO: Foi realizado um levantamento bibliográfico nas bases de dados LILACS, Medline, Scielo e Pubmed a partir do cruzamento dos seguintes descritores: "acupuncture" *OR* "electroacupunture" *OR* "dry needling" *AND* "orofacial pain syndrome" *OR* "orofacial pain" *OR* "temporomandibular dysfunction" *OR* "temporomandibular disorders", disfunção temporomandibular ou pontos-gatilho miofasciais nos últimos 16 anos. Foram incluídos ensaios clínicos, revisões sistemáticas, meta-análises, estudos de caso, envolvendo seres humanos. Os idiomas selecionados foram o inglês e o português. Foram encontrados 21 artigos que, posteriormente, foram criteriosamente avaliados e tabelados. O presente trabalho pode identificar que tanto a acupuntura, como o agulhamento seco, foram significativamente importantes na resolução dos sinais e sintomas da disfunção da articulação temporomandibular de caráter miogênico, com adequada eficácia.

CONCLUSÃO: Pode-se salientar que o agulhamento seco parece ser mais eficaz na resolução da dor local sobre o ponto-gatilho miofascial do que somente a utilização de pontos de acupuntura à distância. A acupuntura demonstrou influências positivas na qualidade de saúde geral e dor dos pacientes com disfunção da articulação temporomandibular miofascial. Dessa forma, a escolha da terapêutica a ser aplicada dependerá da avaliação do profissional sobre as condições clínicas do paciente e dos objetivos terapêuticos a serem atingidos.

Descritores: Acupuntura, Articulação temporomandibular, Dor orofacial.

INTRODUCTION

The myofascial pain syndrome can be defined as a pain originated from myofascial trigger points (MTP) located in a tensioned muscle band that produces the localized and/or diffuse or irradiated pain[1,2].

The etiopathogenic factors are multidimensional, corresponding to biomechanical, structural, neuromuscular and biopsychosocial

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changes that encompass, metabolic, traumatic, and genetic conditions and habits of daily life[1,3]. In this context, special mention must be given to the temporomandibular joint disorder (TMD). The TMD involves the masticatory muscles, the temporomandibular joint (TMJ), or both, as well as its adjacent structures[4].

The main triggering risk factors of TMD are related to the presence of micro and/or macro traumas. The first one results from forces of a small magnitude that repeatedly act over time, generating changes in the joint itself. The second comes from any abrupt external force on the joint causing structural or biomechanical lesions[5].

The treatment depends on the diagnosis, which should be meticulous and ad hoc. Currently, the treatment options for TMD include behavioral and postural therapy, and physiotherapy techniques including ultrasound, transcutaneous electrical nerve stimulation (TENS), laser, exercises, massage, and mobilization. Interocclusal appliances (IOA), pharmacotherapy with tricyclic antidepressants, painkillers, central action muscle relaxants, in addition to botulinum toxin, acupuncture, and dry needling (DN)[6-8] can also be used.

DN corresponds to a mechanical stimulus from the insertion of a needle in the muscle where the presence of an MTP was detected. This technique acts directly on the nerve fibers of painful sensation, stimulating the local activation of the A-delta fibers and the inhibition of the C fibers that carry the local pain impulses, resulting in the relaxation of the tense muscle band[9].

Likewise, the acupuncture therapy involves the insertion and manipulation of needles in acupoints, that are specific sites of the body located in the meridians. In accordance with the Traditional Chinese Medicine, the acupoints put the energy flow into motion (*QI*) through the meridians in the entire body[10].

The physiological mechanisms for analgesia with acupuncture, described in the current literature, comprise the activation of the hypothalamus with the release of endogenous opioid peptides as a probable immune response pathway to the relief of pain. Another hypothesis described is that acupuncture is capable of producing analgesia on neuropathic pain by suppressing the activation of microglia and astrocytes. It is also suggested that the acupuncture pathways are related to pain pathways, as well as to the sensory-somatic nervous system with impulses described in the posterior horn of the spinal cord and medial thalamus, among others[11].

