

CPD

Efficacy of acupuncture in the management of atopic dermatitis: a systematic review

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Summary

Atopic dermatitis (AD) has a high negative impact on quality of life. Acupuncture has antipruritic actions and may assist in treatment of AD; however, the current state of evidence for this remains unknown. We aimed to evaluate the efficacy of acupuncture against placebo/sham acupuncture in the management of AD. Electronic searches were conducted on a number of databases, from their inception until November 2013. Studies comparing the effects of acupuncture with those of placebo/sham acupuncture on severity of disease or symptoms/signs of AD were included. We did not find any studies that were eligible to be included in this systematic review. Among the excluded studies, there were two studies that evaluated the antipruritic effects of acupuncture and one study that evaluated the effects of acupuncture on IgE-mediated allergy. However, there were no randomized controlled trials evaluating the effects of acupuncture on AD as a disease. This finding therefore provides an indication of the current state of evidence of acupuncture in the management of AD, and highlights the research gap that exists, in that there is a lack of gold-standard studies (i.e. RCTs) to support valid conclusions. There is currently no evidence of the effects of acupuncture in the management of AD, and no evidence-based recommendations or conclusions can be made from this review. Several studies indicated that acupuncture may have a role in reducing itch or regulating IgE-mediated allergy, both of which are major characteristics of AD. However, there were no RCTs evaluating the effects of acupuncture on AD as a disease. There is therefore an urgent need for rigorously designed RCTs to assess the efficacy of acupuncture in the management of AD.

Introduction

Atopic dermatitis (AD) (or atopic eczema; AE), is a chronic, inflammatory skin disease, affecting 15–30% of children and 2–10% of adults.¹ The aetiology and pathogenesis of AD remain unclear, but there is involvement of genetic, immunological and environmental factors.²

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Itching is one of the most distressing aspects of AD, which has a high negative impact on the quality of life (QoL) of patients, thus indicating the importance of itch management during treatment. Current therapies focus on preventing disease aggravation and reducing inflammation.³ However, long-term use of the mainstay treatment, topical corticosteroids, may result in local and systemic adverse effects such as skin atrophy and primarily hypothalamic–pituitary–adrenal axis suppression, and can result in complications such as secondary bacterial infections and eczema herpeticum.^{4,5}

Acupuncture is used for various health conditions, including dermatological conditions.⁶ The origin of

acupuncture dates back to 1700 BC.⁷ There are many forms of acupuncture known, including filiform needling, dry needling, ear/auricular acupuncture, laser acupuncture and electroacupuncture. Despite historical evidence and previous acupuncture studies on AD, the current state of evidence for acupuncture treatment of AD remains unknown.

This systematic review aimed to evaluate published randomized controlled trials (RCTs) assessing the efficacy of the common forms of acupuncture in the management of AD, in terms of reduction in severity of disease or symptoms/signs, or improvement in QoL.

Methods

Electronic searches were conducted on the following databases from their inception to November 2013: CINAHL, Cochrane Library, Embase, ProQuest, PubMed, ScienceDirect, Scopus, Web of Science, VIP Database for Chinese Technical Periodicals (CQVIP) and China National Knowledge Infrastructure (CNKI). The search terms included: 'randomized controlled trial', 'atopic dermatitis', 'acupuncture', 'acupuncture therapy', 'ear acupuncture', 'electroacupuncture', 'laser acupuncture' and 'dry needling'.

Study selection criteria

Inclusion criteria were: RCTs; published in English or Chinese; diagnosis of AD (or AE) according to validated diagnostic criteria (i.e. Hanifin and Rajka diagnostic criteria, the UK diagnostic criteria, the Schultz-Larsen criteria, the criteria of Diepgen, the Kang and Tian criteria or the International Study of Asthma and Allergies in Childhood (ISAAC) criteria) as identified in a previous systematic review;⁸ which compared a common form of acupuncture (or dry needling) with placebo/sham interventions; evaluated disease or symptom/sign severity using outcome measure instruments that have been adequately tested and validated [i.e. the SCORing Atopic Dermatitis (SCORAD) index, the Eczema Area and Severity Index (EASI) or the Patient-Oriented Eczema Measure (POEM)]^{9,10} or outcomes evaluating individual signs or symptoms of AD, such as itch intensity evaluated using a visual analogue scale (VAS), or QoL evaluated using validated measures [i.e. Children's Dermatology Life Quality Index (CDLQI), Dermatitis Family Impact (DFI), Dermatology Life Quality Index (DLQI), Infant's Dermatology Life Quality Index (IDLQI), Skindex-29, Skindex-16, Skindex-17 and the Quality of Life Index for Atopic Dermatitis (QoLIAD)].^{9,11,12} Diagnosis of

nonspecific 'eczema' was accepted only if it referred to children.

