Minireview Article

Efficacy of Acupuncture in Chronic Low Back Pain Treatment

ABSTRACT

Aims: To evaluate the effects of acupuncture practice in the treatment of chronic low back pain.
Methodology: This is a literature review, seeking articles published in the last 5 years in the PubMed database, using the indexed descriptors in the Health Sciences Descriptors (DeCS/MeSH) to form the search strategy: Acupuncture AND "low back pain." Six articles in Portuguese and English were selected for this work.
Results: Several studies analyzed the efficacy of different acupuncture and electroacupuncture approaches in the treatment of chronic low back pain. One study highlighted invasive laser acupuncture with different wavelengths, revealing improvements in pain and disability scales after 4 weeks. Another research compared electroacupuncture at various frequencies, observing similar reductions in pain between the groups. Combined acupuncture (hands and ear) was more effective than usual medical treatment, showing greater reduction in pain and cure rate. Both electroacupuncture and manual acupuncture also demonstrated efficacy in reducing pain intensity and quality. Acupuncture with embedded wires stood out, showing positive and rapid results in chronic low back pain. Another study revealed that both electroacupuncture and a placebo had positive impacts on pain intensity.
Conclusion: Different approaches of acupuncture and electroacupuncture can be effective in the treatment of chronic low back pain, with varied outcomes. This review highlighted the use of various pain scales, such as the Visual Analog Scale for Pain and the Numeric Pain Scale, making direct comparison challenging, but all approaches reported improvement. Therefore, various types of acupuncture have shown improvements in chronic low back pain. However, further research is needed to fully understand their effectiveness and variations.

Keywords: Acupuncture, Low Back Pain, Complementary Therapies, Therapeutics, Chronic Pain.

1. INTRODUCTION

Chronic low back pain (CLBP) is characterized by dysfunction in lumbar biomechanics, manifesting as painful episodes lasting more than 12 weeks [1]. It can be classified as specific when the etiology is known, such as hernias or fractures, or nonspecific when the cause is unknown [2]. Furthermore, CLBP is considered a public health issue, being one of the primary causes of work absenteeism worldwide [3]. CLBP has a global prevalence of 25.4% in the elderly population (≧60 years) and 3-20% in adults (<60 years) [4,5].

Various therapeutic interventions have been proposed as alternatives for CLBP treatment, given that this condition affects approximately 80% of the population at some stage in life, primarily impacting the elderly population, which is more susceptible to the side effects of analgesics and anti-inflammatories (RIGO et al., 2011). Additionally, certain factors are associated with the presence of CLBP, such as male gender, age over 30 years, smoking, alcohol consumption, obesity, and improper posture [6].

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Some of the non-traditional curative and preventive measures for CLBP include pilates, kinesiotherapy, heat therapy, hydrotherapeutic treatment, and acupuncture [7]. Currently, acupuncture is part of Integrative and Complementary Practices (PICS) offered by the Unified Health System (SUS) and is used as an alternative treatment for chronic low back pain, potentially effective in reducing symptoms and consequently improving the patient's quality of life by alleviating pain [8,9].

Acupuncture is an ancient therapeutic practice that involves the insertion of needles into specific points on the body for pain relief [10]. There are variations of the technique that incorporate technological advancements, such as electrical stimulation, the use of lasers in conjunction with needles, and the insertion of biodegradable threads to enhance the effectiveness of acupuncture [11]. As an intervention that avoids the use of pharmaceuticals, acupuncture is an important alternative for patients affected by CLBP [12].

Therefore, this review aims to evaluate the effects of acupuncture practice in the treatment of chronic low back pain.

2. METHODOLOGY

This is an integrative literature review conducted in July and August of 2023 using the PubMed database. Indexed descriptors in the Health Sciences Descriptors (DeCS/MeSH) were employed to form the search strategy: Acupuncture AND "low back pain." In order to narrow down the search, inclusion criteria comprised articles in English or Portuguese published between 2018 and 2023. After reviewing the titles and abstracts, duplicated articles, literature reviews, meta-analyses, and those not related to the study's theme were excluded. Subsequently, full-text articles were read, with inclusion in the study of those that addressed the objective of this review.

3. RESULTS

A total of 30 articles were found on PubMed using the search strategy described above. Upon reviewing the titles and abstracts, 21 articles were excluded, leaving 9 for full-article reading. Of these, 3 articles were excluded as they did not meet the objective of this review. Therefore, a total of 6 articles were included in this review, with the main findings described below.

