

# Effects of Acupuncture on Chinese Adult Patients with Psoriatic Arthritis: A Prospective Cohort Study

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## Research Article

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### ABSTRACT

**Introduction:** Psoriasis is a distressing and chronic inflammatory condition that affects skin and joints. There is an increasing body of evidence supporting the effectiveness of acupuncture in the treatment of psoriasis, but few studies conducted to investigate its effectiveness of acupuncture for patients with psoriatic arthritis. This study aimed to investigate the effectiveness and safety of acupuncture treatment as an adjunct to usual care in Chinese adult patients with psoriatic arthritis.

**Methods:** This was a prospective cohort study. Chinese adult patients with a diagnosis of psoriatic arthritis were offered acupuncture and allocated into groups based on their choice: the acupuncture group (n=30) was comprised of patients electing to receive treatment over a 12 week period. The control group (n=30) was made up of patients who declined and was matched for age, gender and baseline Psoriasis Area and Severity Index (PASI) score.

**Results:** In this 12 week study, patients in the acupuncture group experienced significantly greater improvement in their PASI score at post-intervention than did the control group ( $p < 0.05$ ). The acupuncture group had a higher rate of good responders ( $\Delta PASI_m \geq 75$ ) did the control group (73.33% vs. 53.33%). There were no significant differences between groups in terms of adverse effects as a result of acupuncture.

**Conclusion:** Acupuncture plus usual care was associated with a greater improvement in PASI score than usual care alone. This prospective cohort study was evidence-based research and demonstrated that acupuncture can safely offer clinical benefits for treating psoriatic arthritis.

## INTRODUCTION

Psoriasis is a distressing and chronic inflammatory condition that affects skin and joints [1]. The estimated prevalence of psoriatic arthritis in patients with psoriasis is ranged from 30% to 40% [2]. The prevalence of psoriasis in China has been estimated to be 0.47% in 2012, which affects around 61.1 million patients [3]. Patients with psoriasis are at risk of various complications, including cardiovascular disease, diabetes and depression, especially those with a severe form of the illness [4,5]. In addition, psoriasis brings not only physical suffering, but is also associated with a variety of psychological difficulties, as well as a tremendous economic and financial burden to society [6].

Acupuncture has been used for psoriasis treatment in China and the developed countries [7]. In China, acupuncture has been used to treat disease for more than 2,500 years [8]. The historical evidence of acupuncture use in dermatology over many centuries indicates that it is a relatively safe and inexpensive treatment [8]. Although there is an increasing body of evidence supporting the effectiveness of acupuncture in the treatment of psoriasis [7,9,10], but few studies conducted to investigate its effectiveness of

acupuncture for patients with psoriatic arthritis. According to the principles of Traditional Chinese Medicine (TCM), psoriasis can be referred to as “domination of evil heat in the blood”. Acupuncture treatment can be used to treat psoriasis by “cleaning heat and cooling down blood” [11]. Thus, the aim of the present study was to investigate the effectiveness and safety of acupuncture treatment as an adjunct to usual care in Chinese adult patients with psoriatic arthritis.

## METHODS

### Study Design and Sample

The study design was a prospective cohort study. Chinese adult patients (aged 18 or older) with a diagnosis of psoriatic arthritis were invited to participate. Exclusion criteria included patients with chronic plaque psoriasis, erythrodermic or pustular psoriasis. Patients who were pregnant or breastfeeding were also excluded. A total of 97 patients with but few studies conducted to investigate its effectiveness of acupuncture for patients with psoriatic arthritis were approached: 89 were willing to participate and nine declined. Patients who accepted the offer of acupuncture treatment formed the intervention group (n=30). The contemporaneous control group was selected from the 59 volunteer patients who declined acupuncture but otherwise met the inclusion criteria and were willing to contribute outcome data to the study. According to the pre-agreed study protocol, in order to achieve a 1:1 ratio in the intervention and comparator groups, patients in the control group were chosen based on age, gender and duration of psoriasis in years (n=30).

