

# Shock-wave therapy versus corticosteroid injection on lateral epicondylitis: a meta-analysis of randomized controlled trials

Yuan Xiong, Hang Xue, Wu Zhou, Yun Sun, Yi Liu, Qipeng Wu, Jing Liu, Liangcong Hu, Adriana C. Panayi, Lang Chen, Chenchen Yan, Bobin Mi & Guohui Liu

## ABSTRACT

**Background:** Shock-wave (SW) therapy has been widely promoted and proven to be effective in ameliorating symptoms of lateral epicondylitis (LE) during recent years. Corticosteroid (CS) injection is another common treatment of LE, and several researches have documented its significant effect in the treatment of LE. Despite this, few studies have focused on comparing the use of SW and CS in the treatment of LE. The aim of this meta-analysis is to assess whether SW is superior to CS in managing LE, both in terms of ameliorating pain and improving functionality.

**Methods:** A systematic search of the literature was conducted to identify relevant articles that were published in Pubmed, Medline, Embase, the Cochrane Library, SpringerLink, Clinical Trials.gov and OVID from the databases' inception to December 2018. All studies comparing the efficacy of SW and CS in terms of pain levels and functionality improvement were included. Data on the two primary outcomes were collected and analyzed using the Review Manager 5.3.

**Results:** Four studies were included in the current meta-analysis. A significant difference in VAS score (SMD = 1.13, CI 0.72–1.55  $P < 0.00001$ ,  $I_2 = 0$ ) was noted between the SW group and the CS group. Furthermore, Significant difference was also seen in the term of grip strength (including HGS and GSS scoring system) (SMD = -1.42, CI -1.85--0.98  $P < 0.00001$ ,  $I_2 = 0$ ).

**Conclusions:** In light of the better improvement in the terms of VAS and grip strength with follow-up more than 12 weeks, we assume that SW may be a superior alternative for the treatment of LE.

## **Acknowledgments**

This work was accomplished with the help of the library of Huazhong University of Science and Technology.

## **Declaration of interest**

The authors have no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties. Peer reviewers on this manuscript have no relevant financial relationships to disclose.

## **Availability of data and materials**

Please contact the corresponding author, Guohui Liu, for data requests.

## **Additional information**

### **Funding**

This study was supported by grants from the National Natural Science Foundation of China [No. 81772345]. The funder had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

### **Notes on contributors**

**Yuan Xiong**

**Yuan Xiong** and **Hang Xue** participated in the design of the study

**Hang Xue**

**Bobin Mi** and **Yi Liu** carried out data curation

**Wu Zhou**

**Jing Liu** and **Qipeng Wu** performed the statistical analysis

**Yun Sun**

**Lang Chen** and **Qipeng Wu** carried out investigation

**Yi Liu**

**Bobin Mi** and **Chenchen Yan** carried out project administration

**Qipeng Wu**

**Yun Sun** and **Wu Zhou** operated software

**Jing Liu**

**Yuan Xiong** carried out supervision

**Liangcong Hu**

**Liangcong Hu** and **Wu Zhou** carried out validation

**Adriana C. Panayi**

**Yuan Xiong** and **Hang Xue** conceived of the study, and participated in its design and coordination and helped to draft the manuscript;

**Lang Chen**

***Guohui Liu, Yuan Xiong*** and ***Adriana C. Panayi*** participated in the sequence alignment and drafted the manuscript. All authors read and approved the final manuscript.