

Research Paper

Comparing the Effect of Cold and Warm Stimulation of Hoku Point on Pain Caused by Removal of External Fixators Pin in Patients with Hand Fractures

Nasrin Rajabi ¹, Maasoumeh Barkhordari-Sharifabad ^{2,*}, Alireza Abedi ³, Hossein Fallahzadeh ⁴

¹ M.Sc. Student of Critical Care Nursing, Department of Nursing, School of Medical Sciences, Yazd Branch, Islamic Azad University, Yazd, Iran

² Ph.D. in Nursing, Assistant Professor, Department of Nursing, School of Medical Sciences, Yazd Branch, Islamic Azad University, Yazd, Iran

³ Ph.D. in Orthopedic, Kashan University of Medical Sciences, Kashan, Iran

⁴ Ph.D. in Biostatistics, Department of Biostatistics and Epidemiology, School of Health, Shahid Sadoughi University of Medical Sciences and Health Services, Yazd, Iran

* **Corresponding author:** Maasoumeh Barkhordari-Sharifabad, Ph.D. in Nursing, Assistant Professor, Department of Nursing, School of Medical Sciences, Yazd Branch, Islamic Azad University, Yazd, Iran. E-mail: barkhordary.m@gmail.com

How to Cite this Article:

Rajabi N, Barkhordari-Sharifabad M, Abedi A, Fallahzadeh H. Comparing the Effect of Cold and Warm Stimulation of Hoku Point on Pain Caused by Removal of External Fixators Pin in Patients with Hand Fractures. *J North Khorasan Univ Med Sci.* 2020;**6**(4):39-48.

DOI: [10.29252/ijrn-06405](https://doi.org/10.29252/ijrn-06405)

Received: 24 Sep 2019

Accepted: 09 Mar 2020

Keywords:

Hoku Point Stimulation

Cold

Warm

Pain

External Fixator

© 2020 Iranian Journal of
Rehabilitation Research in Nursing

Abstract

Introduction: One of the most common complaints in patients during the pin is removed from the metacarpal bone fracture is pain. Topical warm and cold therapy have effects on the skin so that it can relieve pain. On the other hand, according to traditional Chinese medicine, the Hoku point is the most crucial pain point in the body. This study aimed to compare the effect of cold and warm stimulation of Hoku point on pain Caused by Removal of External Fixators pin in patients with hand fractures.

Methods: This randomized clinical trial study was performed on 109 patients with metacarpal finger fracture with an external pin referring to the emergency department of Shahid Beheshti Hospital in Kashan in 2019. Patients were divided into three groups through block randomization: Huko point massage with ice, Huko lead massage with a warm compress and routine care. The Hoku point massage was done for 10 minutes before the pin was removed. Patients' pain severity was measured by the McGill pain questionnaire immediately after removing the pin in all three groups. Data were analyzed using the Chi-square test and one-way ANOVA.

Results: The mean total pain score in the Huko point stimulation group with a warm compress, ice, and routine care was $65/33 \pm 1/50$, $31/21 \pm 5/21$, and $42/30 \pm 4/93$, respectively. The results of one-way ANOVA showed a significant difference in terms of overall pain between the three groups ($P < 0.001$). Post hoc test showed that the mean score of all pain and its dimensions were significantly lower in the cold-stimulated Hoku point group than in the other two groups and in the Hoku-stimulated point-warm group considerably lower than the control group ($P < 0.001$).

Conclusions: Cold-stimulated Hoku point stimulation significantly attenuated pain due to external pin removal in patients with fractures compared to Hoku-stimulated point-warm or routine care. Therefore, considering the cheapness, applicability, and safety of this method, it is recommended to plan nurses' training in applying alternative medicine approaches, including stimulation of Hoku point.

Extended Abstract

OBJECTIVE

One of the most common complaints in patients during the pin is removed from the metacarpal bone fracture is pain (5). Topical warm and cold therapy has effects on the skin so that it can relieve pain (9, 10). On the other hand, according to traditional Chinese medicine, the Hoku point is the most critical pain point in the body (11). This study aimed to compare the effect of cold and warm stimulation of Hoku point on pain Caused by Removal of External Fixators pin in patients with hand fractures.

METHODS

This randomized clinical trial study was done in the emergency department of Shahid Beheshti Hospital, Kashan, Iran, from November 2018 to May 2019. The study population consisted of all patients with a metacarpal fracture with an external pin referred to the emergency department of Kashan Shahid Beheshti Hospital for Removal of External Fixators pin.