Studies were excluded if they involved other types of dermatitis, reported only immunological data or involved moxibustion, tuina (Chinese massage), acupressure, plum-blossom needling (using a device with several needles), or Acupoint injection (injection of water or other fluid substances, such as vitamin C solution, into acupuncture points).

Data extraction and risk of bias assessment

A Cochrane Skin Group data extraction form, which was modified to suit this review, was used to extract data, including information on study design, participant demographics, treatment protocol and results, which were then checked by a second reviewer. Any discrepancies were resolved through discussion. Only published data were included in the analysis. Meta-analysis comparing acupuncture with control intervention was conducted via RevMan (v5.1); The Cochrane Collaboration.

Assessment of risk of bias was conducted using the Cochrane Collaboration tool for assessing risk of bias.¹³ The quality of acupuncture administration in the studies were also evaluated using the Assessment of Quality Acupuncture (AQA), an instrument developed using the Delphi process,¹⁴ while quality of reporting was evaluated against the Standards for Reporting Interventions in Clinical Trials in Acupuncture (STRICTA) 2010 checklist.¹⁵ Because of the large overlap of criteria between these two instruments, we decided that only results from the AQA would be reported as it has several more criteria than STRICTA.

Results

Description of studies

In total, 359 studies were identified. After screening of titles and abstracts, we excluded 329 studies that were duplicates, or were not RCTs, not AD studies, not acupuncture studies, or not published in English or Chinese. This left 30 full articles that were retrieved for further evaluation, but all were excluded for other reasons (Fig. 1).

Assessment of risk of bias, and use of STRICTA 2010 and Assessment of Quality Acupuncture

We could not conduct assessment of risk of bias, quality of reporting or acupuncture administration because there were no eligible studies found for inclusion.

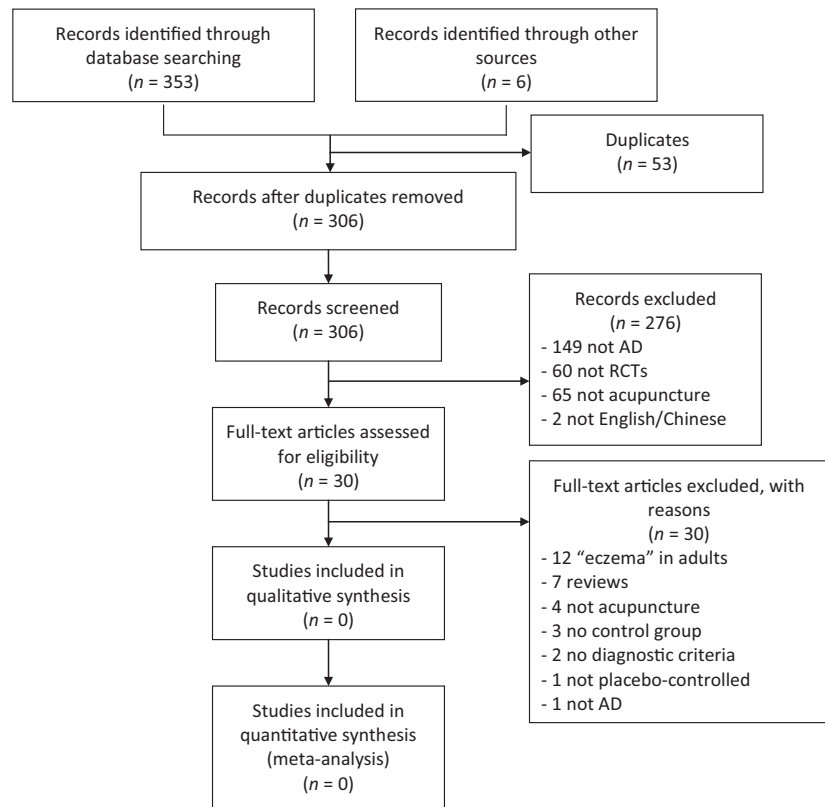


Figure 1 Flowchart of study selection process.

