

# Treatment of lateral epicondylitis with acupuncture and glucocorticoid

## A retrospective cohort study

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### Abstract

Lateral epicondylitis (LE) is a common musculoskeletal disorder for which an effective treatment strategy remains unknown. The goal of this study is to examine whether acupuncture is more effective than injection of glucocorticoid in adults with LE.

Adults with LE received either acupuncture or injection of glucocorticoid were followed-up for 6 months. All patients assessed before treatment, 0, 3 months, and 6 months after the therapy. Outcome measures consisted of visual analog scores (VAS) and the Mayo elbow performance score (MEPS).

The acupuncture group and the corticosteroid group did not differ on demographic or clinical characteristics ( $P < .05$ ). VAS and MEPS score was not significantly different between 2 groups at 0 and 3 months. MEPS scores were significantly lower in the corticosteroid group at 6 months, compared with those in the acupuncture group ( $P < .05$ ). However, the VAS score was not significantly different ( $P > .05$ ). There were no complications related to the use of acupuncture or corticosteroid injection.

We found that both methods were effective for external humeral epicondylitis. However, after 6 months of treatment, patients with chronic LE with acupuncture achieved pain relief and function improve significantly, exceeding the effect of corticosteroid injection.

**Abbreviations:** LE = lateral epicondylitis, MEPS = Mayo elbow performance score, VAS = visual analog scores.

**Keywords:** acupuncture, glucocorticoid, lateral epicondylitis

## 1. Introduction

Lateral epicondylitis (LE) is the most commonly diagnosed condition of the elbow and affects approximately 1% to 3% of the population. It is thought that lesions on the lateral epicondyle because of a combination of mechanical overloading and abnormal microvascular responses.<sup>[1]</sup> Numerous methods have been advocated for treating LE, including rest, nonsteroidal anti-inflammatory, injection of corticosteroids or platelet-rich plasma,

physical therapy, extracorporeal shockwave therapy, and botulinum toxin injection. Injection of corticosteroids, which was considered to be the gold standard before but is actually currently controversial.<sup>[2]</sup>

Acupuncture is a kind of closed release operation between surgical method and nonsurgical method. It is formed on the basis of incision operation and acupuncture. The operation of acupuncture is characterized by easy cutting from the treatment site to the deep part of the lesion, peeling off the harmful tissue, so as to achieve the purpose of pain relief and disease elimination. As acupuncture is a green, simple, inexpensive, and helpful treatment which has been widely practiced and it has been accepted for treating musculoskeletal disease, especially for the functional disability and pain symptoms.<sup>[3]</sup> A number of study have been conducted to assess the effectiveness and safety of acupuncture therapy for LE.<sup>[4]</sup> A systematic review showed that acupuncture may be effective in the relief of LE pain for a period of 6 months.<sup>[5]</sup> However, a definitive conclusion on whether acupuncture is effective for LE or not cannot be drawn.<sup>[6]</sup>

Few studies have examined the effectiveness of acupuncture against corticosteroids. Thus, we decided to conduct this retrospective cohort study by evaluating the elbow functional status and pain symptoms to assess the effectiveness and safety of acupuncture for LE.

## 2. Method

The study was approved by the ethics committee of the First Affiliated Hospital, School of Medicine, Zhejiang University. Adult subjects with a clinical diagnosis of LE in the out-patient clinic after assessment between January 2018 and March 2019 were recruited in the retrospective cohort study.

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ZP and MZ contributed equally to this work.

The data used to support the findings of this study are available from the corresponding author upon request.

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Inclusion criteria were: adults with unilateral lateral elbow pain for over 3 months. All subjects had pain spot at or near the common extensor tendon insertion at the lateral epicondyle. Exclusion criteria were: elbow pathology including instability, arthritis or any local dermatological problem, coagulation disorders, treatment to the affected area within the last 4 weeks, pregnancy, diabetes, infections disease, or malignancy.

All subjects received acupuncture or corticosteroid treatments once. Patients received other treatments were eliminated from the study. The focus was altered according to the site of maximum reproduction of local pain by the subject at initiation of treatment. It is worth mentioning that ultrasonographic localization of the region of interest was performed. All subjects completed 10 cm visual analog scales (VAS) for elbow pain and repeated before treatment and 3 and 6 months after the therapy. Data concerning type of treatment (corticosteroids or acupuncture), complications, side, sex, and age were retrieved from medical files.

The Mayo elbow performance score (MEPS) was used to observe the effect of treatment. Of the 100 points, 45 are for pain, 20 are for motor function, 10 are for stability, and 25 are for daily activities. A total score of >90 indicated excellent; a total score of 75 to 89 indicated good; a total score of 60 to 74 indicated passable; and a total score of <60 indicated poor.

Data were collected and analyzed using SPSS version 24.0 for Windows (SPSS Inc., Chicago, IL). Continuous variables were presented as means ± standard deviation, and categorical data were shown as numbers. The independent sample *t* test, the Chi-square test, repeated measure analysis of variance, or the Mann-Whitney *U* test was utilized to group variables. *P*-value less than .05 was considered significant.

