

# The MLS therapy in postural myofascial pain and postraumatal of the neck.

G. Nunez<sup>1</sup>, D. Bertolini<sup>2</sup>, C. Piscopo<sup>1</sup>

<sup>1</sup> - San'Antonio Clinic, Padua

<sup>2</sup> - Orthopedics, Nursing Home, Abano

## ABSTRACT

Myofascial pain is a common cause of chronic syndromes, not only of orofacial district, but also any other district; such painful syndromes often mimic other disorders, in relation to their location, and are still often be denied or underestimated. Myofascial pain is usually in an area known as Trigger points (TrPs). Laser therapy has been often proposed for the treatment of pain and disability management of various disorders. In comparison to the classical laser therapy, MLS therapy has several special characteristics: it combines laser emissions with two wavelengths (808 and 905 nm), one in the continuous mode (808 nm, with a maximum power of 1W), and the other one in a pulsed mode (905 nm, with a peak power of 25 W). The advantage of this laser system consists in better propagation inside the tissue respect to other wavelengths and in the possibility of increasing the emitted energy. The aim of the study was to analyze the efficacy of MLS in patients with myofascial pain. 30 patients with myofascial pain in the cervical region

were enrolled in the study. The patient's evaluation included Visual Analogue Scale (VAS) and Neck Pain Disability Questionnaire that is a multidimensional questionnaire assessment of pain, disability and cognitive-behavioural aspects linkable to cervicgia. The symptoms of pain was evaluated through the VAS scale, at the end of each session of MLS therapy and after one month after the end of treatment. Pain relief was good in both cases. MLS therapy has proven to be very effective in post traumatic myofascial pain. Myofascial postural pain needs a series of actions such as postural gymnastics that might improve the result.

## INTRODUCTION

Myofascial pain is without a doubt the most common cause of chronic syndromes, not only of orofacial district, but also any other district. Such painful syndromes often mimic other disorders, in relation to their location, and are still often be denied or underestimated. Myofascial pain is usually in an area known as Trigger points (TrPs), a hypersensitive point within

a skeletal muscle, painful to palpation and compression [1-2]. The TrP arise from cycles of sarcomerical contractions with increased metabolic activity and local ischemia. These phenomena are maintained by the release of various substances such as lactate, prostaglandin E<sub>2</sub>, bradykinin, substance P, potassium and hydrogen ion and initiated by an excessive release of acetylcholine [3-4]. The pathophysiology of myofascial pain in the orofacial complex is being connected to a wide range of factors, which may cause or facilitate the dysfunction of muscle fibers or overlap with it: among them are the malocclusions, physiological factors; changes in posture (e.g. in front of the computer, watching tv, or even sleeping), past trauma (neck distorsion for exemple), reumatological, endocrine, nutritional disorders, anaemia, avitaminosis, stress [5-6].

In comparison to the classical laser therapy, the MLS therapy has several special characteristics: it combines laser emissions with two wavelengths (808 and 905 nm), one in the continuous system (808 nm, with a maximum power of 1W), and the other one in a pulsed system (905 nm, with a maximum power of 25 W) [7-8].The advantage of this combination consists in better penetrability and in the possibility of increasing the emitted energy. Therefore, the pulsing system combines the stimulating effect on microcirculation with the advantage of an increased top power, but they have a low average energy, and the combination to a continuous laser wave secures an appropriate energetic intake. The synchronizing of the two wavelengths may transfer the energy towards the cellular sublayer in a more efficient manner than the emission of a single component. Thus, the MLS impulse has bigger antiphlogistic, bio-stimulating and analgesic effects than

a continuous emission or a pulsed one, used separately or in combination, but unsynchronized. Enjoying the advantage of a bigger divergence of the diodes irradiation cones, the multidiode laser may have a spot of big dimensions – 50 mm. its wavelength and the energetic transfer method in relation to time. MLS therapy creates the conditions for the achievement of numerous therapeutic effects, as it has an anti-inflammatory, anti-edematous, and analgetic action, which eventually leads to rapid ameliorations [9-10].

