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HEAD TO HEAD

Should doctors recommend acupuncture for pain?

It's a safe alternative to drugs that is under-researched because it lacks commercial interest, writes **Mike Cummings,** but **Asbjørn Hróbjartsson** and **Edzard Ernst** argue there is no convincing evidence of clinical benefit and that the potential risks and health service costs are unjustified

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Yes—Mike Cummings

Doctors in most developed countries recommend acupuncture for treating pain. Indeed, in Brazil, acupuncture is recognised as a medical specialty.[1] The UK is an exception, with only Scotland recommending acupuncture for chronic pain.[2]

In the US, acupuncture is recommended for back pain,[3] but in the UK it is no longer included in the National Institute for Health and Care Excellence's (NICE) guidelines for low back pain. The 2009 guideline on early management (CG88) was the first to recommend acupuncture, but it was removed in the controversial 2016 update.[4 5]

Acupuncture remains in the NICE guideline on headaches, and is the only treatment recommended for prophylaxis of chronic tension type headache. Curiously, this guideline calculates that the anticonvulsant topiramate is twice as good as acupuncture in preventing migraine, even though direct comparisons with drugs favour acupuncture.[6 7]

Sham acupuncture

The approach adopted by NICE compares the benefit of acupuncture over sham acupuncture, with the benefit of topiramate over a placebo, rather than directly comparing acupuncture with topiramate.

This approach assumes that sham acupuncture has no effect beyond an inert pill; however, a large meta-analysis on the differential effects of placebo treatments (in headache) shows that sham acupuncture (and sham surgery) are associated with higher response rates than oral placebos.[8] So the baseline used for these comparisons is uneven. This explains why the NICE guideline on headaches recommends drugs before acupuncture in prophylaxis of migraine whereas the Cochrane review reports acupuncture is better (immediately after a course of treatment).[6]

The biggest and most robust dataset for acupuncture in chronic pain comes from a meta-analysis by Vickers and colleagues of individual patient data from 20 827 patients.[9] This shows moderate benefit for acupuncture compared with usual care (about 0.5 standardised mean difference (SMD) in pain) but smaller effects compared with sham acupuncture of about 0.2 SMD. Importantly, it also shows that 85% of the effect of acupuncture is maintained at one year.

The small, but highly statistically significant, effect of standard needling (acupuncture) over gentle needling (sham acupuncture) indicates the biological plausibility of the technique. But the true value in practice should be measured against usual care or other interventions. Critics dismiss the small effect over sham as bias associated with unblinded practitioners, but I have not heard any plausible mechanism proposed for an unblinded practitioner influencing the pain outcome assessed by a patient who continues to be blinded.

Better quality of life

Further evidence that should urge a more flexible approach from guideline developers comes from a study reporting methods for network meta-analysis on continuous (pain) outcomes. This study used data from the Vickers meta-analysis. A surprise finding was that for health related quality of life, sham acupuncture clearly outperformed usual care in all the types of chronic pain studied.[10] Whether or not you consider these to be the effects of a theatrical placebo, they represent important improvements in quality of life over usual care, and with minimal risk.[11]

Is it all about money? In hospitals, acupuncture seems to incur more staffing and infrastructure costs than drug based interventions, and in an era of budget restriction, cutting services is a popular short term fix. Group clinics in the community can provide more treatment at much lower cost, but they are vulnerable to the constant re-evaluations in commissioning services. Another challenge is the lack of commercial sector interest in acupuncture, meaning that it does not benefit from the lobbying seen for patented drugs and devices.

In summary, the pragmatic view sees acupuncture as a relatively safe and moderately effective intervention for a wide range of common chronic pain conditions. It has a plausible set of

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neurophysiological mechanisms supported by basic science.[12] For those patients who choose it and who respond well, it considerably improves health related quality of life, and it has much lower long term risk for them than non-steroidal anti-inflammatory drugs. It may be especially useful for chronic musculoskeletal pain and osteoarthritis in elderly patients, who are at particularly high risk from adverse drug reactions.