The practice of DN and the traditional acupuncture has, to a large extent, positive and significant effects in the treatment of pain[12], presenting different results depending on the case. Traditional Chinese acupuncture has shown greater efficacy in solving problems related to local pain and stress[13]. On the other hand, DN on the MTP seems to produce a better response than the insertion of this same needle in an acupuncture point that is not an MTP[14].

Starting with the analysis of the different types of clinical and physiological responses obtained with the use of DN and traditional acupuncture, the aim of this study was to compare the effectiveness of these two therapies in patients with myofascial TMD.

CONTENTS

We did a bibliographic survey in the following databases: BVS, LILACS, Medline, Scielo, and Pubmed. The search was structured from the crossing of the following keywords: acupuncture OR electroacupuncture OR dry needling AND orofacial pain syndrome OR orofacial pain OR temporomandibular dysfunction OR temporomandibular disorders, or temporomandibular dysfunction or myofascial trigger points. The search was concluded on June 17, 2016.

The selection obeyed the following inclusion criteria: quasi-experiments, randomized clinical trials involving only humans, and systematic reviews that had acupuncture, electroacupuncture and/or DN treatment in English and Portuguese, published in the last 16 years. Studies with animal models, open-label studies as well as protocols with moxibustion and laser therapy were excluded.

We found 14,021 articles for evaluation and selection of the titles. At that stage, articles that were not related to the subject of the study, or that did not present specific treatment or study focusing on the myogenic TMD were excluded, remaining 413 studies.

The reading of the summaries was subsequently performed keeping the exclusion criteria described above, also excluding the articles that did not present a methodological design consistent with the objectives and the theme of the study. Then, 71 studies were left to be read in full. Of these, a total of 21 articles were selected (Figure 1), which fit the objectives and the methodology of this survey (Table 1).

