FPIN's Clinical Inquiries

Acupuncture for Knee Osteoarthritis

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Clinical Question

Are needle-only acupuncture and electroacupuncture effective treatments for knee osteoarthritis?

Evidence-Based Answer

Electroacupuncture can be used to improve pain and physical function in adults with knee osteoarthritis. (Strength of Recommendation [SOR]: A, based on multiple meta-analyses of randomized controlled trials [RCTs].) Electroacupuncture seems to be more effective than needle acupuncture for symptoms of knee osteoarthritis, but both treatments are more effective than standard care. (SOR: B, based on network meta-analyses with inconsistent results.) Needle-only acupuncture offers pain relief and functional improvement, but not consistently at clinically relevant levels. (SOR: B, based on a meta-analysis and RCTs with inconsistent results.)

Evidence Summary

A 2010 systematic review of 16 RCTs (N = 3,498) compared needle acupuncture with a sham intervention for short- and long-term (up to eight weeks and 26 weeks, respectively) pain relief and functional improvement in patients with peripheral joint osteoarthritis.[1] This meta-analysis included studies measuring outcomes in patients with knee osteoarthritis (12 trials), hip osteoarthritis (three trials), or both. The included studies measured pain and function using a variety of scales, so authors collected the average change in scores for each study using the standardized mean difference. Acupuncture produced statistically significant improvements in pain and function, but the effect was small. In a secondary analysis of acupuncture vs. wait-list controls, acupuncture produced statistically and clinically relevant improvements in patients with osteoarthritis.

A 2013 systematic review and network meta-analysis of 24 RCTs (N = 1,219) compared acupuncture with standard care (analgesics, education, or exercise advice) in adults 55 years and older with knee osteoarthritis.[2] Postintervention pain was assessed using a variety of pain scales; outcomes were reported using the standardized mean difference. Outcomes favored acupuncture for overall improvement in pain. A subgroup analysis of higher-quality trials, as defined by the authors, also showed that acupuncture reduced pain more effectively than standard care.

A 2018 network meta-analysis of 16 RCTs (N = 2,065) compared five acupuncture methods (needle-only, electroacupuncture, fire needle [quickly inserting a red-hot needle into acupuncture points], warm needle, and sham needle) with educational interventions and no intervention in patients with knee osteoarthritis.[3] Needle-only acupuncture and electroacupuncture were shown to have some clinically relevant outcomes:

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needle-only acupuncture did not improve pain significantly but did improve function compared with wait-list controls, and electroacupuncture improved pain and function vs. sham needle acupuncture, educational interventions, and wait-list controls. All outcomes were measured using the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) scales for pain and function.

A 2016 systematic review and meta-analysis of 31 RCTs (N = 3,187) compared electroacupuncture with various control interventions (manual acupuncture [inserting and manipulating needles, usually via rotation], sham electroacupuncture, no treatment, wait-list controls, or a combination of these interventions) for the treatment of knee osteoarthritis.[4] Pain intensity was the primary outcome; secondary outcomes included comprehensive arthritis symptoms, as measured by WOMAC total scores, and quality of life, as measured by the 36-item Short Form Health Survey. Subanalysis showed that electroacupuncture was more effective than control interventions. The heterogeneity of included studies was moderate to high.

A 2017 systematic review and meta-analysis of 11 RCTs (N = 695) compared electroacupuncture with pharmacologic treatments (ibuprofen, celecoxib [Celebrex], diclofenac, and glucosamine) and other physical interventions (physiotherapy, manual acupuncture, tui na) in adults with knee osteoarthritis.[5] The primary outcome was effectiveness as defined by at least 25% improvement in WOMAC total scores; secondary outcomes included physical function and pain. Electroacupuncture was superior to control interventions for reducing pain and improving function. However, the studies had excess heterogeneity (I^2 = 41%), and there were concerns for bias in patient randomization and blinding strategies.

Recommendations from Others

A 2014 systematic review synthesized recommendations and guidelines for the management of osteoarthritis from 16 organizations.[6] Of the 15 that discussed nonpharmacologic alternative and complementary approaches, five included recommendations about acupuncture in general. These recommendations varied widely: The American Academy of Orthopaedic Surgeons rated acupuncture as "strongly not recommended" for knee osteoarthritis, whereas the Osteoarthritis Research Society International recommended it with its highest level of evidence and SOR ratings. The American College of Rheumatology gave acupuncture a conditional recommendation with no evidence rating. The European League Against Rheumatism recommended acupuncture for knee osteoarthritis with an SOR rating of A, and the Asian Chronic Pain Management Advisory Board recommended acupuncture for osteoarthritis in general. However, the systematic review concluded that there was not enough evidence to support a universal guideline recommending acupuncture.

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