The sample size in each group was 36 patients. Inclusion criteria consist of Willingness to participate in the study, Metacarpal fracture of the finger and presence of external fixator, lack of consciousness disorder, Verbal communication ability, lack of Inflammation, and biting at the point of massage. Exclusion criteria included withdrawal during the study. Sampling was done through a convenience method and then blocked randomization. The ethics committee of Yazd Islamic Azad University was allowed to do this study (IR.IAU.KHUISF.REC.397.220), and the design of this study was recorded on the clinical trial website (NO.IRCT20181119041699N2). Before sampling, study objectives were explained to all participants, and informed consent was obtained from all participants in the study. Patients participated in the study voluntarily and freely and could be excluded at any stage of the research without any restrictions. Data collection instrument included demographic questionnaire (age, sex, marital status, education level) and 20-item McGill Pain Questionnaire on a Likert scale (each question ranged from 1 to 6); higher scores indicated a higher perception of pain. The minimum score was 20, and the maximum was 120. The McGill Pain Questionnaire was designed by Melzac and was used on 297 patients suffering from various types of pain (16). In Iran, Khosravi et al. (2012) reported the internal consistency coefficient of this questionnaire as 0, 85 (Cronbach's alpha), and the internal consistency coefficient of all four components were above 0, 80 (17). After introducing themselves, the purpose of the study, and explaining how to complete the questionnaires and assure the study patients of the confidentiality of the answers, Patients were assessed for inclusion and

exclusion criteria. After obtaining written consent from them, they entered the study.

At the beginning of the study, a demographic questionnaire for patients was filled through a self-report method. Subsequently, patients who were continuously enrolled in the study were divided into three groups (Huko point massage with ice, Huko point massage with a warm compress, and routine care). Hoku point massage for both groups was performed by a researcher who had previously received the necessary training to perform the massage.

In this study, to massage the Huko point with ice, the researcher placed the bottom of a plastic bottle of polyethylene on the Huko point of the hand on the opposite side of the fracture (the hand that had no fracture) for 10 minutes before removing the pin. To massage the Huko point with a warm water compress, the researcher applied the bottom of the warm water bottle of polyethylene containing water at 45 °C to the Huko end of the opposite side of the fracture (the non-fractured hand) for 10 minutes before removing the pin. Immediately after pin withdrawal and patients' condition stabilized in all three groups, the pain questionnaire was completed by interviewing patients in the room set apart to remove the external pin. Patients were followed up in a single-blind study in which Statistician has not known the type of intervention until the end of data analysis. Data were analyzed using the Chi-square test and one-way ANOVA.

RESULTS

The mean total pain score in the Huko point stimulation group with a warm compress, ice, and routine care was 65.33 ± 1.50 , 31.21 ± 5.21 , and 42.30 ± 4.93 , respectively. The results of one-way ANOVA showed a significant difference in terms of overall pain between the three groups ($P < 0.001$). Post hoc test showed that the mean score of all pain and its dimensions were significantly lower in the cold-stimulated Hoku point group than in the other two groups and in the Hoku-stimulated point-warm group significantly lower than the control group ($P < 0.001$).

CONCLUSION

Cold-stimulated Hoku point stimulation significantly attenuated pain due to external pin removal in patients with fractures compared to Hoku-stimulated point-warm or routine care. Therefore, considering the cheapness, applicability, and safety of this method, it is recommended to plan nurses' training in applying alternative medicine approaches, including stimulation of Hoku point.

Ethical Considerations

The ethics committee of Yazd Islamic Azad University was allowed to do this study (IR.IAU.KHUISF.REC.397.220), and the design of this study was recorded on the clinical trial website (NO.IRCT20181119041699N2). Before sampling, study objectives were explained to all participants, and informed consent was obtained from all participants in the study. Patients participated in the study voluntarily and freely and could be excluded at any stage of the research without any restrictions.

Funding

This study had no sponsors and was conducted with a personal cost.

Authors' Contributions

Ms. Nasrin Rajabi Conducting the Intervention Program, Entering Study Data into Statistical Program and primary drafting Paper, Maasoumeh Barkhordari-

Sharifabad Submit, Follow up and revise the paper, Alireza Abedi was supervising Intervention Implementation, Hossein Fallahzadeh Statistical Analysis of Study Data.

Conflicts of Interest

The authors acknowledge that there is no conflict of interest in this study.

Applicable Remarks

This study will be useful to pain relief due to the Removal of External Fixators pin in patients with hand fractures as a cheap, low-risk, and secure method.

Acknowledgments

The researchers would like to thank the patients who collaborated with us in conducting this study, the Vice Chancellor for Research and Technology of the Islamic Azad University of Yazd, and the emergency department personnel of Shahid Beheshti Hospital in Kashan.