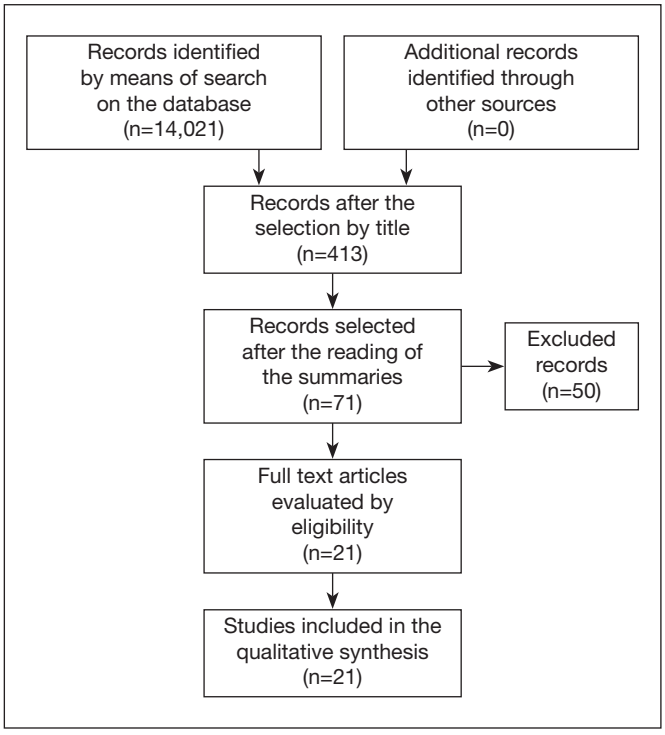

Figure 1. Flowchart of the selection of the articles

Table 1. Included articles

Authors	Population	Objective	Methodology	Therapy	Conclusion
Vicente--Barrero et al.[15]	20 patients	Evaluate the effectiveness and results of the use of acupuncture or IOA in patients with TMD.	Randomized clinical selection 1 group: IOA 1 group: acupuncture	Points: ExHN5, TA 5, TA 21, TA 17, VB 2, VB 34, E6, E36, IG4. Depth: 3.5mm, 15 sessions of 30 min.	Acupuncture comparatively showed to be more effective than IOA in the treatment of TMD.
Jung et al.[16]	7 studies	Evaluate the clinical evidence pro and cons the acupuncture treatment compared to physical therapy as TMD treatment.	Systematic review and meta-analysis	6 studies evaluated acupuncture. Average of 1 session to 3 weeks of treatment. Most used points: IG4 (most used), ID3, ID18, ID2, E6, E7.	The studies indicated that acupuncture has a significant effect on pain, but the results related to the penetrating needling, the fake acupuncture, real acupuncture with Qi sensation, did not show any significant difference among them.
La Touche et al.[17]	4 studies	Evaluate the effectiveness of the acupuncture to treat muscle DTM published in the last decade.	Systematic review	The selected points were E7, IG4, IG2, ID3, E6. Depth: 6 to 30mm, duration: 15 to 30 min.	The study suggests that acupuncture is beneficial in short-term muscle pain. The use of E7, E6, and IG4 is suggested for the treatment of TMD.
Rancan et al.[18]	17 patients	Investigate the electromyographic activation levels and the bite force in the molar region, before and after 3 months of acupuncture in subjects with TMD.	Before-and-after type of clinical trial	Most used points: IG4, E6, E7, B2, VB14, VB20, ID18, ID19, F3, E44, R3, ExHn3. 10 sessions lasting 20 minutes.	The data suggest that acupuncture interferes with the functional capacity of the masticatory system, changing the electromyographic activity patterns, bite force potential and decreases pain.
Borin et al. [19]	40 patients .	Evaluate the effect of acupuncture on pain level and TMD severity.	Randomized clinical trial. 1 group: acupuncture 1 group: untreated control group.	Most used points: E7, E5, 17, ExHn5, VB3, VB43, IG4, ExHn3. Treatment 2 times a week for 5 weeks, 30 min.	Acupuncture has shown to be effective in decreasing the level of pain and TMD severity.
Borin et al[20]	40 patients	Evaluate the effect of acupuncture on the electromyographic activity of the masticatory muscles in patients with TMD.	Clinical trial 1 group: acupuncture 1 group: untreated control group.	Used points: E7, E5, TA17, ExHn5, VB34, IG4, ExHn3. Treatment 2 times a week for 5 weeks, 30 min.	Acupuncture reduced the electric activity at mandibular rest position of the temporal muscles, provided greater balance between the masseter and temporal muscle function. Acupuncture did not act evenly on the masticatory muscles in chewing and maximum intercuspation.
Grillo et al.[21]	40 patients	Evaluate the effect of acupuncture in patients with myogenic TMD compared to the control group using IOA.	Randomized clinical trial. 1 group: acupuncture 1 group: IOA and information on TMD, diet, parafunctional activities 1 x week for IOA adjustment.	Used points: IG4, IG11, ID19, F2, VB20, VB21, VB34, B2, VC23, TA23. Once a week, 20 min for 4 weeks.	Acupuncture reduced pain intensity and improved the movement of the jaw. The two treatments have proven to be effective strategies to control TMD pain.
Camargo, Grillo and Sousa[22]	31 patients	Describe the results obtained on the reduction of TMD pain intensity in patients attending the public service with a minimum of 3 acupuncture sessions.	Descriptive study. 1 group: acupuncture Treatment aiming at the rebalance becomes different for each patient.	Used points: C7, PC6, ID3, VB20, TA23. Once a week, 3 sessions, 20 min.	With 3 sessions it was possible to control the pain of patients with TMD. Therefore, it is understood that its use may contribute to the public service.

Continue...

