

Can intractable discogenic back pain be managed by low-level laser therapy without recourse to operative intervention?

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Objective: The aim of the study reported here was to investigate the possible clinical role of low-level laser therapy (LLLT) in discogenic back pain patients who failed to respond to a conventional physical therapy program to avoid recourse to operative intervention.

Methods: The paper reports on the long-term mean 5-year prospective follow-up of a patient cohort of 50 unselected patients visiting our tertiary referral pain center for discogenic back pain who had had a single-level lesion documented by magnetic resonance imaging followed by subsequent discography to confirm the affected disc being the pain generator. All of the patients who entered the study had failed response to a combination of nonsteroidal anti-inflammatory agents and had had not less than 3 months of conventional physical therapy. LLLT, at a wavelength of 810 nm wavelength emitted from a GaAAs semiconductor laser device with 5.4 J per point and a power density of 20 mW/cm², was employed. The treatment regimen consisted of three sessions of treatment per week for 12 consecutive weeks.

Results: All but one patient had significant improvement in their Oswestry Disability Index score, from a mean of 50% score to a mean of 10% score, at the end of treatment at 12 weeks. In addition, surprisingly, the improvement was found maintained at follow-up assessments 1 year and 5 years later. The one patient among the 50 patients who failed to respond eventually required surgery, while the others did not require surgery.

Conclusion: We conclude that LLLT is a viable option in the conservative treatment of discogenic back pain, with a positive clinical result of more than 90% efficacy, not only in the short-term but also in the long-term, with lasting benefits.

Keywords: GaAAs semiconductor laser, Oswestry Disability Index, single-level lesion, LLLT

Introduction

The significance of low-level laser in clinical medicine began with the important works of Endre Mester. In recent years, the various clinical applications of low-level laser therapy (LLLT) have mainly been based on previous scientific works concerning the effect of low-level lasers, which exert a positive influence on fibroblast¹ and collagen synthesis² at the cellular-molecular level.

As far as discogenic back pain is concerned, most orthopedic surgeons use non-steroidal anti-inflammatory medications and conventional physical therapy consisting of ultrasonic therapy, traction therapy, trans-cutaneous electrical therapy, and short-wave therapy. These forms of conservative treatment modalities represent symptomatic treatment only, without the biomodulation effects offered by low-level lasers; for instance, ultrasound treatment affords neither anti-inflammatory nor biomodulation effects at the cellular-molecular level.

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