### Study Procedure and Ethical Approval

This study was undertaken at a general hospital in South China. The study was conducted in accordance with the Declaration of Helsinki code of ethics. Ethical approval was obtained from the ethics review committee of the studied hospital. All patients participated on a voluntary basis and gave written informed consent before data collection. A research physician was responsible for recruiting, while a dedicated acupuncturist performed the interventions. A second physician collected the outcome data and was deliberately kept blind as to whether or not patients had been treated.

### Acupuncture Treatment

The acupuncture group received manual acupuncture, which was provided by a single acupuncturist trained in Traditional Chinese Medicine. Sterile, disposable, stainless steel needles (length 4 cm, diameter 0.25 mm, Global Brand, China) were inserted at a combination of the following seven acupuncture points: DU14 (Dazhui), UB12 (Fengmen), ST36 (Zusanli), SP6 (Sanyinjiao), SP10 (Xuehai), LI11 (Quchi), UB40 (Weizhong). Additional points for facial and head lesions include GB20 (Fengchi) and ST9 (Renyang), and TW6 (Zhigou) depending on each patient's traditional diagnosis (blood-heat type) as determined by the acupuncturist. The duration of needling was 30 min, the frequency of treatment was every other day and the total duration of acupuncture treatment was 12 weeks. Both groups received usual care, which included a combination of phototherapy (e.g. PUVA) and systemic drug therapy (e.g. Retinoids).

### Outcome Measures

Treatment effectiveness was assessed by the Psoriasis Area and Severity Index (PASI), which is the most extensively studied psoriasis clinical severity score and the most thoroughly validated [12]. The primary outcome was any percentage reduction of the PASI score ( $\Delta$ PASI) from baseline (T0) to week 12 (T1) (at completion of the course of acupuncture treatment). The PASI change score ( $\Delta$ PASI) was equal to (baseline PASI score – post-intervention PASI score)/baseline PASI score  $\times$  100%. Percentage of PASI improvement compared with baseline ( $\Delta$ PASI) represents the clinical response. Patients were classified as no responders ( $\Delta$ PASI<25), mild responders ( $25 \leq \Delta$ PASI<50), moderate responders ( $50 \leq \Delta$ PASI<75), or good responders ( $75 \leq \Delta$ PASI  $\leq$  100) [13]. Secondary outcomes included the number of adverse events as a result of treatment, especially relating to acupuncture treatment, reported by patients during the study period.

### Data Collection and Analysis

All data were collected by a physician with research training. Data were collected from January 2016 to February 2017. SPSS version 21.0 was used for statistical analysis (IBM SPSS Statistics, Armonk, NY, USA). Categorical data were compared using the Chi-Square test. Continuous data were checked for normality of distribution and analyzed using the independent samples t-test or Mann-Whitney test, as appropriate. All statistical tests were two-tailed, and  $p < 0.05$  was taken to indicate statistical significance.

## RESULTS

A total of 60 eligible patients were allocated into two groups according to their willingness, 30 in each treatment arm (**Figure 1**). **Table 1** shows the baseline data in the acupuncture and control groups. The median age was 45 years (ranging from 24 to 67 years old). The median duration of psoriasis was 19 years (2-47) for all patients in the study and was 20 years (2-43) for the 30 patients in the acupuncture group, and 19 years (4-47) for the 30 patients in the control group. The groups were well balanced in their demographic and clinical characteristics in terms of baseline PASI score (**Table 1**).

