

Efficacy of Low Level Laser Therapy in Myofascial Pain Syndrome: An Algometric and Thermographic Evaluation

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Background and objectives: The efficacy of low level laser therapy (LLLT) in myofascial pain syndrome (MPS) seems controversial. Our aim was to clarify the effect of LLLT in MPS by using algometry and thermography.

Study Design/Materials and Methods: Sixty-two patients with MPS having an active trigger point in the neck or upper back region were randomly divided into two equal groups according to therapy applied (group 1: LLLT + stretching exercises, group 2: stretching exercises alone). The outcome measures were pain measured with visual analogue scale (VAS), algometry on the trigger point, algometric difference, thermographic difference, and thermal asymmetry. Comparison was made within and between the groups pre- and post-therapeutically and 3 weeks after therapy.

Results: Mean pain values decreased more significantly in group 1 from baseline to 3 weeks follow up (7.54–3.06) while these values were 7.03–5.19 in group 2 ($P < 0.05$). Group comparisons revealed significant favorable differences in group 1 patients in terms of all other parameters at the first and the second evaluation post therapeutically ($P < 0.05$).

Conclusions: LLLT seemed to be beneficial for pain in MPS by using algometry and thermography. *Lasers Surg. Med.* 33:339–343, 2003. © 2003 Wiley-Liss, Inc.

Key words: algometry; low level laser therapy; myofascial pain syndrome; stretching exercise; thermal asymmetry; thermography; trigger point

INTRODUCTION

Myofascial pain syndrome (MPS) is characterized by pain originating from trigger points at muscles and fascias associated with muscle spasm, tenderness, motion restriction, fatigue, and sometimes autonomic dysfunction of the related region [1,2]. As the exact pathogenesis and healing mechanisms are not known, many empirical modalities have been used in the treatment of this syndrome [3].

Low level laser therapy (LLLT) has been safely used in the treatment of MPS with its analgesic, myorelaxant, tissue healing, and biostimulation effects [4–7]. The clinical results of LLLT in musculoskeletal pain and MPS seemed controversial, however, this can probably be explained by inappropriate application of various types of

laser energy in some trials that revealed no beneficial effect of LLLT [8].

In outcome studies about the efficacy of treatment modalities on MPS, pain related parameters, such as visual analogue scale (VAS) and pressure algometer (PA), have often been used [7,9]. Although infrared thermography was reported as a non-invasive and useful tool for diagnosis and treatment follow up of MPS, this method has not been widely used as an outcome measure. Some authors suggest that thermographic imaging typically demonstrate a focal hot spot on the area of active trigger point [10]. However, the specificity of hot spots to detect trigger points for diagnosis has still been debated. Although Fischer [11] suggested infrared thermography can be used for diagnosis and monitoring the treatment efficacy in the follow up period, Swerdlow and Dieter [12] observed that it is not highly specific for diagnosis.

The main aim of this study was to investigate whether LLLT has clinical therapeutic effect on MPS by using not only the usual pain parameters, but also thermographic evaluation as outcome measures.

MATERIALS AND METHODS

Patient Selection

Sixty-two patients, between 18 and 60-years-old, applied to our outpatient clinics with complaints of neck and upper back pain and had the diagnosis of MPS with only one active trigger point in either trapezius or levator scapulae muscles according to Travell–Simons criteria [1,13], were included in the study. Diagnosis was based on the presence of all five major criteria and at least one of the three minor criteria. The five major criteria taken into account were regional pain, reference pain pattern, palpable taut band, presence of trigger point and motion restriction, whereas the minor

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