

Is acupuncture an alternative for the treatment of Parkinson's Disease?

José Otayza^{a,b}, Carlos Juri^{b,c}

^a Facultad de Medicina, Pontificia Universidad Católica de Chile, Santiago, Chile

^b Proyecto Epistemonikos, Santiago, Chile

^c Departamento de Neurología, Facultad de Medicina, Pontificia Universidad Católica de Chile, Santiago, Chile

*Corresponding author cjuri@med.puc.cl

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Abstract

Introduction

It has been proposed that acupuncture has several benefits for patients with Parkinson's disease. However, its real clinical effect is still under discussion.

Methods

To answer this question we used Epistemonikos, the largest database of systematic reviews in health, which is maintained by screening multiple information sources, including MEDLINE, EMBASE, Cochrane, among others. We extracted data from the systematic reviews, reanalyzed data of primary studies, conducted a meta-analysis and generated a summary of findings table using the GRADE approach.

Results and conclusions

We identified nine systematic reviews including 53 studies overall, of which 45 were randomized trials. We concluded acupuncture might have a small effect in improving motor symptoms and disability in Parkinson's disease, but the certainty of the evidence is low.

Problem

Parkinson's disease is a common chronic neurodegenerative disease. The treatment of choice is levodopa, but at long term its efficacy decreases and adverse effects like dyskinesia appear. At this stage, many patients look for complementary therapies, like acupuncture, which would exert systemic effects through local stimulation. Doing so, it would improve motor symptoms and disability. However, its real clinical effect in this condition is not clear.

Key messages

- Acupuncture might have a small effect in improving motor symptoms and disability in Parkinson’s disease, but the certainty of the evidence is low.
- Acupuncture is probably associated with mild adverse effects.

About the body of evidence for this question

<p>What is the evidence. See evidence matrix in Epistemonikos later</p>	<p>We found nine systematic reviews¹⁻⁹, that included 53 primary studies¹⁰⁻⁶². Of which 45 are randomized controlled trials¹⁸⁻⁶². This table and the summary in general is based on the latter, because the observational studies did not increase the certainty of the evidence and did not provide additional relevant information.</p>
<p>What types of patients were included*</p>	<p>Patients with Parkinson’s disease were included, with or without motor complications. However, the information about the degree of progression of the disease, the proportion of patients with cognitive compromise or other non-motor symptoms were not specified. .</p>
<p>What types of interventions were included*</p>	<p>Sixteen trials used traditional acupuncture^{18,19,21,23,27,30,35-41,47,48,49,60}, nine electro-acupuncture^{22,24,28,32,36,43,45,59,62}, 18 scalp acupuncture^{25,26,29,31,33,34,42,44,50-58,61} and two abdominal acupuncture^{20,46}.</p> <p>In 33 trials it was compared against non use of acupuncture^{19-23,25,26,28-31,33,34,39,41-43,46,48-62}, in seven against use of drugs^{27,32,37,38,44,45,47} and in five against sham acupuncture^{18,24,35,36,40}.</p>
<p>What types of outcomes were measured</p>	<p>From the multiple outcomes measured by the trials, the systematic reviews grouped them as follows:</p> <ul style="list-style-type: none"> • Motor symptoms through UPDRS (Unified Parkinson’s Disease Rating Scale) • Degree of disability, measured through Webster score • Adverse effects • Constipation • Vesical dysfunction <p>The follow-up ranged between four weeks and three months</p>

* The information about primary studies is extracted from the systematic reviews identified, unless otherwise specified.

Methods

To answer the question, we used Epistemonikos, the largest database of systematic reviews in health, which is maintained by screening multiple information sources, including MEDLINE, EMBASE, Cochrane, among others, to identify systematic reviews and their included primary studies. We extracted data from the identified reviews and reanalyzed data from primary studies included in those reviews. With this information, we generated a structured summary denominated FRISBEE (Friendly Summary of Body of Evidence using Epistemonikos) using a pre-established format, which includes key messages, a summary of the body of evidence (presented as an evidence matrix in Epistemonikos), meta-analysis of the total of studies when it is possible, a summary of findings table following the GRADE approach and a table of other considerations for decision-making.

Summary of Findings

The information about the effects of acupuncture in Parkinson's disease is based on six randomized trials^{21,29,31,34,41,59} that included 396 patients overall. The rest of the trials did not report the outcomes of interest or did it in a way it was not possible to incorporate them in a meta-analysis.