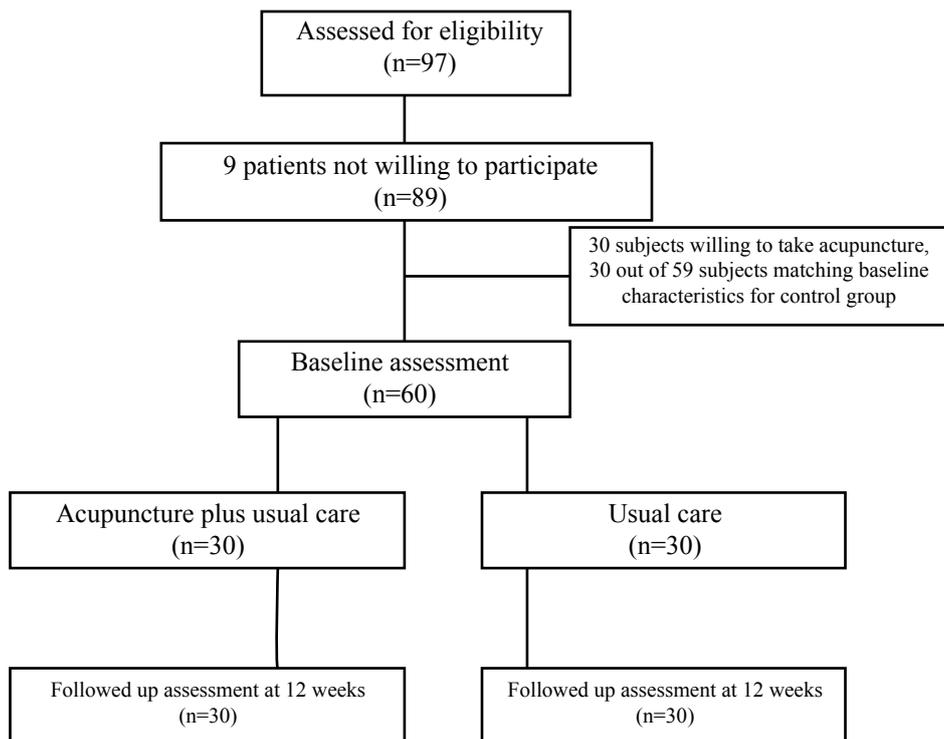


Figure 1. Study procedure.

Table 1. Demographic and clinical characteristics.

| Variables   | Acupuncture (n=30) | Control (n=30) | p     |
|---|--------------------|----------------|-------|
| Age (years) (Median with range)                   | 46.1 (26-67)       | 44.5 (24-65)   | >0.05 |
| <b>Gender</b>                                     |                    |                | >0.05 |
| Male  | 16 (53)            | 18 (60)        |       |
| Female  | 14 (47)            | 12 (40)        |       |
| Duration of psoriasis (years) (Median with range) | 20 (2-43)          | 19 (4-47)      | >0.05 |
| Baseline PASI score                               | 22.65 (4.76)       | 21.87 (5.21)   | >0.05 |

Acupuncture as an adjunct to usual treatment was effective for patients with psoriatic arthritis in the prospective cohort study (Figure 2). At baseline, there were no statistically significant differences in terms of PASI score (22.65 ± 4.76 vs. 21.87 ± 5.21, p>0.05). At post-intervention assessment of 12 weeks' assessment, there were significant differences for the PASI score (5.41 ± 1.33 vs. 9.82 ± 3.25, p<0.05). In addition, the acupuncture group had a higher rate of good responders (i.e., treatment with marked effectiveness) than the control group (73.33% vs. 53.33%, p<0.05) (Table 2).

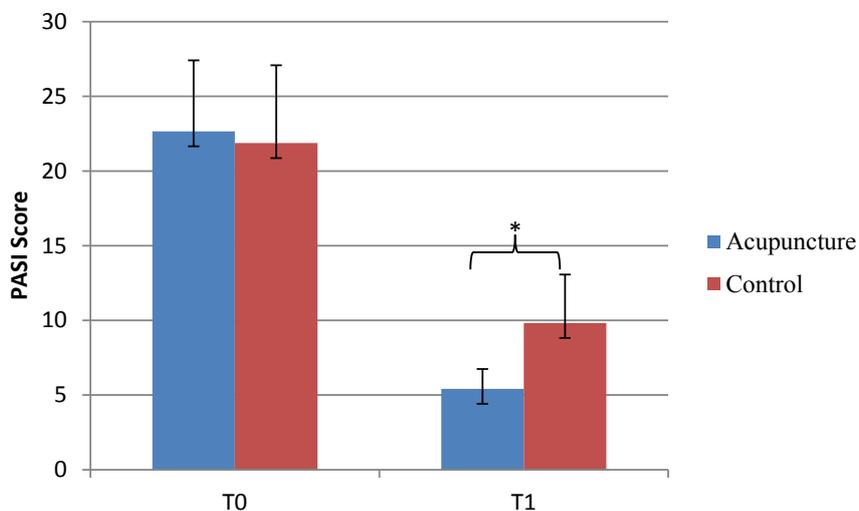


Figure 2. Improvement in PASI scores at post-intervention by group.

