



Acupuncture in the treatment of fibromyalgia: what has changed in the last 10 years?

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Abstract: In the last 10 years, fibromyalgia diagnosis has been transformed by the American College of Rheumatology (ACR) classification criteria. These changes have significantly impacted outcomes in treatment recommendations, including many non-pharmacological therapies, notably acupuncture. This review presents what has changed on acupuncture recommendations for the treatment of fibromyalgia after alterations performed by ACR classification criteria. A literature search was performed to identify published studies between January 01, 2008 and June 30, 2018. Published studies were identified using an initial search of PubMed database. We searched for trials published using the terms “fibromyalgia acupuncture”. We used only full-text articles available online and related to the objective of this review. The last ACR’s criteria [2010] have included the evaluation of other symptoms of fibromyalgia besides pain. New diagnostic and therapeutic technologies have also enabled the publishing of new trials, scientifically demonstrating the effectiveness of acupuncture in patients with the fibromyalgia syndrome. It is concluded that acupuncture is currently considered a scientifically recommended treatment for fibromyalgia.

Keywords: Fibromyalgia; acupuncture; treatment; criteria; recommendation

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Introduction

Fibromyalgia is a disease characterized by multifocal pain, mainly musculoskeletal, fatigue, cognitive dysfunction and sleep disorders for at least 3 months. Mood disorders and anxiety are also frequent comorbidities (1-16) is the second most common rheumatic disorder, leaving behind only osteoarthritis. It mainly affects middle-aged women (22–55 years), with an incidence of 11.28/1,000 cases a year, in contrast to 6.88/1,000 cases per year in males, in a ratio of 2:1, similar to other chronic pain conditions (5,11,13,15,17–20). The impact on quality of life is significant, being compared to diseases with low quality

such as rheumatoid arthritis and chronic obstructive pulmonary disease. The treatment is both pharmacological and non-pharmacological (5,7,11,13).

Non-pharmacological treatment consists of Complementary and Alternative Medicine (CAM), which is “a group of medical health systems, practices and products that are not generally considered to be parts of conventional medicine”, and includes the most diverse therapies, among them: medications (e.g., homeopathy), dietary (e.g., diets, herbal remedies, vitamins and supplements), physical (e.g., acupuncture and chiropractic), exercises (e.g., tai chi and yoga) and music therapy (2,5,10,21,22).

Acupuncture is one of the methods of Traditional

Chinese Medicine therapy that involves the insertion of fine needles at certain points in the body, called “acupuncture points”, mainly to relieve the pain of various diseases, but also to calm the mind (6,7,11,19,23–25). Around 91% of the population who suffer from fibromyalgia seek acupuncture as a treatment within 2 years after diagnosis (2,6,16,21,23,26).

In the last 10 years, the diagnostic criteria for fibromyalgia have changed in the scientific community. In 1990, the American College of Rheumatology (ACR) published as a diagnostic criterion for fibromyalgia, the existence of 11 tender muscle points from a list of 18 points. The diagnosis was positive when the physician made a pressure of 4 kg with the thumb (the nail bed turned white) at these 11 points, and the patient confirmed the increase in sensitivity (7,11,15,22,27,28). In 2010, the ACR proposed a new diagnostic criterion, which excluded the tender points method, and introduced a scoring system resulting from the Widespread Pain Index (WPI) and Severity of Symptom Scale (SS). The WPI evaluates 19 areas of pain in the body, each scoring 1 point, while the SS scores from 0 to 12, assessing fatigue, sleep, cognition and other general symptoms. The diagnosis is positive when the patients have, for at least 3 months, the following results: WPI >7 and SS >5 or WPI: 3–6 and SS >9 (11,12,15,20). This change improved the sensitivity and specificity to 90.2% and 89.5%, respectively, as it did not restrict the diagnosis to the subjective clinical examination of physicians (often unfit to do so), and also included the association of clinical symptoms (11,15). In 2016, there was still a small update in the criteria, changing from 3 to 4, in the result WPI: 4–6 and SS >9.15

Considering the aforementioned updates, it is imperative to review the studies carried out in the last years, in order to determine if there were also changes in the recommendations of acupuncture as a treatment for fibromyalgia.

Methodology

For this narrative review, the terms “fibromyalgia acupuncture” were searched in the largest online medical articles search engine, PubMed (<https://www.ncbi.nlm.nih.gov/pubmed>), listing 181 related scientific articles. From these, articles published in the last 10 years were selected by clicking on the <Custom range> link of the Publication dates filter, establishing the period between 01/01/2008 and 06/30/2018, resulting in a list of 98 articles. From this list,

27 articles which only have the abstracts were excluded, and also other 26 articles, either because they did not analyze the treatment of fibromyalgia with acupuncture, did not add information consistent with the objective of this review, or still because they were not finished studies or about animal experiments.

