

# Efficacy of 904 nm Gallium Arsenide Low Level Laser Therapy in the Management of Chronic Myofascial Pain in the Neck: A Double-Blind and Randomize-Controlled Trial

Ali Gur, MD,\* Aysegul Jale Sarac,<sup>1</sup> Renzi Cevik,<sup>1</sup> Ozlem Altindag,<sup>1</sup> and Serdar Sarac<sup>2</sup>

<sup>1</sup>Physical Medicine and Rehabilitation, School of Medicine, Dicle University, Diyarbakir, Turkey

<sup>2</sup>Physical Medicine and Rehabilitation, Kartal State Hospital, Istanbul, Turkey

**Background and Objectives:** A prospective, doubleblind, randomized, and controlled trial was conducted in patients with chronic myofascial pain syndrome (MPS) in the neck to evaluate the effects of infrared low level 904 nm Gallium-Arsenide (Ga-As) laser therapy (LLLT) on clinical and quality of life (QoL).

**Study Design/Patients and Methods:** The study group consisted of 60 MPS patients. Patients were randomly assigned to two treatment groups: Group I (actual laser; 30 patients) and Group II (placebo laser; 30 patients). LLLT continued daily for 2 weeks except weekends. Follow-up measures were evaluated at baseline, 2, 3, and 12 weeks. All patients were evaluated with respect to pain at rest, pain at movement, number of trigger points (TP), the Neck Pain and Disability Visual Analog Scale (NPAD), Beck depression Inventory (BDI), and the Nottingham Health Profile (NHP).

**Results:** In active laser group, statistically significant improvements were detected in all outcome measures compared with baseline ( $P < 0.01$ ) while in the placebo laser group, significant improvements were detected in only pain score at rest at the 1 week later of the end of treatment. The score for self-assessed improvement of pain was significantly different between the active and placebo laser groups (63 vs. 19%) ( $P < 0.01$ ).

**Conclusion:** This study revealed that short-period application of LLLT is effective in pain relief and in the improvement of functional ability and QoL in patients with MPS. *Lasers Surg. Med.* 35:229-235, 2004.

© 2004 Wiley-Liss, Inc.

**Key words:** gallium arsenide; low level laser therapy; myofascial pain syndrome; neck pain; quality of life; depression

## INTRODUCTION

Myofascial pain syndrome (MPS) is a common cause of pain in clinical practice. MPS is characterized by acute or chronic specific pain affecting a small number of muscles and involving single or multiple "trigger points" that are usually located in tight bands within the affected muscles [1]. These trigger points (TP) are hypersensitive to pressure and produce a local twitch and referred pain within a defined reference area [2,3]. It has been proposed that acute or chronic muscle stress may be an initiating factor in MPS.

MPS was shown the most common in neck or shoulder and it is one of the most common of neck or shoulder pain in our population. Neck pain is a common complaint with a point prevalence from 10 to 18% and lifetime prevalence from 30 to 50%. Chronic neck pain has a high prevalence in the community and is responsible for significant loss of work-days and a reduction in quality of life for individuals [4,5].

Common treatment consists of drugs, massage, and other physiotherapy, local and epidural injections. Non-steroidal anti-inflammatory drugs are commonly used for this condition but have significant side-effects, and pain modulating therapies, such as anti-epileptic medication, are not well tolerated. Thus, there is a need for non-drug, and non-invasive therapies for chronic neck pain related with MPS which can be used as a first-line therapy in practice [6]. Current treatment increasingly includes complementary methods, of which low level laser therapy (LLLT) is one of the most commons.

LLLT was introduced in a clinical randomized controlled trial on musculoskeletal pain as early as in 1980 [7]. In the past two decades, a number of clinical randomized controlled trials have been performed with LLLT to treat a variety of musculoskeletal and neurogenic pain conditions. Clinical applications of LLLT have been performed either by direct exposure of the skin overlying the injury, exposure of TP or acupuncture points, or of nerves inside or outside the painful area. A broad range of doses (0.0001-38 J/cm<sup>2</sup> [8] has been reported to produce significant effects on musculoskeletal disorders in about one third of the LLLT trials. Thus the rationale behind the selection of application technique and treatment parameters like power density, size of exposure area, timing or treatment frequency often remains unclear. Recent review articles have concluded that there is a little-if any-in evidence favor of LLLT for the treatment of musculoskeletal pain [9,10]. Several editorials in medical journals have supported the criticism on the clinical use of LLLT [11]. Still the amount of rando-

\*Correspondence to: Ali Gur, MD, Physical Medicine and Rehabilitation, Dicle University School of Medicine, Diyarbakir, Turkey. E-mail: [alig@dicle.edu.tr](mailto:alig@dicle.edu.tr)

Accepted 11 June 2004

Published online in Wiley InterScience

([www.interscience.wiley.com](http://www.interscience.wiley.com)).

DOI 10.1002/1sm.20082