Table 1. Included articles – continuation

Authors	Population	Objective	Methodology	Therapy	Conclusion
Shen and Goddard[23]	15 participants.	Evaluate the short-term effect of acupuncture on myofascial pain.	Blind randomized clinical trial. 1 group: acupuncture 1 group: simulated acupuncture (needle did not penetrate) applied at 1cm distal to IG4.	Used points: IG4. 1 intervention of 15 min, depth: 10 to 20mm.	There was a significant statistical difference in pain tolerance with acupuncture. It has also reduced fascial, cervical and head pain. The tolerance to pain in the masticatory muscles increased significantly with acupuncture, more than with the simulated acupuncture.
Smith et al.[24]	27 patients	Compare the effect of the real acupuncture and the simulated acupuncture in the treatment of the TMJ myofascial pain to establish the real effectiveness of acupuncture.	Double-blind, randomized controlled trial 1 group: simulated acupuncture (no penetration) 1 group: real acupuncture	Used points: E7, bilateral, 6 interventions of 20 min with manual stimulation at 5 and 10 min., for 3 weeks, depth: 6 to 12 mm.	Acupuncture had a positive effect on TMD signs and symptoms.
McNeely, Olivo and Magee[25]	12 studies	Evaluate the methodological quality and summarize the evidence from studies, randomized controlled clinical trials, that analyzed the effectiveness of physiotherapy interventions in TMD.	Systematic review	Two studies concerning acupuncture. In the one with better quality, acupuncture significantly reduced pain compared to the other therapy. The other study did not show any difference between real and simulated acupuncture.	Most of the studies had a bad methodological quality. It is worth mentioning that exercises are effective in reducing TMD symptoms and that acupuncture still needs further studies.
Nogueira et al.[26]	23 patients	Compare the analgesic effect of acupuncture with PENS on masticatory myalgia.	Randomized clinical trial. 1 group: acupuncture. 1 group: PENS on the painful site needle and 100 Hz electrotherapy.	Used points: Shenmen, IG4, E36, F3, VG20, Yintang. 2 acupuncture sessions per week for 20 min., 5 weeks, 10 to 20 mm depth.	Acupuncture and PENS are effective in decreasing the masticatory myalgia in the masseter muscle in the short term.
Grillo et al.[27]	40 patients	Evaluate the effects of acupuncture on psychological aspects in women with chronic pain related to the diagnosis of TMD.	Clinical trial 1 group: acupuncture. 1 group: IOA when sleeping, diet information and parafunctional activities.	Used points: IG4, IG11, ID19, F2, VB20, VB21, VB34, B2, VC23, TA23 on the right side. 4 sessions, once a week for 20 min.	Both groups improved because of the chronic nature. It is recommended a longer treatment period to extend the acupuncture benefits.
La Touche et al.[28]	9 studies.	Perform an analysis to evaluate the quality of the studies and the effectiveness of acupuncture in pain relief.	Systematic review and meta-analysis of randomized clinical screening	Used points: E6, E7, VB20, Ex2, IG4, ID2, ID3, E36, Depth: 6 to 30 mm, 15 to 30 min duration.	It is suggested that acupuncture is an effective short-term adjuvant treatment for analgesia in patients with TMD.
Cho and Whang[29]	14 studies,	Evaluate the effectiveness of acupuncture for symptomatic treatment of TMD in a review of randomized clinical trials.	Systematic review	Used points: E7, IG4, ID19 were the most frequent, approximately 1 to 30 sessions.	This review provided moderate evidence that acupuncture is effective to reduce TMD symptoms; further studies are needed.
Rosted, Bundgaard and Pedersen[30]	60 patients	Investigate whether the results using acupuncture to treat patients with TMD, in a general dental practice, are comparable with the results of acupuncture achieved in previous studies in university clinics. Check if the therapeutic approach used differs from the one used in university clinics.	Clinical trials	Used points E5, E6, E7, E8, ID18, ID19, VB8, and EX2 (Taiyang). Thirteen dentists used relevant points in the cervical region for a headache, VB20, VB21 B10. 24 dentists used the VG20 and EX6 points to induce relaxation. Average of 3.4 sessions of 15min.	Acupuncture is a simple, safe, and potentially useful and effective in the treatment of TMD in the general dental practice.

Continue...