\*p<0.05; T0, baseline; T1, at week-12

Abbreviations: PASI: Psoriasis Area and Severity Index

**Table 2.** Comparison of improvement in PASI score between two groups.

| Categories  | Acupuncture (n=30) | Control (n=30) | p     |
|---|--------------------|----------------|-------|
|   | n (%)              |                |       |
| <b>Good responders</b> ( $75 \leq \Delta\text{PASI} \leq 100$ ) | 22 (73.33)         | 16 (53.33)     | <0.05 |
| <b>Moderate responders</b> ( $50 \leq \Delta\text{PASI} < 75$ ) | 5 (16.67)          | 8 (26.67)      | NS    |
| <b>Mild responders</b> ( $25 \leq \Delta\text{PASI} < 50$ )     | 3 (10.00)          | 5 (16.67)      | NS    |
| <b>No responders</b> ( $\Delta\text{PASI} < 25\%$ )             | 0 (0.00)           | 1 (3.33)       | NS    |

NS: Non-Significance

All patients in both groups completed the follow-up assessment at the end of 12-week study period. There were no serious adverse events reported in either group, with only minor complaints reported in the acupuncture group, such as spot bleeding and needling pain. These needling reactions or complaints were generally mild and well tolerated. No other adverse events occurred, in a significantly greater proportion in the acupuncture group, relative to the control group.

## DISCUSSION

This study examined the effectiveness and safety of acupuncture for adult patients with psoriatic arthritis. After matching for patients' baseline PASI score, age and gender, there were statistically significant effects of acupuncture on the improvement in PASI score in the treatment group compared with the control group. In addition, there was a higher percentage of good responders (i.e., therapeutic effects were markedly effective) in the acupuncture group. While the method of allocating patients into the acupuncture group was based on their personal willingness and lack of randomization, the possibility of residual confounding cannot be completely ruled out.

In terms of the safety of using acupuncture to treat psoriatic arthritis, there were only minor adverse effects, with acupuncture well tolerated in general. There were no significant differences for other adverse events occurring between the acupuncture group and the control group. Although this study could not indicate the possible mechanisms of acupuncture therapy for effectively treating psoriasis, previous research suggests that at least three key components were involved in acupuncture stimulations working for patients with various types of dermatologic diseases: "the hypothalamus pituitary-adrenal axis, the autonomic nervous system, and brain-derived neurotropic factor <sup>[14]</sup>. This study may try to explain the possible mechanism based on TCM principles. As psoriasis could be referred to as "domination of evil heat in the blood" and could be attributed to the excess of blood evil heat stagnating in the skin to form eruptions <sup>[11]</sup>, acupuncture may be able to regulate the blood system and other relevant body systems for clearing extra body heat and cooling the blood.

This study has a couple of limitations. First, this prospective cohort study has a relatively small sample size. Future similar studies should be conducted with a larger sample size to confirm the positive findings. In addition, this study faces an inherent difficulty in the use of controls, such as placebo and sham acupuncture <sup>[8]</sup>. A sham-controlled trial would be needed to control for the non-specific effects of acupuncture treatment <sup>[15]</sup>; however, this poses an ethical dilemma in view of the serious nature of psoriasis and the need for effective treatment. As acupuncture for psoriasis is not standard care in clinical practice, this study used acupuncture integrated with usual care for the treatment group. Zaslowski <sup>[16]</sup> indicated that acupuncture plus conventional care versus conventional care alone is the most ethical option, because there is no attempt to prevent patients from receiving conventional treatment. Ultimately, randomized controlled trials will be required to examine whether acupuncture has truly positive effects when treating psoriatic arthritis.

## CONCLUSION

This prospective cohort study shows that acupuncture appears effective in treating adult patients with psoriatic arthritis when used as an adjunct to standard care, however, this needs to be verified by further research, including a larger sample size and randomization. Future studies need to be sufficiently powered to determine whether acupuncture can be used to treat psoriasis for guiding clinical practice in the future.

## ACKNOWLEDGEMENT

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