One study [13] examined the efficacy of Invasive Laser Acupuncture (ILA) with lasers of different wavelengths for the treatment of chronic low back pain. Participants were allocated into 3 groups: control, which received acupuncture without laser activation; a group with laser activation at a wavelength of 650 nanometers (nm); and a group with laser activation at a wavelength of 830 nm. Following a bilateral acupuncture treatment lasting 10 minutes with ILA and subsequent electroacupuncture, also for 10 minutes, over a period of 4 weeks, different patient responses regarding pain scales were observed. In terms of the Visual Analog Scale for pain (VAS), there was an average drop from 50.47 mm to 36.20 mm in the control group; from 55.07 mm to 23.13 mm in the 650 nm group; and from 49.60 mm to 28.60 mm in the 830 nm group after the 4 weeks of treatment. Regarding the Oswestry Disability Index (ODI), there was a decrease from 9 to 8 points in the control group, from 11 to 7 points in the 650 nm group, and from 11 to 5 points in the 830 nm group.

Over a 5-week period, researchers [14] conducted electroacupuncture (EA) therapy at different frequencies: high (100 Hz), low (2 Hz), alternate (2 and 100 Hz), control (without electrical stimulation), and placebo (with an adhesive moxa, mimicking needle penetration). EA sessions were held for 30 minutes, twice a week for 5 weeks. A significant difference between all groups from pre-treatment to post-treatment was observed, with an average decrease from 6.8 to 1.9 on the Numeric Pain Rating Scale (NPRS). No significant differences were found between the three groups with electrical stimulation at different frequencies. The study also showed that manual (control) and electrical (intervention) stimulation did not differ statistically and that a placebo effect occurred, with the placebo group achieving the greatest reduction in NPRS (from 7.5 to 0.9).

Luo and colleagues [15] investigated, after 7 weeks of treatment, the superiority of acupuncture, whether hand acupuncture combined with auriculotherapy or standard acupuncture, compared to usual medical treatment for chronic low back pain. Three groups were used for comparison of therapy results with the Visual Analog Scale (VAS). After 6 months of treatment initiation, a decrease from 6.7 to 3.02 on the VAS (0 to 10) was observed in the combined hand acupuncture and auriculotherapy group, from 6.92 to 4.16 in the standard acupuncture group, and 1.42 in the usual medical treatment group. The research found that after 6 months of treatment, there was a cure rate of 70.4% and a pain reduction of 18.5% in the combined acupuncture group. In contrast, a cure rate of 46% and a 22% pain reduction were observed in the standard acupuncture group, and a 22.9% cure rate and a 22.9% pain reduction in the usual medical treatment group.

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Another study [16] examined the effectiveness of EA and manual acupuncture (MA) in treating patients with chronic low back pain over a 6-week period, with a frequency of 2 sessions per week and 40 minutes per session. EA received 30 minutes of manual acupuncture, followed by 10 minutes of electroacupuncture at a frequency of 10 Hz. Pain intensity was quantified using the Numeric Rating Scale (NRS), and pain quality was assessed using the McGill Pain Questionnaire (MPQ). The treatment results indicated a reduction from 7.9 to 3.8 and from 7.8 to 4.2 in the NRS for the MA and EA groups, respectively, between the pre-treatment and post-treatment periods. In the sensory component of the MPQ, there was a decrease from 17.3 to 8 for MA and from 20.1 to 9.4 for EA during the same period.

In the study led by Yeh and colleagues [17], 60 participants were divided into a group receiving nonsteroidal anti-inflammatory drugs (NSAIDs) and fake electronic acupuncture shoes and another group with electronic acupuncture shoes (EAS) and a placebo for NSAIDs to compare the effectiveness of both over 6 weeks. The Visual Analog Scale (VAS) was used to analyze pain intensity during this period. The study found, after 2 weeks of treatment, an effectiveness of 68% in the EAS group and 59% in the NSAIDs group, based on a decrease in VAS. In contrast, after 1 week of treatment, there was 78% effectiveness in EAS and 59% in NSAIDs, while after the last treatment session, these numbers were 73% and 62%, respectively. The average VAS score before starting treatment was 4.4, and at the last visit, it was 3.1.

The Korean study conducted by Sung [18] and others evaluated the effects of acupuncture and Thread Embedding Acupuncture (TEA) as a treatment for chronic low back pain. Both treatments resulted in a clinically relevant reduction in the Visual Analog Scale (VAS) after 8 weeks of the study. However, the TEA group showed a higher average reduction of 33.7, compared to the traditional acupuncture group, which had an average reduction of 15.6. The reduction in pain was observed in the long term for both treatments, increasing over time and with more sessions. The reduction in the TEA-treated group occurred more rapidly, within the first month of the study, while the acupuncture group experienced it from one and a half months onwards.

4. DISCUSSION

In this integrative review, different types of acupuncture were compared in the quest for greater effectiveness in treating chronic low back pain. Among the various scales used to attempt to measure pain before and after treatment, at least one pain intensity scale was always present: VAS, NRS, NPRS. Each study adapted the scales in a unique way, but the principle of all scales remained the same. In two studies [14, 19], VAS obtained a classification from 0 (no pain) to 100 (worst pain imaginable), while in others [16, 18], the same proportion and parameter were followed, but on a scale from 0 to 10. Additional singular scales [15, 17] were also used, such as NRS and NPRS, with values equivalent to VAS from 0 to 10.