Table 1. Included articles – continuation

Authors	Population	Objective	Methodology	Therapy	Conclusion
Goddard et al.[31]	18 patients	Evaluate the effectiveness of a standardized acupuncture protocol in patients with myofascial pain in the jaw muscles	Blind randomized clinical trial 1 group: acupuncture 1 group: fake acupuncture (needle inserted at 1 cm of the acupuncture points) IG4, E6, 2 to 4mm depth.	Used points: IG4 and E6 bilaterally, depth of 10 to 30 mm, until getting Qi sensation. Duration of 30 min twittering for 5 seconds. at 15 minutes.	There was no significant difference in pain reduction between the two groups.
Fernández--Carnero et al.[32]	12 patients	Investigate the effectiveness of needling on the active MTPs of the masseter muscle in patients with TMD.	Randomized clinical trial. 1 group: Deep DN 1 group: placebo needling on painful site.	Deep DN with twitting maneuver for 5 times until the stimulation of muscle contraction. Two interventions at a 7-day interval.	Deep DN on the trigger point of the masseter muscle promoted pain reduction, increasing its level of tolerance and increasing the bite force. There was an improvement in the mouth opening in the short term.
Uemoto et al.[33]	21 patients	Compare laser therapy and needle therapy in patients with myofascial pain syndrome.	Randomized clinical trial, 1 group: laser therapy, 1 group: control 1 group: DN	Total of 4 sessions with an interval of 48 and 72h. DN on the MTP of the right-side masseter muscle and needling with an injection of 2% lidocaine with no epinephrine on the left side. The laser therapy group received infra-red laser, with a dose of 4J/cm^3 on the right side and 8J/cm^2 on the left side.	It showed that the injection of 2% lidocaine and laser therapy are effective to disactivate the MTG. DN proved to be effective in reducing pain according to the visual analog scale.
Itoh et al.[34]	16 patients	Determine if acupuncture on the MTPs is effective compared to fake acupuncture.	Blind randomized clinical trial 1 group: fake acupuncture 1 group acupuncture on the MTPs.	Acupuncture on MTPs was performed by a 5 to 15mm insertion, provoking local contraction with an average of 4.2 insertions for 15 min. Once a week, 30 min for 5 weeks. In fake acupuncture, the needling was simulated with no needle penetration, for 10 minutes with an average of 4.8 insertions.	Acupuncture on the MTPs showed to be more effective than fake acupuncture.
Gonzalez--Perez et al.[35]	48 patients	Investigate if deep DN in the lateral pterygoid muscle could reduce pain and improve jaw mobility in comparison with a methocarbamol/paracetamol treatment.	Randomized open label clinical trial. 1 group: DN 1 group: 380mg methocarbamol, 300mg acetaminophen, 1 dose every 6h for 3 weeks.	DN in the lateral pterygoid muscle, once a week for 3 weeks.	Deep DN proved to be more effective than the use of pharmacological substances in reducing pain, mouth opening, laterality, and jaw protrusion.

DN = dry needling; IOA = interocclusal appliance; TMJ = temporomandibular joint; TMD = temporomandibular dysfunction; MTPs = myofascial trigger points; PENS = percutaneous nerve electrical stimulation.

RESULTS

Of the 21 studies, 4 presented DN and 17 acupunctures as a treatment to evaluate the effectiveness of its effects on TMD in relation to other therapies. Of the total studies selected, 3 were systematic reviews, 2 systematic reviews followed by a meta-analysis of 16 clinical trials.

Of the four articles corresponding to the DN technique of, all had positive results concerning pain sensation, electric activity of the masseter and temporal muscles, maximum mouth opening, laterality, and jaw protrusion. Yet, the 17 articles that used the traditional acupuncture demonstrated that it was more effective than the placebo treatment, fake acupuncture, acupuncture without needle penetration and laser therapy. Acupuncture on painful sites and electrotherapy showed equal effectiveness on the perception of pain, electric muscle activity, maximum mouth opening mouth without pain, supported pressure level, sensitivity, and TMD severity.

The muscles involved in TMD in the studies were the masseter, temporal (anterior bundle), pterygoid, upper trapezius, anterior and posterior region of the neck that when palpated produced headaches, common in the TMD. The

muscles that had more intervention were right (R) and left (L) masseter, left and right temporal (anterior bundle), right and left pterygoid.

Three studies described the technique of deep DN[32,34,35], in its majority, on masseter, lateral pterygoid, temporal, through the back and forth movement for approximately 5 times, as well as insertions and withdrawal of the needles. The depth of the needle remained between 5 and 15mm, except for one article that deepened 1 to 2cm at a 30° angle in relation to the skin[18]. The average frequency of applications was of 4 sessions, with intervals varying between once a week and 1 session every 2 and 3 days[33]. Concerning acupuncture, treatments varied between one and 10 sessions, with a frequency of 1 to 3 times per week, with an average duration of 10 to 30min, with or without *Qi* activation (energy flow), being only considered the manual stimulation. The deepening of the needle varied, approximately 3 to 30mm[15,17,23,24,26,28,31].