All of the trials reported motor symptoms measured in the UPDRS III scale (396 patients), four trials^{28,34,61,62} reported the degree of disability measured with the Webster score (208 patients) and four trials^{23,24,44,55} reported adverse effects (150 patients).

The summary of findings is the following:

- Acupuncture might have a small effect in improving motor symptoms in Parkinson's disease, but the certainty of the evidence is low.
- Acupuncture might have a small effect in improving disability in Parkinson's disease, but the certainty of the evidence is low.
- Acupuncture is probably associated with mild adverse effects. The certainty of the evidence is moderate.

Acupuncture for Parkinson's disease				
Patients	Parkinson's disease			
Intervention	Acupuncture (added to standard treatment)			
Comparison	Standard treatment (without acupuncture)			
Outcome	Absolute effect*		Relative effect (95% CI)	Certainty of evidence (GRADE)
	WITHOUT Acupuncture	WITH Acupuncture		
Motor symptoms (UPDRS III) **	21.39 points	16.93 points	--	⊕⊕○○ ¹ Low
	MD: 4.46 points better (Margin of error: 3.53 to 5.39 better)			
Degree of disability (Webster's score) **	13.26 points	9.48 points	--	⊕⊕○○ ¹ Low
	MD: 3.78 points better (Margin of error: 2.17 to 5.4 better)			
Adverse effects	Only minor adverse effects were reported in four patients. Two cases of subcutaneous hematoma [55], one of weakness and self-limited headache [55] and one of worsening of basal orthostatism [19].		--	⊕⊕⊕○ ¹ Moderate
Pain	Pain was not measured or reported by the systematic reviews		--	
<p>Margin of error: 95% confidence interval (CI). RR: Risk ratio. MD: Mean difference. GRADE: Evidence grades of the GRADE Working Group (see later). *The score of the group WITHOUT acupuncture was calculated from the average of the control group of the trials. The score WITH acupuncture was calculated based on mean difference and its confidence interval. **Unified Parkinson's Disease Rating Scale (UPDRS) is a scale of 0 to 159 points that evaluates the impact of Parkinson's disease in four areas. UPDRS III, in particular, is focused on motor symptoms and it ranges from 0 to 68 points. The higher the score, more and more serious symptoms the patients have. Webster's score is a score from 0 to 30 points, and it assesses the degree of disability of the patient with Parkinson's disease. The higher the score, the greater the severity. ¹ We downgraded the certainty of the evidence due to risk of bias. For the outcomes UPDRS III and Webster's score it was downgraded in two levels, for adverse effects only one because it is unlikely that the risk of bias may substantively change the conclusion.</p>				

About the certainty of the evidence

(GRADE)*

⊕⊕⊕⊕

High: This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different† is low.

⊕⊕⊕○

Moderate: This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different† is moderate.

⊕⊕○○

Low: This research provides some indication of the likely effect. However, the likelihood that it will be substantially different† is high.

⊕○○○

Very low: This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different† is very high.

* This concept is also called 'quality of the evidence' or 'confidence in effect estimates'.

† Substantially different = a large enough difference that it might affect a decision

Other considerations for decision-making

To whom this evidence does and does not apply

The evidence presented in this summary may be applied to any patient with Parkinson's disease.

The limitations of the existing evidence do not allow to establish if there is a subgroup of patients in which it may have a different effect.

It should be noted that in the different reviews it was not specified what was the degree of progression of the disease, proportion of patients with cognitive compromise or other non-motor symptoms.

It is important to be aware that we were unable to incorporate to the meta-analysis any of the trials that compared acupuncture vs placebo acupuncture. This is the most important comparison to determine the genuine effect of acupuncture. The comparisons against no treatment cannot make a difference between the true effect of acupuncture and the ritual associated to this practice.

About the outcomes included in this summary

The outcomes shown in the summary of findings table are those considered critical for decision-making by the authors of this article, but they agree with those reported by the systematic reviews.

Because of the nature of this intervention, many outcomes may be affected, such as speed of progression, medication need and total UPDRS, but there was no substantial effect in any of them.

Balance between benefits and risks, and certainty of the evidence

The certainty of the evidence is low, but if the observed effect were true, it would be very small.

The existing evidence does not allow to determine if there is some type of acupuncture (for example, standardized protocols of acupuncture for Parkinson's disease) that may have clinically relevant benefits.

