Clinical efficacy of low level laser therapy (LLLT) in managing refractory De Quervain's tenosynovitis

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Citation

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Abstract

Introduction:

Traditionally, patients with refractory de Quervain tenosynovitis were either treated with steroid injections or surgery. The above 2 options are not without side effects. The current study assessed the clinical efficacy of LLLT in managing a cohort of patients with de Quervain tenosynovitis refractory to not less than 3 months of conventional physiotherapy. LLLT was the only treatment modality used in the study.

Material & Methods:

The prospective clinical case series consisted of 21 patients with de Quervain tenosynovitis refractory to at least 3 months of conventional physiotherapy. LLLT is used as the sole treatment modality. LLLT was administered using GaAlAs semi-conductor laser of 810 nm wavelength treated 3 times a week for 12 weeks. Serial VAS pain scale was charted.

Results:

All 21 subjects had good relief of pain with complete pain relief noted on serial charting of VAS pain scale. There were no side effects, nor defaulters. All were satisfied with this non-invasive treatment modality

Conclusion:

LLLT if administered properly can adequately manage refractory de Quervain tenosynovitis without recourse to steroid injections and surgery

INTRODUCTION

De Quervain's tenosynovitis is of common occurrence and seen by general practitioners, Orthopedic specialists, and rehabilitation specialists.
Standard textbook teaching is that these patients will mostly be given a course of physiotherapy, failing that either steroid injection or operative intervention represent options for refractory cases. Nowadays, there is a move away from steroid injections and operative intervention is usually regarded as a last resort by most subjects. The current study reports the clinical outcome of a clinical case series of patients refractory to not less than three months of conventional physiotherapy and given twelve weeks treatment of LLLT as the sole treatment modality.

MATERIALS AND METHODS

This clinical case series consisted of 21 subjects with refractory De Quervain's disease of the wrist confirmed by ultrasound scanning, and represent consecutive unselected patients visiting the wellness pain clinic attended by the author during the period 2016 to 2023.
The pain level was assessed by the Visual Analogue Scale (VAS) of pain, and clinical failure is defined as breakthrough pain that necessitated steroid injection and/or surgery. LLLT was emitted from GaAlA semiconductor diode laser device emitting 810 nm wavelength, 5.4 J per point, and power density of 20 mW/cm2 and the duration of treatment for each wrist was 360 seconds. Each subject received 3 sessions of treatment per week. All patients refused the idea of sham light source as control and all 21

subjects had unilateral pathology, so the opposite normal wrist cannot be used as control.

RESULTS

The male:female ratio of the study cohort was 1:2, the right wrist was affected in 17 patients, out of the remaining 4 patients whose pathology was on the left wrist, 3 were found to be left handed. The mean VAS score on entry to the study was 8 (range 7-9). Upon completion of treatment at the 12 week mark, the mean VAS score was 2 (range 1-3) and all patients were satisfied with the non-invasive therapy. None of the patients required surgery and there were no defaulters.

DISCUSSION

In the past, refractory De Quervain's syndrome are mostly subjected to surgery. But recent papers (1) pointed out some treatment failures arise from incomplete release of Extensor Pollicis Brevis sub-compartment, other complications include neuroma formation of the superficial radial nerve, subluxation of Abductor Pollicis Longus tendon etc.
LLLT has bio-modulation effect such as improvement in micro circulation, as well as up-regulation of genes involved in the energy metabolism and oxidative phosphorylation thus simulating an increase in ATP production, which in turn regulates other cellular processes leading to normalisation of biological functions at the cellular level (2). The author has published favourable effects of LLLT in Achilles' tendon pathology (3), and in injury of the shoulder supraspinatus tendon (4). For more chronic tendon pathology,
LLLT can help up-regulate some growth factors and increases the amount of Collagen Type 3 (5) thus aiding in the management of more chronic tendon pathologies, besides having anti-inflammatory effects (6).

CONCLUSION

Twelve weeks administration of low-level laser therapy (LLLT) was found to be highly effective in the management of refractory De-Quervain Tenosynovitis of the wrist, without recourse to steroid injection or surgery.

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