

Effectiveness of acupressure on pruritus and lichenification associated with atopic dermatitis: a pilot trial

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ABSTRACT

Background Pruritus is a debilitating aspect of atopic dermatitis (AD). Acupuncture has been reported to diminish pruritus, but self-administered acupressure has not been previously evaluated.

Objectives To evaluate the effectiveness of acupressure on the severity of eczema in a pilot trial.

Methods Adult patients with AD were randomised to an intervention group (acupressure with standard of care) or a control group (standard of care alone). Subjects in the intervention group performed acupressure using a 1.2 mm acupellet at the LI11 point, applying pressure for 3 min three times per week for 4 weeks. The severity of itching and AD at baseline and at 4 weeks were measured on a visual analogue scale (VAS), the Investigator's Global Assessment (IGA) and the Eczema Area and Severity Index (EASI).

Results Fifteen subjects were enrolled, 12 of whom completed the study between November 2009 and May 2011. There was no significant change between baseline and follow-up survey scores within the control group. In the investigation group there was a decrease in the VAS score ($p=0.05$) and EASI lichenification ($p=0.03$), although without significant change in the overall EASI score. Comparison of the scores between groups showed a greater decrease in VAS in the experimental group than in the control group ($p=0.04$), and a decrease in the IGA ($p=0.03$) and EASI lichenification score ($p=0.03$). The overall EASI scores were unchanged.

Conclusion Subjects using acupressure at LI11 for 4 weeks had improvement in pruritus and lichenification. Acupressure may prove to be an easily administered alternative treatment, but larger-scale studies are needed to confirm these preliminary findings.

INTRODUCTION

Treatment options for atopic dermatitis (AD) include conventional agents as well as complementary and alternative medicines to address the itch/scratch cycle. Recent investigations have suggested a role for acupuncture techniques in reducing pruritus, although the effectiveness of acupressure has not been

investigated.^{1–4} While acupuncture requires skin penetration with needles, acupressure only requires application of pressure outside the skin. Acupressure offers the advantage of painless self-application in any setting by the application of pressure to traditional acupuncture points. We conducted a randomised non-blinded pilot trial to investigate the effectiveness of acupressure in decreasing AD-related pruritus in patients visiting a dermatologist.

METHODS

Consecutive adult patients with pruritic AD were recruited from a single academic centre. Exclusion criteria included use of acupuncture or acupressure within the previous 12 months. Informed consent detailing the risks and benefits of participating in the study was discussed and obtained from each patient prior to enrolment. Each subject was also provided with a copy of the consent form. Subjects approached were also clearly given the option of not participating in the study.

Prior to enrolment, a randomisation sequence with control and experimental groups was generated using GraphPad Software (La Jolla, California, USA). Envelopes corresponding to subject number and containing group assignments were consecutively given to subjects enrolled in the study. Control groups were not allowed to perform acupressure techniques or receive acupuncture treatments, but were encouraged to continue using any prescription or over-the-counter medications or lotions. Participants in the experimental group were taught by the principal investigator to perform acupressure techniques using a 1.2 mm titanium acupellet (Lhasa OMS, Weymouth, Massachusetts, USA). Subjects were instructed to apply pressure for 3 min three times per week for 4 weeks at LI11 located on the left arm lateral to the antecubital fossa (figure 1). Research staff administering surveys were blinded to the randomisation of individuals into control (no acupressure) and experimental (acupressure) groups. All subjects were asked to keep a daily

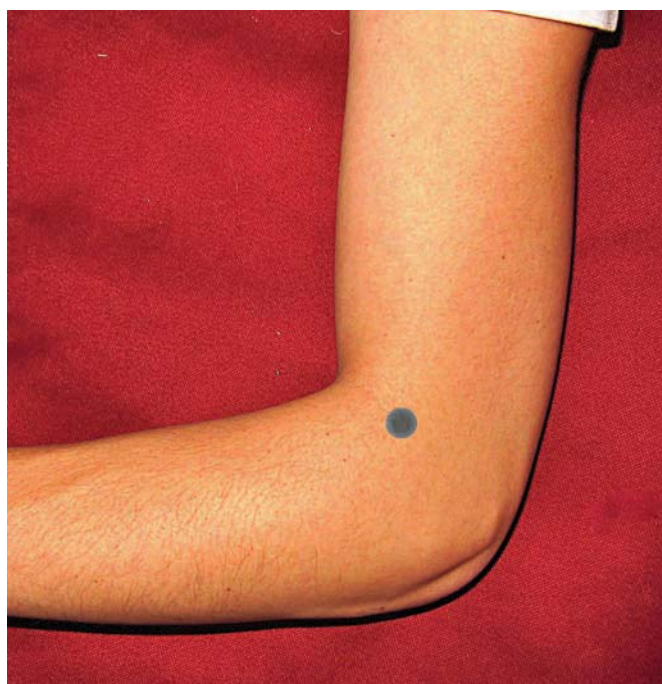


Figure 1 Anatomical location of LI11 acupressure point.