Resource considerations

It is an intervention with relatively high cost. While it is not possible to conduct an appropriate cost-benefit balance, because of the uncertainty about the latter, it is highly likely that it is not a cost-effective intervention.

What would patients and their doctors think about this intervention

Faced with the evidence presented in this summary, most patients and clinicians should lean against the use of acupuncture in Parkinson's disease.

However, since there is a positive perception about the therapeutic effects of acupuncture, both in the general population and in many health professionals, it is reasonable to expect variability in decision-making.

Differences between this summary and other sources

The conclusions of this summary partially disagree with the ones of the systematic reviews, since they conclude it is a probably effective intervention, although recognize the limitations of the existing evidence.

The main clinical guidelines, like the Movement Disorders Society guidelines [63] and the Canadian Society [64], take into account acupuncture among non-pharmacological interventions, but they state there is not enough evidence to determine if it has a clinical effect on motor symptoms, so it is considered as an investigational intervention

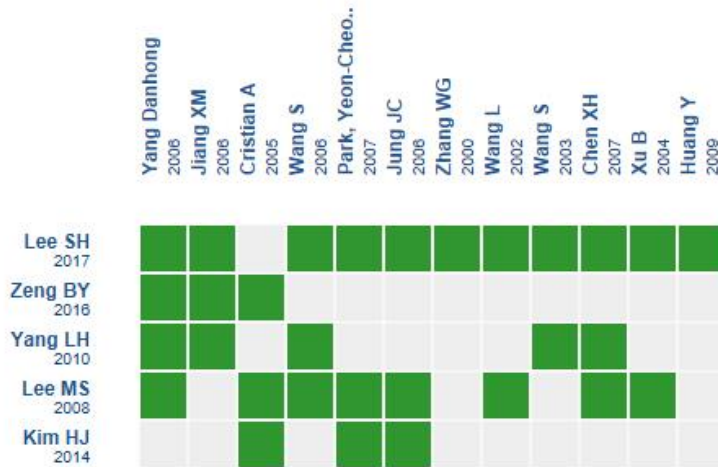
Could this evidence change in the future?

The likelihood that future evidence changes the conclusions of this summary about the benefits of acupuncture for Parkinson's disease is high, due to the low certainty of the existing evidence.

According to the International Clinical Trials Registry Platform of the World Health Organization, there are at least nine ongoing trials ^{65,66,67,68,69,70,71,72,73}, that may provide relevant information.

How we conducted this summary

Using automated and collaborative means, we compiled all the relevant evidence for the question of interest and we present it as a matrix of evidence.



An evidence matrix is a table that compares systematic reviews that answer the same question. Rows represent systematic reviews, and columns show primary studies. The boxes in green correspond to studies included in the respective revisions. The system automatically detects new systematic reviews including any of the primary studies in the matrix, which will be added if they actually answer the same question.

Follow the link to access the **interactive version**: [Acupuncture for Parkinson's disease](http://dx.doi.org/10.5867/medwave.2014.06.5997)

Notes

The upper portion of the matrix of evidence will display a warning of “new evidence” if new systematic reviews are published after the publication of this summary. Even though the project considers the periodical update of these summaries, users are invited to comment in *Medwave* or to contact the authors through email if they find new evidence and the summary should be updated earlier.

After creating an account in Epistemonikos, users will be able to save the matrixes and to receive automated notifications any time new evidence potentially relevant for the question appears.

This article is part of the Epistemonikos Evidence Synthesis project. It is elaborated with a pre-established methodology, following rigorous methodological standards and internal peer review process. Each of these articles corresponds to a summary, denominated FRISBEE (Friendly Summary of Body of Evidence using Epistemonikos), whose main objective is to synthesize the body of evidence for a specific question, with a friendly format to clinical professionals. Its main resources are based on the evidence matrix of Epistemonikos and analysis of results using GRADE methodology. Further details of the methods for developing this FRISBEE are described here (<http://dx.doi.org/10.5867/medwave.2014.06.5997>)

Epistemonikos foundation is a non-for-profit organization aiming to bring information closer to health decision-makers with technology. Its main development is Epistemonikos database

www.epistemonikos.org.

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Correspondencia a

Centro Evidencia UC
Pontificia Universidad Católica de Chile
Centro de Innovación UC Anacleto Angelini
Avda. Vicuña Mackenna 4860
Macul
Santiago
Chile



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