Results

Until the year 2010, clinical trials equated the effect of traditional acupuncture to the effect of sham procedures and did not recommend acupuncture as a treatment for fibromyalgia (1,21,27,28). However, more recent studies have pointed to divergent outcomes (13,23).

The use of newest imaging exams has demonstrated different effects between real acupuncture and its sham. Functional magnetic resonance imaging, for example, shows that only true acupuncture causes an alteration in central nervous system neuromodulation in fibromyalgia analgesia (11,29), revealing the activation of the Blood Oxygenation Dependent Level (BOLD) associated with increased levels of glutamate (one of the main neurotransmitters of the pain pathways) in the posterior cerebral insula (18,30). Standardized low-resolution brain electromagnetic tomography (s-LORETA) and positron emission tomography showed a change in the pattern of images between the before and after the application of acupuncture (18,24). In a study published by CNS Neuroscience & Therapeutics, the s-LORETA image showed a greater stimulation of some areas of the brain such as the cingulate gyrus (Brodmann area 24), temporal pole (Brodmann area 41) (in this case, a thoracic tender point was stimulated) (24), and a lesser stimulation in the middle and lower frontal gyrus bilaterally (Brodmann area 9), when a painful region is needled. In another study using C-carfentanil positron emission tomography, patients with fibromyalgia, which show a decrease in the binding potential of μ -opioid receptors, have been shown to be altered in various regions of the central nervous system (cingulate cortex, putamen, nucleus accumbens, caudate nucleus, amygdala and temporal pole). These areas showed an increase in the potential of receptor binding in patients treated with traditional acupuncture, unlike those treated with sham acupuncture, which presented a decrease or maintained low potential in patients with fibromyalgia, whether in the short or long term of the evaluation (31).

The most recent studies about acupuncture have scientifically demonstrated the outcomes described in

Traditional Chinese Medicine, such as the treatment to anxiety and depression, chronic fatigue syndrome, inflammation, chronic pain and insomnia, and the improvement of blood activity (3,8,12-25,32-34). Stimulating acupuncture points causes the deactivation of myofascial trigger points, releases of endorphin, dynorphin and enkephalin, increases production and use of serotonin, noradrenaline, dopamine, glutamate/glutamine and substance P, the fall of inflammatory mediators TNF- α , IL-1, IL-6 and VEGF, reverberating on the nervous system, both central (hypothalamic-pituitary-adrenal axis) and autonomic, and also endocrine-immune system (3,6,8,9,16,18,33,35).

Even trials that demonstrated no differences between real acupuncture and sham acupuncture on treating fibromyalgia, concomitantly exposed that acupuncture was still better than conventional drug treatment, either in pain relief or in improving quality of life or well-being (3,4,6,7,12,36-41). This happened probably because the sham procedure is not an adequate placebo to evaluate the therapeutic benefits of real acupuncture (4,18,26,38,39,42): for example, considering acupuncture different from electro-acupuncture, randomized controlled trials using the electro-stimulation (which cannot be pretended) have shown statistically significant results compared to sham acupuncture (6,8,21,41,43). Or still because acupuncture treatment must be individualized, based on the complaints of each patient, and not standardized as a drug treatment (12,38).

The publication of new studies allowed that a new systematic review in 2014, published in the Cochrane Library, contradicted the 2007 review, and affirmed that acupuncture is a recommended therapy for the treatment of fibromyalgia. This new review, unlike the previous one, included articles that appeared only in the Chinese language database (6,44). And more recent trials have confirmed this result (11-13,16,20,25,40,42,44); although some, even after the new ACR's 2010 criteria, still use the diagnostic criteria of 1990, which makes data obsolete and in need of update (16,23,33-35,39,41,43,45).

After small modification in parameters adopted by the ACR in 2016, only one study was found using this condition, and it was in favor of acupuncture (15).

Discussion

From 2008 to 2018, the ACR presented three diagnostic criteria for fibromyalgia: in 1990, 2010 and 2016. In consequence these modifications, there was also a change

in the results of the studies and their recommendations to acupuncture as a treatment for the syndrome. The most radical change occurred in the 2010 publication, that included clinical symptoms as criteria, which were based previously only on local muscle pains, the tender points. Since then, new trials (including the new parameters), beside new methods of therapeutic evaluation, have made it possible to transform the condition of acupuncture into a recommended treatment to fibromyalgia, due to the improvement not only of pain but also of sleep, cognition and well-being, whether compared to conventional drug treatment or to its sham procedure.

Conclusions

Due to alterations in ACR's fibromyalgia diagnostic criteria and newest diagnostic and therapeutic evaluation technologies, acupuncture is nowadays considered a recommendable treatment for its symptoms.

New high-quality assays using ACR's 2016 criteria are needed in order to corroborate or confront the use of acupuncture as a treatment for fibromyalgia.

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Footnote

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/lcm.2019.08.01>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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