The most used and recommended points for the TMD treatment were: stomach 6 (E6) that corresponds to the masseter muscle insertion (jaw angle) and stomach 7 (E7) that is located right below the zygomatic arch to the front of the ATM. There are distant points with analgesic function such as the large intestine 4 (IG4) that is anatomically between the first and second metacarpal[19], the stomach (E36) located in the tibial muscle anterior, inferior and lateral to the patella, as well as the points in the head and neck to help the relaxation of the adjacent musculature[28,36] (Figure 2).

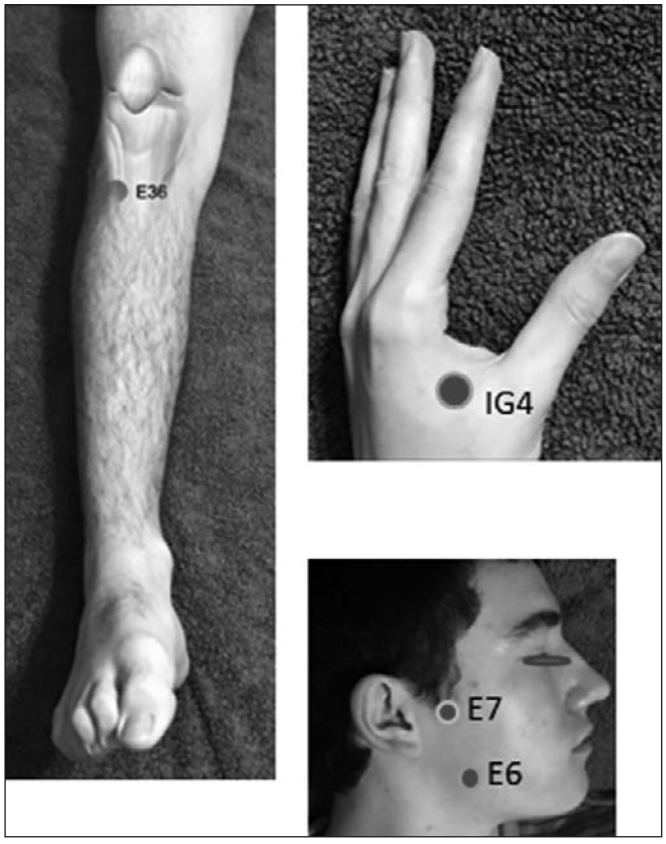

Figure 2. Most commonly used acupuncture points to treat temporomandibular dysfunction

The methods to assess TMD used in the studies were the visual analogical scale (VAS), pressure algometry, sensitivity to pressure force, maximum mouth opening without pain, jaw movements as protrusion and laterality, deviation of the jaw, electromyography of the masticatory muscles, RDC/TMD axis II questionnaire, GCPS scale, TMD severity questionnaire, craniomandibular dysfunction index, pain distribution questionnaire, frequency of joint noises, stomatognathic evaluation, numeric pain rating scale (NPRS)[15,24,26,31].

Moreover, it was possible to observe in this study that most of the patients that seek TMD treatment are female, with age between 18 and 68 years[17,20,35].

DISCUSSION

TMD has signs and symptoms that include ATM and/or masticatory muscles pain, especially when palpated, with limitation, deviation or deflection of mandibular movements and joint noises[2,7]. Pain is the most common symptom, affecting more women than men in a 4:1 ratio[16,37]. However, other studies reported a proportional occurrence of TMD in both gender[21], but reinforcing that women seek more treatment than men, relating it their concern with their health[15].

On the other hand, the MTPs can be characterized as a presynaptic dysfunction in the endplate, with an excessive release of acetylcholine in the synaptic cleft, causing a sustained contraction, recognized as muscle contraction next to this plate[40]. Therefore, it is defined as a neuromuscular disease, characterized by motor and sensory changes, causing referred pain on palpation and hyperirritability in the assessed muscle band[9,39].

