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Hyperthermia at 434 MHz in the Treatment of Overuse Sport Tendinopathies: A Randomised Controlled Clinical Trial

Abstract

The objective of this randomized study was to compare a thermotherapy system, hyperthermia at 434 MHz and conventional ultrasound in the treatment of overuse sports tendinopathies. The study group consisted of 44 athletes, 33 males and 11 females (age 26 ± 4.56 years) affected by tendinopathies at lower extremities (patellar or achilles tendons). After elucidation of the kind of trial, 22 patients were randomly assigned to hyperthermia and 22 to ultrasound. The patients received after a pain measurement and ultrasound scanning 12 treatments, 3 times a week for 4 weeks. The same standardized examination was done at the end of treatment and 1 month after the end of treatment. The assessor physician was unaware of the treatment allocation.

The patients were asked to rate the ultimate outcome on the base of pain resolution and return to sports activity. Both groups had a significant decrease of symptoms ($P < 0.001$). Hyperthermia, however, demonstrated better effects on the reduction of VAS score and on the subjective overall satisfaction (77%) of excellent and good results in comparison to the 33% of ultrasound. In patients with chronic overuse tendinopathies hyperthermia at 434 MHz showed encouraging results, with short-term clinical improvement, safety and no side effects.

Key words

Overuse injury · ultrasound · physical therapy · microwave diathermy · achilles tendon · patellar tendon

Introduction

Overuse tendinopathies are a major problem for athletes and active patients alike. A wide variety of modalities including ultrasound, laser and different forms of heat are separately or in combination employed to treat these conditions [10,15,27]. Such modalities are claimed to decrease inflammation and pain and promote healing processes, but there is no definite evidence to support many of these claims [4,20].

One of the most recent and promising thermotherapy systems is the hyperthermia which, using a superficial cooling system and a deep heating source operating with a microwave power generator at 434 MHz, allows the target tissue to rise therapeutic tem-

peratures (between 41 °C and 45 °C) down to a depth of several centimetres without overheating the overlying superficial tissues [24]. The effectiveness of hyperthermia in the early treatment of muscle injuries in athletes has been recently demonstrated [14]. The aim of our study was to investigate the efficacy of hyperthermia in the treatment of overuse tendinopathies. In particular, as ultrasound is a widespread modality used in the treatment of tendon injuries for its thermal, mechanical and analgesic effect [11,15,21,26], we included a control group treated with conventional ultrasound in the study described here. To date, there have been no clinical studies in scientific literature on the use of hyperthermia at 434 MHz in the treatment of overuse tendinopathies.

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Bibliography

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