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Investigation of the Effect of GaAs Laser Therapy on Lateral Epicondylitis

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Abstract

Background and Objective: There are conflicting reports regarding the efficacy of low energy laser therapy in treatment of lateral epicondylitis (LE). Contradictory results are considered to be due to different joint treatment protocols regarding variables such as dose, duration, and frequency. The aim of this study was to investigate the efficacy of gallium-arsenide (GaAs) laser therapy, which was performed with the dose regimen recommended by the World Association for Laser Therapy, in relieving pain and improving functional activities in patients with LE. ***Patients and Methods:*** Forty-nine patients (50 elbows) evaluated in our outpatient clinic were included in the study. Elbows were randomized into two groups: laser ($n=25$) and placebo laser ($n=25$). Either laser or placebo laser therapy was applied to patients for 15 sessions (5 d per week for 3 weeks). Main outcome measures were visual analog scale, tenderness, Disability of the Arm Shoulder and Hand (DASH) questionnaire, the Patient-Related Lateral Epicondylitis Evaluation (PRTEE) test, pain-free grip strength, and the Nottingham Health Profile (NHP) questionnaire. Evaluations were performed before treatment, at the end of 3 weeks of treatment, and after the 12th week of treatment ended. ***Results:*** Upon post-treatment evaluation, a significant improvement in all parameters was observed for both groups ($p<0.05$). No significant difference was found when the laser and placebo groups were compared. At the 12 week evaluation, a significant sustained improvement in all parameters was observed. On intergroup evaluation, a significant improvement was observed in favor of the active treatment group regarding pain with resisted extension of the wrist, tenderness with pressure, and for both the total and subgroup scores of the DASH questionnaire and PRTEE test, as well as for the pain subgroup of the NHP questionnaire ($p<0.05$). ***Conclusion:*** Although low energy laser therapy had no advantage compared to placebo in patients with LE for the short term, a significant improvement, particularly in functional parameters, was achieved in the long term. Laser, which has relatively no side effects, might be included among long-term treatment options for LE.

Introduction

LATERAL EPICONDYLITIS (LE), or tennis elbow, is defined as pain around the lateral epicondyle of the humerus that is aggravated by activity of the wrist and elbow.[1] The etiology of LE is due to damage caused by recurrent overuse of the extensor carpi radialis brevis and extensor digitorum communis muscles, specifically where they attach to the lateral epicondyle. It is most often encountered between the ages of 40 and 60 years, and the dominant arm is generally affected.[2]

Several months of conservative treatment is indicated before considering surgical intervention. The aim of conservative treatment is to reduce pain, control inflammation, accelerate healing, and enable patients to do their daily activities.[3,4]

Conservative treatment methods include anti-inflammatory drugs, ice, LE bands, corticosteroid injections, and an exercise regimen, as well as various physical therapy methods such as massage therapy, laser, electrotherapy, and ultrasound.[5–7] There are three Cochrane reviews on treatment of LE. In one of these reviews, the researchers could not find definitive conclusions concerning effectiveness of orthotic devices.[8] Oral and topical nonsteroid anti-inflammatory drugs (NSAIDs) were found to be effective in one review,[9] while in the other review, researchers failed to obtain sufficient evidence to support or refute effectiveness of acupuncture for LE treatment.[10] In another review, a number of treatment modalities, including acupuncture, exercise therapy, manipulations and mobilizations, ultrasound, phonophoresis, Rebox, and ionization with diclofenac, were found to show positive effects in pain reduction or improved function for patients with LE based on at least level 2b evidence.[11]

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