log of their applicable eczema care regimen, documenting use of emollients, medications and acupressure. The daily log requested subjects to write down the date, time, type and amount of product used. However, there was no standardised definition of thin, moderate or thick layer of medications or emollients and subjects characterised this trait based on their own judgement.

A baseline survey was administered to collect information on previous use of AD therapies including corticosteroids, antihistamines, antibiotics, calcineurin inhibitors, phototherapy, cyclosporine, azathioprine and methotrexate. Severity of itch and AD were evaluated at baseline and 4 weeks later (± 3 days) using a 10 cm visual analogue scale (VAS) to rate the level of itch over the past week, the Investigator's Global Assessment (IGA) and the Eczema Area and Severity Index (EASI) survey.^{5–13} The IGA measures disease severity on a scale of 0 (clear) to 5 (very severe disease). The EASI score is calculated from the following components: area of involvement, erythema, thickness, excoriations and lichenification.

Data analysis was performed using SAS V.9.2 (Cary, North Carolina, USA). Comparisons between groups were performed using Wilcoxon rank sum tests and Fisher exact tests. Within-group comparisons were made using Wilcoxon signed rank tests. All analyses were performed with two-tailed p values ≤ 0.05 considered significant.

RESULTS

Fifteen consecutive adult subjects (5 women, 10 men) aged 19–79 years (median 28.5) were enrolled (7 in the control group, 8 in the acupressure group). Two subjects in the control group (no acupressure) and one subject in the acupressure group were lost to follow-up. The demographic characteristics of the two groups are shown in

Table 1 Demographic characteristics of study subjects and previous treatment for atopic dermatitis

	No acupressure group (n=7)	Acupressure group (n=8)
Median age (year)	36	34
Gender (male)	6	4
Ethnicity		
Caucasian	4	6
African-American	2	2
Asian	1	0
Previous use of		
Topical corticosteroids	7	8
Calcineurin inhibitors	6	5
Antibiotics	5	7
Oral corticosteroids	4	6
Phototherapy	3	2
Cyclosporin	1	0
Azathioprine	0	1
Methotrexate	0	0

table 1. No adverse side effects were reported during the study. Ethnicity and prior use of corticosteroids, calcineurin inhibitors and antibiotics were not statistically associated with baseline disease severity, with the exception that non-Caucasians ($n=10$) had a higher mean baseline EASI score than Caucasians ($n=5$). Those with moderate to severe lichenification on the EASI together with previous use of oral antibiotics had a larger affected area ($EASI > 2$) at baseline.

There was no statistically significant change between baseline and follow-up VAS, IGA and EASI scores within the control group. There was a statistically significant change from baseline in the acupressure group for VAS ($p=0.05$) and EASI lichenification ($p=0.03$). A comparison of the changes between groups showed a greater change in the acupressure group than in the control group in VAS score ($p=0.04$), IGA ($p=0.03$) and EASI lichenification score ($p=0.03$; table 2).

DISCUSSION

Our study evaluated the effectiveness of acupressure in reducing AD severity when used three times per week at the LI11 acupuncture point. Subjects in the acupressure group showed a decrease in AD severity between baseline and 4 weeks on VAS, IGA and EASI lichenification assessments. The difference in VAS and EASI lichenification scores between the control and acupressure groups was statistically significant. Improvement in IGA scores approached but did not reach significance in the acupressure group, probably because of the small sample size.

Previous studies at LI11 have shown subjective benefit of pruritus with acupuncture. Che-Yi *et al* conducted a randomised controlled study of subjects with refractory uraemic pruritus and found that those who received LI11 acupuncture during dialysis had subjectively decreased itch compared with those receiving placebo point acupuncture.¹⁴ Professional acupuncturists performed the treatment in a controlled environment while subjects

Original paper

Table 2 Change in VAS between control and experimental groups ($p=0.04$) and change in IGA score between control and experimental groups ($p=0.03$).

