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RESEARCH ARTICLE



Could Acupuncture Be Useful in the Treatment of Temporomandibular Dysfunction?

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Abstract

In this study, the effects of acupuncture in comparison with flat occlusal plane appliance were evaluated in patient with myogenic temporomandibular dysfunction (TMD). The sample consisted of 40 women with TMD and unbalanced energy predominance of Yang Liver Ascension, selected using the Renying and Cunkou pulses, randomly divided into two groups: acupuncture and splint. The effect of treatments on the masseter and anterior temporal muscles was evaluated after 4 weeks of treatment, by means of electromyographic activity (root mean square) and pain pressure threshold. Pain intensity was measured using the visual analog scale, and range of mouth opening was evaluated using a millimeter ruler. All evaluations were performed at the beginning and end of the treatment. Visual analog scale score was reduced equally in the two groups ($p < 0001$), and the

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increase in range of mouth opening was significant in both groups. A significant difference was detected only in pain pressure threshold of the left masseter in the acupuncture group ($p < 0.05$). Only root mean square in the at rest position of the right temporal muscle diminished in the final stage of the splint group ($p < 0.05$). Both treatments reduced the pain intensity of myogenic TMD in the short term and may be considered strategies for control of chronic pain related to TMD.

1. Introduction

Temporomandibular dysfunction (TMD) is a collective term that comprises clinical problems in the masticatory muscles, temporomandibular joints (TMJs), and musculoskeletal structures associated with the head and neck [1], and is the most common form of chronic orofacial pain [2]. Classically described clinical signs that characterize TMD are pain in the muscle and/or TMJ, TMJ noises, restriction of mandibular movements, and deviation or limitation of mouth opening [3].

As there are various factors that affect the masticatory system and pain perception, independently or interacting with other causes, they may interrupt the normal activity of this system and originate the dysfunction, reflecting the multifactorial etiology of TMDs [4]. For situations such as these, reversible therapies are indicated as an approach to treatment [5]. These include physiotherapy, medications, biofeedback, acupuncture, and occlusal appliances [6].

The occlusal appliance is the conservative treatment most indicated for TMD [7]. Its efficacy is explained by an integrated neurobiological model: a change in the mandibular relations leads to a more harmonious pattern of the masticatory muscles, alleviating previously more tense areas [6], and also by the balance of proprioception, especially related to the proprioceptive fibers of the periodontal ligament [8].

Acupuncture is a therapeutic method of traditional Chinese medicine (TCM). Although its history dates back over 3000 years, nowadays it is well known, especially in pain management [9]. This is the reason for the increasing number of scientific studies over the past decade to understand the mechanisms of action of acupuncture and its effectiveness in various biologic systems [10].

Some studies [9,11,12] have related the effects of acupuncture on the control of musculoskeletal pain in the orofacial region. However, in these studies, the acupuncture points were selected based on the location of the points in the face and on points distant from the face, or association of the two, without considering the diagnosis of the patient's energy alteration, which would lead to the specific selection of points of treatment for this syndromic profile or pattern.

In therapeutic interventions involving the masticatory muscles, monitoring of muscle activity by electromyography is an objective form of evaluating the results documenting the changes in function of the muscles before and after the interventions [13]. It is also a way of reaching a deeper understanding of patients with TMD [14].

In view of the foregoing, the aim of this study was to evaluate the effects of acupuncture on patients with myogenic TMD, compared with a control group (flat occlusal plane appliance).

2. Materials and methods

The study was conducted at the Specialization Clinic of the Piracicaba Dental School of the University of Campinas, Piracicaba, Sao Paulo, Brazil, between May 2013 and March 2014. The study was approved by the Research Ethics Committee of the Institution (Protocol. 098/2011). All study participants signed the Free and Informed Term of Consent.

The inclusion criteria were as follows: women presenting energy imbalance with predominance of Yang Liver Ascension [15]; women in the age range between 18 years and 45 years, with myogenic TMD (Group Ia or Ib), in accordance with the Research Diagnostic Criteria for TMD – RDC/TMD [16] Axis I, official Portuguese version [17]; and women presenting pain and/or clinical signs and symptoms for longer than 3 months. Additional inclusion criteria were women who made use of contraceptives, had no arthritis, arthrosis, diabetes, or neurological pathologies, Angle's Class I, and no absence of teeth (except third molars).

Thus, 54 patients were evaluated, and of this total 44 were selected, because 10 did not fulfill the inclusion criteria. Four women desisted from participating, leaving a total of 40 individuals who participated in the study (mean age, 30 ± 6.59 years). The participants, the majority of whom (82.50%) were Caucasians, were recruited by means of notices placed on the institution's notice board.

2.1. Identification of imbalance with predominance of Yang Liver Ascension

Imbalance was identified via carotid-radial pulsology (Renying and Cunkou) and diagnosed by observation of the tongue. Observations of the tongue and pulse are important diagnostic methods in TCM, because they reflect the basic energy alterations of the entire body, identifying alterations in the Yin/Yang balance, patterns of energy excess, or deficiency [18,19].

2.2. Renying and Cunkou pulses

Renying (carotid artery) was measured at the protuberance of the larynx, close to ST9 (Renying), which is the pulse that represents the three channels of Yang energy: Taiyang, Shaoyang, and Yangming. Cunkou (radial artery), located close to LU9 (Taiyuan), represents the three channels of Yin energy: Taiyin, Shaoyin, and Jueyin [20].

According to Ling Shu [20], when the meridian Jueyin of the foot (liver) is unbalanced, the Cunkou pulse is twice as strong as the Renying—in that patients must present Cunkou 2×1 Renying, when force of the pulse is assessed.

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