Discussion

None of the studies fully satisfied the inclusion criteria for this systematic review. However, among the excluded studies, two studies that were excluded because they did not use validated diagnostic criteria seemed to best reflect the currently available state of evidence.

Despite the lack of diagnostic criteria in these studies, both required that participants had type I sensitivity, which is commonly seen in AD. The studies also mentioned that participants had to have a minimum score of 18¹⁶ or 20¹⁷ on the SCORAD, a validated outcome measure instrument for AD. One of these studies also mentioned having recruited participants from an outpatient clinic and had 'AD diagnosis' as an inclusion criterion, which may imply the use of clinical diagnosis.¹⁷ Both studies were crossover studies (one with three arms¹⁶ and the other with seven¹⁷) that were conducted in Germany by the same group of authors. The studies involved itch provocation by exposure to a known allergen and the evaluation of a single acupuncture session on AD itch as measured by preventive (when acupuncture was conducted before itch provocation) and direct (when acupuncture was applied after itch provocation) effects. The outcome

measures evaluated were itch intensity measured by VAS, the Eppendorf Itch Questionnaire (EIQ), and sizes of weal and flare. These two studies seemed to be targeting histamine-induced itch in AD by acupuncture, rather than the management of AD as a disease. Both studies concluded that acupuncture significantly reduced Type I hypersensitivity itch reactions, and may therefore be useful in the management of itch, urticarial or eczema in atopic patients.

The antipruritic effects of acupuncture may be related to the induction of vasodilation or stimulation of inflammatory cell mediators by needle insertion, and depletion of neurotransmitters through the activation of C fibres.¹⁸ Acupuncture also affects areas of the brain that are related to the transmission of itch. Functional magnetic resonance imaging in patients with AD showed that acupuncture reduced the itch-evoked activation of parts of the brain related to itch perception, namely the insula, putamen, premotor and prefrontal cortical areas,¹⁹ none of which could be altered by antihistamine or placebo acupuncture.

Studies on the mechanism of acupuncture suggest that the effects of acupuncture are due to physiological response and nervous activation by needle insertion

(and electric stimulation, in the case of electroacupuncture).²⁰ In the study by Manni *et al.*,²¹ there was no mention of whether the use of different acupuncture points or presence of *Deqi* sensation would alter the effects of acupuncture physiologically. While no substantial evidence has yet been discovered, a review characterizing acupuncture stimuli using brain imaging found that the brain maps generated by different acupuncture points differed considerably, supporting the notion of acupuncture point specificity.²² The stimulation of local points around AD lesions inhibited cutaneous hyperplasia and serum IgE, but failed to regulate pro-inflammatory cytokines. By contrast, stimulation of the acupuncture point LI11 in AD rats not only inhibited cutaneous hyperplasia and reduced serum IgE to a greater extent compared with local point stimulation, but also reduced pro-inflammatory cytokines and proteins.²³

We also found another single-blind pilot study by the same group of authors, which was excluded because it was not a placebo-controlled study.²⁴ This study also did not report the use of diagnostic criteria, but participants were described to have a history of atopic eczema for > 10 years, disease severity with SCORAD > 20, and allergic rhinitis with sensitization to *Phleum pratense* and *Dermatophagoides pteronyssinus*. The study compared twice-weekly acupuncture treatment for 10 sessions (33 days) with no intervention, and evaluated disease severity using SCORAD, and itch intensity using VAS and basophil activation. Although there were no significant differences in SCORAD, there were significant reduction in VAS, itch intensity and basophil activation, showing that acupuncture may play a role in IgE-mediated allergy.

To our knowledge, there has yet to be a systematic review evaluating acupuncture for AD. Although we did not find any studies eligible to be included in this review, making it an 'empty review', it does provide an indication of the current state of evidence of the efficacy of acupuncture in the management of AD. It also highlights the existing research gap, in that there is a lack of gold-standard RCTs to answer this research question, and should therefore act as a guide to support further research.^{25,26}

There may have been potential bias in the review process, as the protocol was limited to include only randomized placebo-controlled studies utilizing validated diagnostic and outcome-measure instruments, to ensure that the review was not based on poor-quality evidence. However, even though there is currently a number of diagnostic and outcome-measure instruments, there is yet to be a consensus on the

most appropriate or suitable ones to be used clinically,⁹ which may explain the lack of such instruments used in the studies. Nevertheless, without the use of adequately validated diagnostic instruments in RCTs, it is difficult to confirm the clinical condition under review, and the lack of validated outcome measures may not reflect the reliability of the clinical effects of the intervention.