**MATERIALS AND METHODS**

30 patients with myofascial pain were selected. 14 posttraumatical and 16 postural. 18 males and 12 females, aged between 23 and 71 years (mean = 45). The diagnosis of cervical distortion was formulated according to the standard procedure of spine radiography. In some cases the state of patients was evaluated through dynamic radiography and MRI of the region.

Exclusion criteria were: therapy with oral anticoagulants, non compliant patients (cognitive impairment or psychiatric disorder), skin diseases. The patients' evaluation included history and clinical examination, VAS (11-12) and Neck Pain Disability Questionnaire [13].

In many diseases, predominantly post-traumatic and degenerative affecting cervical spine is important to assess the presence and degree of involvement of cervical nerve structures. In the presence of a cervical pain of possible neurological origin you can use different clinical trials that indicate whether the relevant radicular pain (i.e. from a nerve root), or trunkular (i.e. from a nerve trunk) and if there are signs of a mechanical compression of the root itself. So we used some test: Foramen Compression Test. Indicates the

SCORE	INTERPRETATION OF THE OSWESTRY LBP DISABILITY QUESTIONNAIRE
0-20% Minimal Disability	Can cope w/ most ADL's. Usually no treatment needed, apart from advice on lifting, sitting, posture, physical fitness and diet. In this group, some patients have particular difficulty with sitting and this may be important if their occupation is sedentary (typist, driver, etc.)
20-40% Moderate Disability	This group experiences more pain and problems with sitting, lifting and standing. Travel and social life are more difficult and they may well be off work. Personal care, sexual activity and sleeping are not grossly affected, and the back condition can usually be managed by conservative means.
40-60% Severe Disability	Pain remains the main problem in this group of patients by travel, personal care, social life, sexual activity and sleep are also affected. These patients require detailed investigation.
60-80% Crippled	Crippled Back pain impinges on all aspects of these patients' lives both at home and at work. Positive intervention is required.

Interpretation of disability scores (from original article) / Fairbanks CT, Couper C, Davies JB, O'Brien JP. The Oswestry low back pain disability questionnaire Physio Ther 1980;66:271-273./

compression of one or more cervical roots at the level of the foramen of conjugation. Running with the patient sitting tilt your head to one side and the examiner applies pressure on the head with both hands. It is good when the pressure causes a pain radiated to upper limb on the side where the head is flexed.

Test of distraction. The patient sitting, the examiner raises his head with both hands (a hand under her chin and the other below the occiput) with a traction. It is good when traction exerted reduces pain radiated to upper limb.

Test of the brachial plexus stretching. Patient supine, the examiner fix the shoulder of the limb to be tested in JAWS, abduce and extends the arm holding the elbow bent, the forearm supine and extending the elbow. When the final position induces a pain radiated to upper limb is significant. The test is

primarily a radiculopathy on the roots C5-C7 or a problem at the expense of the cervical plexus. To increase the sensitivity of the test you may ask the patient to turn his head from the side while rotating to the side looked reduces symptoms. The test is very effective and is almost always positive whenever there is the slightest been irritant of the roots. So it is especially useful in clinical cases where a shoulder pain radiated, is moderately mild cervicalgia coexists and you are unable to resolve if the disease is attributable to cervical or scapular-humeral belt.

Depression Test of the shoulder. The patient is sitting, the examiner with one hand pushing down on the shoulder and the other tilt the head to the opposite side. The Test is positive when the action produces ipsilateral cervical pain radiated to upper limb.