### 3. Results

From Jan 2018 to March 2019, a total of 94 patients' records were included in this retrospective study. Screening of medical records was the first step to select eligible patients. Five were excluded due to loss to follow-up. Seven patients received other treatments during the follow-up period. Eighty-two subjects were recruited to the study. The acupuncture group and the corticosteroid group did not differ on demographic or clinical characteristics (*P* > .05). Baseline characteristics of the patients are shown in Table 1.

As shown in Tables 2 and 3, VAS and MEPS score was not significantly different between 2 groups at 0 and 3 months. MEPS scores were significantly lower in the corticosteroid group at 6 months, compared with its in acupuncture group (*P* < .05). However, the VAS score was not significantly different (*P* > .05). This indicating the acupuncture group and the corticosteroid greatly relieved pain up to the 6th month. However, acupuncture

**Table 1**  
Baseline characteristics of the study patients.

	Acupuncture group (n = 40)	Corticosteroid group (n = 42)
Age, yr	55.4 ± 6.8	56.3 ± 7.0
Female (n)	24	26
Pain site (n)		
Left	21	24
Right	19	18
Mean duration of symptom, mo	5.2 ± 1.3	5.3 ± 1.5

**Table 2**  
Comparison of VAS scores between groups before and 0, 3, and 6 mo after treatment.

Group	Before treatment	After treatment		
		0 mo	3th mo	6th mo
Acupuncture (n = 40)	5.4 ± 1.6	2.2 ± 0.6	2.8 ± 0.6	3.2 ± 0.9
Corticosteroid (n = 42)	5.2 ± 1.5	2.1 ± 0.7	3.0 ± 0.8	3.4 ± 1.3

VAS=visual analog scores.

could relieve MEPS score for up to 6 months. No other adverse effects were reported.

### 4. Discussion

Our results suggest that acupuncture and corticosteroid injections are the good treatment option in the short-term for patients with LE. However, at long-term follow-up, our findings suggest that acupuncture becomes the more suitable option.

This retrospective cohort study was designed to compare the use of acupuncture to corticosteroid in patients with LE. Both of 2 methods were proved to be both safe and easy in clinical practice. The corticosteroid group was actually better initially and then declined, returning to baseline level concerning functional impairment, while the acupuncture group improved for much longer. There was a significant difference in the decrease of pain and disability of function after the acupuncture even after 6 months. Comparing the function results with the results of the 6 months follow up, the effect in the corticosteroid group declined, whereas the result in the acupuncture group was maintained.<sup>[7]</sup>

LE is a common problem with many available nonsurgical treatment and this includes including rest, nonsteroidal anti-inflammatory, injection of corticosteroids or platelet-rich plasma, physical therapy, extracorporeal shockwave therapy, and botulinum toxin injection. Corticosteroid injection was considered the gold standard in the treatment of LE.<sup>[1,8]</sup> In our study, MEPS at the sixth month was also lower in the corticosteroid group than in the acupuncture group, although the analgesic effect is acceptable. Other trials also indicated poor long-term outcomes for corticosteroid injections for LE, which would be associated with more additional treatment. This may be because corticosteroid injections might be harmful to the tendon and incorrect recovery exercise after treatment.<sup>[9]</sup>

Many systematic reviews have assessed the effectiveness and safety of acupuncture for LE by evaluating the pain and suggested that acupuncture has some effect on treating elbow pain. It was universally accepted that acupuncture has some effect on elbow functional disability. Acupuncture for the treatment of external humeral epicondylitis is quick, cheap, and safe. According to our

**Table 3**  
Comparison of MEPS scores between groups before and 0, 3, and 6 mo after treatment.

Group	Before treatment	After treatment		
		0 mo	3th mo	6th mo
Acupuncture (n = 40)	60 ± 6	86 ± 9	83 ± 8	81 ± 7
Corticosteroid (n = 42)	61 ± 7	85 ± 6	79 ± 7	68 ± 6*

MEPS=Mayo elbow performance score.

\**P* < .05.

research, compared with corticosteroid, acupuncture not only alleviates long-term pain, but also has better functional recovery. Based on our findings, acupuncture should be used more in the treatment of LE.<sup>[6]</sup> However, future decisions for application of acupuncture for LE should be confirmed by further prospective randomized controlled study.

There are some limitations of this study. First, as a retrospective study, we cannot intervene in all factors, although the factors that obviously affect the results of the study are taken into account and excluded. In addition, patients who received other treatments were excluded from this study during the study period. Future research should focus on how to conduct a prospective randomized controlled study to achieve more instructive results.

In view of our results, patients should be properly informed about the advantages and disadvantages of the treatment options for LE. If individuals prefer quick relief of symptoms, a corticosteroid injection might be suitable, but the long-term outcome can be poor. Our result demonstrates that acupuncture improves pain and function more effectively than corticosteroid injection in chronic LE.

### Author contributions

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