No—Asbjørn Hróbjartsson and Edzard Ernst

Doctors should not recommend acupuncture for pain because there is insufficient evidence that it is clinically worth while. In China, acupuncture was considered irrational and superstitious during 1700-50, excluded from the Imperial Medical Institute in 1822, and only revived after Mao's takeover.[13] In the West, acupuncture remained a fringe phenomenon until the 1970s, when the counterculture movement disregarded scientific implausibility and embraced alternative healthcare. Today, clinical trials provide an informative basis for debate.

Small effect, high risk of bias

Overviews of clinical pain trials comparing acupuncture with placebo find a small, clinically irrelevant effect that cannot be distinguished from bias.[9 14 15] Two systematic reviews of randomised trials reported the effect of acupuncture as standardised mean difference (SMD) 0.17 and "close to 0.20," corresponding to 4-5 mm on a 100 mm visual analogue scale,[9 14 15] which is below the usual threshold for clinical relevance of 10-15 mm. Also, not one of 12 Cochrane reviews of acupuncture for pain reported a clinically important effect beyond placebo (on low back pain, rheumatoid arthritis, cancer pain, dysmenorrhoea, lateral elbow pain, endometriosis, peripheral joint osteoarthritis, prevention of migraine and tension type headache, shoulder pain, fibromyalgia, and pain in labour).[16] The reviews on back pain, migraine, and tension type headache considered acupuncture a possible treatment option based mostly on trials with non-blinded patients, but effects beyond placebo were "small."

However, even this small apparent effect may be due to bias rather than acupuncture. Risk of inadequate patient blinding is high in placebo controlled acupuncture trials. Supposedly blinded patients interact repeatedly with unblinded acupuncturists—for example, in nine of 13 trials, patients could clearly distinguish the acupuncture and placebo procedures.[14 17] So, differences in patient expectations, and in patients' reporting of subjective symptoms such as pain, are likely to result in small to moderate false positive results.

Acupuncture enthusiasts often emphasise "pragmatic" comparisons between acupuncture and usual care.[9 15 18] However, unblinded pragmatic trials cannot differentiate possible true effects of acupuncture from placebo effects and bias. To inform us reliably of any causal relation between acupuncture and effect, we need to focus on adequately blinded "explanatory" acupuncture trials.[16 18]

Harms and costs of theatrical placebo

Paradoxically, acupuncture enthusiasts often downplay the importance of acupuncture points, disregarding a clear distinction between acupuncture and placebo. However, if acupuncture is endorsed as a theatrical placebo we should be discussing the ethics of placebo interventions, not the elusive effect of acupuncture.

Acupuncture is often regarded as harmless, but needling may cause pain, haemorrhages, infection, pneumothorax, and even death.[19] In Denmark, for instance, four cases of pneumothorax, one fatal, were disclosed in 2017.[20 21] Such complications might be rare, but assessments of exact numbers are thwarted by unreliable data. Under-reporting of harm in acupuncture trials is extensive. For example, in a review of back pain, only 14 of 35 trials reported on harms (5% of patients receiving acupuncture and 0% of those receiving placebo).[22]

The cost of acupuncture sessions ranges from £25 to £70, and the overall cost to the NHS may amount to £25m (€28m; $34m) a year, though reliable figures seem unavailable.[21] Health services funded by taxpayers should use their limited resources for interventions that have been proved effective.

More than 50 years ago the gate control model for pain signals provided a basis for hypothesising nerve stimulation and endorphin secretion as biological mechanisms for acupuncture. However, it has proved difficult to develop such hypotheses into a generally persuasive scientific theory, and mechanisms for perceived analgesic effects of acupuncture remain opaque.

In conclusion, after decades of research and hundreds of acupuncture pain trials, including thousands of patients, we still have no clear mechanism of action, insufficient evidence for clinically worthwhile benefit, and possible harms. Therefore, doctors should not recommend acupuncture for pain.

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