	Acupressure	No acupressure	Total
Change in VAS score			
≥25% or more increase (worse)	0	0	0
0–25% change	3	5	8
≥25% or more decrease (better)	4	0	4
Total	7	5	12
Change in IGA score			
+1 or more (worse)	0	2	2
0 (same)	2	1	3
–1 or more (better)	5	2	7
Total	7	5	12

VAS was measured on a 10 cm line with the ends labelled 'no itch' and 'severe itch'.

The IGA score was measured on a 0–5 scale, with 0 representing completely clear and 5 representing very severe disease.

IGA, Investigator's Global Assessment; VAS, visual analogue scale.

were receiving dialysis, rigorously enforcing the location and duration of therapy.

Objective studies of artificially induced itch have also found benefits with acupuncture. Kesting *et al* reported decreased alopecia from histamine-induced artificial itch after one session of ear acupuncture in 32 subjects. Four weeks later the subjects again underwent histamine-induced itch but without acupuncture application. On the ipsilateral acupuncture side the forearms showed decreased or no alopecia compared with the non-treated side, supporting the lasting effects of acupuncture treatments.¹⁵ This provided objective evidence of the value of acupuncture in reducing measurable levels of histamine-induced pruritus.

In subjects with AD, acupuncture may improve itch intensity through decreased allergen-induced basophil activation. One pilot trial of 10 subjects (five control, five experimental) demonstrated decreased CD63-positive basophils after allergen induction in experimental subjects receiving acupuncture.¹⁶ Other small-scale studies have found decreased itch intensity in experimentally-induced histamine-derived itch after electro-acupuncture 5 and 20 min after application.¹⁷ Likewise, acupuncture can decrease the duration of itching even if it has minimal effect on the itch onset time.¹⁸

In a larger placebo-controlled trial of subjects with AD, Pfab *et al* found decreased weal and flare responses produced by an allergen stimulus in those who received acupuncture. In this double-blind crossover trial, 30 subjects with AD were observed after acupuncture at LI11 and SP10 versus placebo point acupuncture or no acupuncture. Itch intensity measured on the VAS was significantly lower in the acupuncture groups, as were objectively measured weal and flare responses reflective of type I hypersensitivity.¹⁹ These results objectively showed the effectiveness of acupuncture in atopic individuals, a population not previously examined.

The success of acupuncture for allergen-induced itch is encouraging, although questions still remain about the effectiveness of this treatment in a non-controlled office

Summary points

- ▶ Acupuncture has been reported to reduce the symptoms of atopic dermatitis
- ▶ We tested acupressure in an unblinded pilot RCT
- ▶ Acupressure was significantly superior to no acupressure for several measures

environment. Acupuncture is difficult for patients to perform and financial limitations may restrict them from seeking licensed acupuncturists. Our pilot study sought to investigate the effectiveness of acupressure, an alternative non-invasive method that uses small pellets on acupuncture points. Because acupressure does not require puncturing the skin, it is feasible for individuals to self-administer at home. This small-scale study provides preliminary data on the use of acupressure outside the office setting in reducing AD-associated itch. Future studies involving larger sample sizes are needed to assess conclusively the effectiveness of self-applied acupressure on AD.

Complementary and alternative medicine (CAM) can be a desirable approach for many people, and this study adds to the growing support for CAM in the treatment of dermatological diseases.^{1 2} However, this study has several limitations. First, the control group did not perform acupressure at a sham pressure point, raising the question of whether the placebo effect of performing any type of acupressure would have been effective. Second, the acupressure group performed the intervention without monitoring. Some subjects may have been applying pressure to the wrong location or for inconsistent amounts of time. Third, there were a small number of subjects in each group, leaving the possibility that the results may have been due to chance or other bias. Although daily therapy logs were filled out, subjects did not characterise well the amounts of emollients used, leading to a possibility of further bias. Given that emollients are known to improve AD, this is a significant source of potential bias. Subjects were also recruited from an academic medical centre, so the baseline severity of disease may be higher than in individuals presenting to community physicians. This treatment may or may not be as effective in subjects with milder disease.

For individuals with moderate AD seeking evidence-based alternative therapy, acupressure may be a solution for reducing AD-related pruritus. Larger studies are needed to confirm our results that acupressure can reduce AD-related pruritus and lichenification.

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Competing interests None.

Ethics approval Ethics approval was obtained from the Institutional Review Board of Northwestern University, Chicago, Illinois, USA.

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