Several techniques have been described for TMD, and MTP treatment and acupuncture and DN stand out[15,35]. The results of this review show that there was no study comparing the effect of acupuncture with the effect of DN in cases of myogenic TMD in the conducted search for evidence. As for the studies related to the effectiveness of acupuncture compared to other treatments, it can be pointed out that it was more effective on the overall health quality[40]. In TMD, there was similar efficacy to laser acupuncture, occlusal therapy with IOA, parafunctional habits guidelines and *sham* or placebo acupuncture[36].

In the studies that use DN, this showed significant effectiveness in resolving the pain[32,35,41]. Acupuncture with distant points showed a favorable effect on stress, quality of sleep, and headache due to its action on the physical and mental balance in comparison to the application specifically in local points[40]. One of the explanations of the physiological mechanism of action of acupuncture refers to the stimulation of peripheral innervation, responsible for forwarding the message to the spinal cord, brain stem and hypothalamic neurons, triggering an endogenous release mechanism of opiates such as endorphins, enkephalins, serotonin, acetylcholine, and hormones[24,25,42,43].

Acupuncture in the IG4, associated with the high-intensity current electrostimulation resulted in the activation of the contralateral prefrontal region, reflecting modulation in the anterior and subcortical cingulate cortex, as well as sensory-motor cortical areas involved in the emotional and cognitive relation of

pain[44]. The high frequency conducted by the acupoint may act by reducing the propagation of the Theta and alpha 1 waves, decreasing the anterior cingulate cortex activity, resulting in antinociception as pain modulation[44].

Needling and manual stimulation on the E36 acupoint with *Qi* sensation also showed a decrease in sign excitation on fiber connections and projections to the encephalon, cerebellum and limbic system, emphasizing the analgesic function of this point. It also influences the response patterns of the central nervous system related to the regulation of dopaminergic, norepinephrinergic and serotonergic substances[27]. Some authors even mention that there is the release of enkephalins and dynorphin associated with a cascade of reactions not yet fully understood[18,36].

According to La Touche et al.[17,28], the benefits obtained with acupuncture are more evident in the short term, being the E6, E7, and IG4 the points for the treatment of TMD. As advantages of this therapy, Camargo, Grillo and Sousa[22] highlighted its applicability in public healthcare services since the therapy seems to be cost-effective, safe and simple, providing pain control in a few visits. However, two systematic reviews included in this study showed that the methodological quality of primary studies conducted so far is moderate or weak, requiring better research design[17,28].

Studies that tried to evaluate the electromyographic activity after the use of manual acupuncture with distant and local points, as in the case of E7, have shown the reduction of the electric muscle activity at rest, during posture maintenance and teeth clenching, and a better distribution of the nervous impulse on the masticatory muscles, but with no uniform response pattern. It was also possible to identify changes in the bite force pattern and pain reduction[18,20].

On the other hand, in the deep needling, it is expected to effectively reach the MTP generating muscle contraction, mechanoreceptors excitement and activation of the sensory afferent pathways entering the dorsal horn of the spinal cord. However, it should be noted that the needle manipulation in deep tissue is painful and can cause more tissue damage[45,46]. In this context, Uemoto et al.[33] demonstrated that when comparing DN with the 2% lidocaine injection and laser therapy, it was effective in reducing the pain evaluated by VAS. Moreover, evidence suggests that the use of DN the is superior to fake acupuncture after 5 weeks.

Another important result worth mentioning is related to the DN superiority in relation to pharmacological substances when evaluating the reduction of pain, the amplitude of mouth opening, laterality and jaw protrusion after 3 weeks of therapy[35]. Considering the population profile on the unrestricted use of drugs, the use of a more effective technique, with a lower risk of pharmacological interactions seems to be an important indicator in the clinical practice.

One of the limitations of the present study relates to the evaluation of therapies through indirect comparisons, being necessary to conduct randomized clinical trials that compare the two therapies in one single clinical trial. It is worth mentioning that the profile of the patients included in the mentioned clinical trials is composed mainly of adult women corroborating the data already described in the literature[16,37]. More studies should be conducted with male patients in order to check whether the results obtained so far with the use of DN and acupuncture are similar in both genders.

CONCLUSION

The present study identified that both acupuncture and dry needling were significantly important in the resolution of the signs and symptoms of the myogenic temporomandibular dysfunction, with adequate effectiveness.

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