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The Analgesic Effect of Thermal Therapy After Total Knee Arthroplasty

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Author information

Ching H. Wong, MD (Cand),¹ Leou C. Lin, MD,² Hsieh H. Lee, MD,³ and Chi-Feng Liu, PhD⁴

¹Graduate Institute of Clinical Medical Sciences, Tao-Yuan, Taiwan.

²Department of Orthopedics, Tri-Service General Hospital, National Defense Medical Center, Taipei, Taiwan.

³Department of Orthopedics, Shuang Ho Hospital, Taipei Medical University, Taipei, Taiwan.

⁴Graduate Institute of Integration of Traditional Chinese Medicine with Western Nursing, National Taipei University of Nursing and Health Sciences, Taipei, Taiwan.

Address correspondence to:

Chi-Feng Liu, PhD

Graduate Institute of Integration of Traditional Chinese Medicine with Western Nursing

National Taipei University of Nursing and Health Sciences

No. 365, Ming-Te Road, Pei-Tou 11211

Taipei

Taiwan

E-mail: oriwealth@yahoo.com.tw

ABSTRACT

Objectives: Pain induced by surgery is a dynamic symptom, which may be quite variable even in the same surgical procedures. The purpose of this study was to investigate the analgesic effect of far infrared rays on the patients during the postoperative period of total knee arthroplasty (TKA). The selection and application of analgesic methods after the orthopedic surgery are therefore valuable for advanced studies.

Design: The quasi-experimental design with a total five consecutive days of far infrared ray (FIR) thermal therapy was employed in this study.

Subjects: The study involved 41 participants assigned by register code entry on computer to either the intervention or the control group.

Intervention: The FIR pads were applied on the acupoints of ST37 (*Shang Chu Hsu*), ST38 (*Tiao Kou*), ST39 (*Hsia Chu Hsu*), and ST40 (*Feng Lung*) of the patients involved in the experimental group from the third day to the fifth day after the TKA.

Outcome measures: The analgesic effect was evaluated via the pain intensity of the numeric rating scale (NRS) level and serum concentration of interleukin-6 (IL-6) and endothelin-1 (ET-1).

Results: The FIR showed that the significant effects are on relieving pain and lowering the levels of IL-6 and ET-1. The results cannot only be the reference for the postoperative pain relief of TKA, but it can also be the database of another clinical application.

Conclusions: This study demonstrated that the FIR can lower the NRS of pain and thus reduce the discomfort experienced by the patient. Findings indicated that effective application of FIR decreased the serum level of IL-6 and ET-1, which represent the subjective indicator of pain.