Conclusion

As there were no eligible studies to be included in this review, we have no evidence of the effects of acupuncture in the management of AD. Therefore, no evidence-based recommendations or conclusions can be made from this review. Several of the excluded studies seemed to indicate that acupuncture has a role in reducing itch or regulating IgE-mediated allergy, both of which are major characteristics of AD, but there were no RCTs evaluating the effects of acupuncture on AD as a disease. This review highlights the current lack of research in this area. Rigorously designed RCTs are warranted to recommend the use of acupuncture in the management of AD.

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Learning points

- This study evaluated the current state of evidence for acupuncture in treating AD, and identified a research gap in that there is a lack of rigorous RCTs in this area.
- No RCTs evaluating the efficacy of acupuncture on AD as a disease were identified.
- Two studies evaluated the antipruritic effects and one study evaluated the basophil activation of acupuncture in AD.
- Future rigorously designed RCTs on acupuncture in the management of AD are warranted to support valid conclusions about this treatment.

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CPD Questions

Learning objective

To demonstrate the current state of evidence for acupuncture in the management of atopic dermatitis.

Question 1

Which of the following statements about acupuncture for atopic dermatitis (AD) is true?

- a) Acupuncture has been used to treat AD since 1700 BC.
- b) A recent meta-analysis found clear evidence that acupuncture can relieve the pruritus associated with AD.
- c) A recent systematic review concluded that acupuncture does not improve AD.
- d) A recent systematic review showed that electroacupuncture was efficacious in managing AD, but not manual acupuncture without electric stimulation.

- e) There is insufficient evidence to support the efficacy of acupuncture in the management of AD.

Question 2

What is known about the current research regarding acupuncture in the management of AD?

- a) Despite insufficient clinical evidence, previous studies have shown that acupuncture may have antipruritic effects that may benefit patients with AD.
- b) Previous clinical studies on acupuncture for AD have been of insufficiently good quality to allow any valid conclusions to be made.
- c) Previous studies have clearly found that the presence of *Deqi* during acupuncture treatment plays a significant role in the effects of acupuncture for AD.
- d) There have been no clinical studies on the topic of acupuncture for AD.
- e) The research does not have sufficient evidence on the efficacy of acupuncture in the management of AD as a disease, but it has sufficient evidence to support the antipruritic effects of acupuncture to help patients with AD.

Question 3

Which of the following was identified as a current research gap in relation to clinical studies on the efficacy of acupuncture for AD?

- a) Crossover studies are not a suitable study design for acupuncture research.
- b) No research gap was identified.
- c) There is a lack of appropriate guidelines with regard to the application and reporting of acupuncture in clinical trials.
- d) There are no randomized controlled trials (RCTs) on acupuncture for AD.
- e) There was a lack of consensus or use of an appropriate, validated diagnostic criteria and outcome measures for AD among the published acupuncture RCTs.

Question 4

Which of the following statements is correct regarding this 'empty review'?

- a) This 'empty review' does not add any value to the current state of evidence of acupuncture for the management of AD.
- b) This 'empty review' is an indication that the inclusion/exclusion criteria were too stringent.
- c) This review is labelled as an 'empty review' because it did not find eligible studies for inclusion.
- d) This review is labelled as an 'empty review' because it presents negative results.
- e) This review is labelled as an 'empty review' because it shows no new evidence.

Question 5

Which of the following statements is correct regarding the findings of this review?

- a) Acupuncture is not recommended for the management of AD.
- b) Acupuncture is recommended for the management of AD.
- c) Acupuncture is recommended only to relieve the itching in AD.
- d) There is a lack of rigorous studies regarding acupuncture for the management of AD, and therefore this prevented drawing any evidence-based recommendations or conclusions.
- e) There is too much bias present in the published studies and review to allow for valid conclusions.

Instructions for answering questions

This learning activity is freely available online at <http://www.wileyhealthlearning.com/ced>.

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- Read the article in print or online, paying particular attention to the learning points and any author conflict of interest disclosures
- Reflect on the article
- Register or login online at www.wileyhealthlearning.com/ced and answer the CPD questions
- Complete the required evaluation component of the activity

Once the test is passed, you will receive a certificate and the learning activity can be added to your RCP CPD diary as a self-certified entry.