

Effects of physiotherapy treatment combined with high-frequency diathermy: a pilot case-control study on patients with wrist fractures

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Abstract

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Abstract

Introduction

Wrist fractures are among the most frequent issues in arm and hand rehabilitation. A dedicated physiotherapy protocol is usually used during rehabilitation and is very common to apply physical therapies with an analgesic purpose and promote fracture healing. Thermotherapy is a non-pharmacological therapy that uses heat to induce a biological effect in the body. Within thermotherapy, high-frequency diathermy is already used in treating pain from musculoskeletal lesions/disease and, in particular, in reducing post-surgical/traumatic oedema. Oedema is one of the most common causes of pain in these patients and the possibility of reducing it can give a faster and better rating of recovery. This randomized control study trial aimed to assess the efficacy of high frequency diathermy on pain, oedema and functional recovery.

Methods

Patients with a wrist fracture (distal epiphysis of radius, ulna and/or carpus) referring to the dedicated outpatient clinic of the University Hospital of Verona were evaluated for enrollment. Patients were randomly and equally divided into two groups. The control group underwent conventional physiotherapy sessions, while the case group additionally received high-frequency diathermy treatment with the same amount of rehabilitation time. Treatments were organized in 3 sessions per week. Assessments were carried out before treatment (T0), at the 10th session (T1) and one month after the 10th session or at the 20th session (T2). Pain was assessed using the Italian version of the Patient Rated Wrist/Hand Evaluation (PRWHE) questionnaire. The passive range of motion of the wrist and elbow was measured with a handheld goniometer. Strength was assessed with a dynamometer, oedema and muscle trophism were measured with a tape measure.

Results

The study showed a statistically significant improvement in PRWHE questionnaire scores in the study group in the T2-T0 comparison but not in the T1-T0 comparison. In the study group it has been found statistically significant improvements in wrist oedema reduction in the T1-T0 comparison and in the T2-T0 comparison at all measurement levels. Strength and articularity outcomes have not shown statistically significant differences.

Conclusions

High-frequency diathermy reduces pain in patients with recent wrist fractures. The anti-inflammatory effects of diathermy were shown to be superior two months after the treatment's beginning.

These results suggest that high-frequency diathermy may be a valuable tool in the rehabilitation treatment of patients with recent wrist fractures.

References

Gutow, A. P. Avoidance and treatment of complications of distal radius fractures. Hand Clin. 21, 295–305 (2005).

Goats, G. C. Continuous short-wave (radio-frequency) diathermy. *Br. J. Sports Med.* 23, 123–127 (1989).

Fairplay, T. et al. Cross-cultural adaptation and validation of the Italian version of the patient-rated wrist/hand evaluation questionnaire. *J. Hand Surg. Eur.* Vol. 37, 863–870 (2012).

Singer, B. R., McLauchlan, G. J., Robinson, C. M. & Christie, J. Epidemiology of fractures in 15,000 adults: the influence of age and gender. *J. Bone Joint Surg. Br.* 80, 243–248 (1998).

Mauck, B. M. & Swigler, C. W. Evidence-Based Review of Distal Radius Fractures. *Orthop. Clin. North Am.* 49, 211–222 (2018).