It is valid to emphasize, however, that differences in values and parameters of the scales do not significantly influence the pain suggested by their results [20]. Nevertheless, the variation in scale parameters across different articles complicates a straightforward comparison of results. Therefore, the decision was made to highlight the parameters of each study for a better final comparison.

The use of lasers combined with needles, as in Invasive Laser Acupuncture (ILA), complements traditional acupuncture and proves promising in treating chronic pain. Laser acupuncture alone already shows partial or total relief of pain in various musculoskeletal, joint, and dental pathologies [21, 22, 23]. The variation in the wavelength of the laser used demonstrates the ability to impact results, as the group with 650 nm had a superior reduction, with an average of 31.94 points on the VAS scale (from 0 to 100), compared to the 830 nm group, which had a reduction of 21 points. Despite being a relatively new and less-used technique, ILA is already establishing itself as effective, even with different wavelengths [14].

EA, or electroacupuncture, involves the application of electrical stimuli to acupuncture needles in order to promote a longer-lasting and more extensive impact compared to the mechanical stimulation of traditional acupuncture. Different voltages can be employed to achieve variable results in improving pain [24]. A study comparing different voltages, ranging from 2 Hz to 100 Hz, in chronic low back pain found no significant differences between the data of the groups, as all showed positive results, with an average improvement on the Numeric Pain Rating Scale (NPRS) from 0 to 10 of 4.9 points [15]. Similarly, the study that used a voltage of 10 Hz also demonstrated an improvement in chronic low back pain among the participants, with a reduction of 3.6 points on the Numeric Rating Scale (NRS) from 0 to 10 [17]. Even when using two different scales, a similar improvement to other studies included in this review could still be observed.

Auriculotherapy is an ancient technique from traditional Chinese medicine with convincing results and serves as an important alternative to conventional pharmacological therapies [25], as well as hand acupuncture [26]. In a study [16], a combined therapy using hand acupuncture and auriculotherapy techniques was employed. This innovative therapy

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achieved superior results to traditional acupuncture, with a reduction of 3.68 points on the Visual Analog Scale (VAS) from 0 to 10. This reduction in pain demonstrates that choosing to use combined auricular and hand acupuncture is significantly more efficient than traditional acupuncture—and the latter is more effective than pharmacological approaches.

In the study where a shoe with electroacupuncture technology was used to treat chronic low back pain, a mean reduction of 1.3 on the 0 to 10 VAS scale was achieved. Although this improvement is lower than that of other techniques present in this review, it also demonstrated the ability to enhance the quality of life for patients [18]. This lower value may be attributed to the initially low average on the VAS scale at the beginning of the study, which was lower than observed in other research [27]. Thus, if a new study is conducted with participants in a more severe condition, it may demonstrate a greater efficacy in using this electroacupuncture technology.

Thread Embedding Acupuncture (TEA) differs from other forms by promoting long-term stimulation. In addition to the mechanical stimulation of acupuncture, an absorbable thread is inserted into specific points. The presence of the thread generates biochemical impacts in the affected region, providing a form of chemical stimulation that adds to the impact of traditional acupuncture, resulting in a more enduring therapeutic effect [28,29]. A favorable outcome was obtained when analyzing this acupuncture technique for treating chronic low back pain, with an average improvement on the VAS scale of 33.7 points (from 0 to 100) [19]. The technique has substantial scientific support in reducing pain perception, demonstrating itself to be a simple and safe procedure when performed by competent professionals [30,31]. A significant improvement was found [28] when evaluating TEA for low back pain, with an average reduction of 39.7 points on the VAS scale (0 to 100) after 8 weeks of treatment, corroborating the findings [19] and emphasizing the effectiveness of TEA.

Due to the lack of a common scale among all articles, it was not possible to precisely compare the techniques used for treatment. However, even with the different types of acupuncture employed and the varying pain scales used, all studies included in the review reported an improvement in chronic low back pain. This demonstrates the effectiveness of acupuncture in treating chronic low back pain, even though each technique presents a varied degree of improvement. The need for comparative studies to determine the best treatment approach and better understand the benefits of different techniques and their specificities is reiterated.

5. CONCLUSION

Due to the lack of a common scale across all articles, it was not possible to compare the treatment techniques precisely. However, even with the various types of acupuncture employed and the different pain scales used, all studies included in the review reported an improvement in chronic low back pain. This, therefore, demonstrates the effectiveness of acupuncture in treating chronic low back pain, even though each technique presents a varied degree of improvement. The need for comparative studies to determine the optimal treatment approach and gain a better understanding of the benefits of different techniques and their specificities is emphasized once again.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

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