PROTOCOL	
N° of session	10
Time for single session	3min. (first 3-4 session) 3min. (the other session)
PARAMETER OF TREATMENT	
Frequency	700Hz (first 3-4 session) 1500 Hz (the other session)
Density of the dose	3,0 J/cm <sup>2</sup> (first 3-4 session) 3,5 J/cm <sup>2</sup> (the other session)

Table 1 Protocol of treatment

VAS	pre MLS	After MLS	at 30 days
Myofascial pain postraumatical	8	2	2
Myofascial pain postural	7	4	2

Table 2 - Vas before and after MLS

BEFORE MLS	AFTER 30 DAYS
20 patients Moderate Disability	
10 patients Severe Disability	30 Minimal Disability

Table 3 - Score of Neck Pain Disability Questionnaire

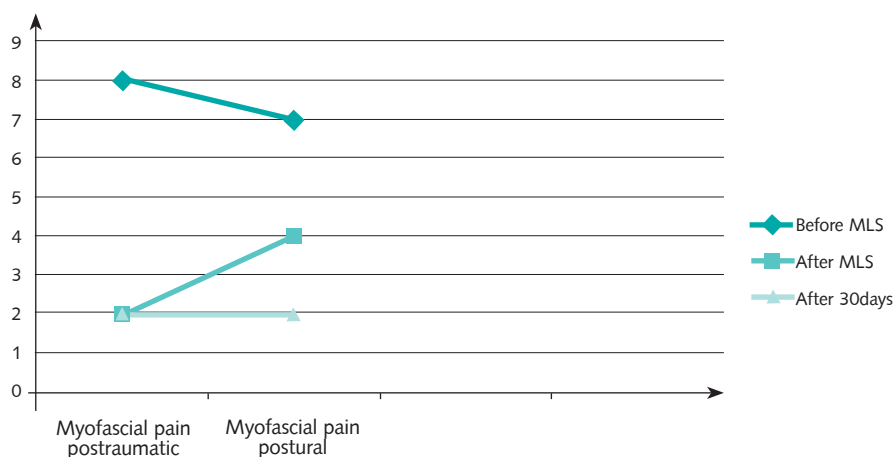


Fig. 1 - The graphic of the results

The assessment of the results was based on quantification of pain with the Visual analogue scale (VAS), on the objectivity, on the amount of pain medications-anti-inflammatories hired and hours of nighttime sleep, dizzying descriptive symptoms. The symptoms of pain was evaluated through the VAS scale, at the end of each session of MLS therapy and after one month after the end of treatment.

Finally was used Neck Pain Disability Questionnaire, as validated in Italian language, such as multidimensional questionnaire assessment of pain, disability and cognitive-behavioural aspects linkable to cervicalgia.

### TREATMENT

We use a MLS laser device ( M6 ASA-Arcugnano, Vicenza). The treatment performed five time in the week and we applied the original program of the laser. The laser is very simple to use especially on the neck have disomogeneous field. The table 1 reproduce the protocol.

### RESULTS

All the patients had a good response to the MLS therapy. The choice of two doses in treatment was dictated by the possible exacerbation of symptoms the first sessions. The figure 1 and the table 1 show the results.

Neck Pain Disability Questionnaire: Before the treatment there were 20 patients in Moderate Disability (20/40%) the other in Severe Disability. At 30 days after the MLS therapy all the patients go to the Minimal Disability score.Tab.2

15 patients (50%) had positive the tests for the neck pain (Foramen Compression Test, Test of distraction, Test of the brachial plexus stretching, Depression Test of the shoulder). After MLS only 3(10%) had the tests positive.

## DISCUSSION

The results described in this article is to highlight the effectiveness of MLS Therapy in the treatment of a disease often does not respond to traditional treatments such as myofascial pain. It is extremely important the fact that the application of this method has achieved significant results already after the first four-five sessions of treatment and in all cases the treaties (the initial and not surprisingly slight inhomogeneities in sample found symptoms is due to the different individual response that usually you register in the system-level trauma sympathetic but it is not relevant for the purposes of the goodness of the results obtained, because the metrics chosen are considered the most reliable and secure). The two groups have had a good overall result. The slightly smaller because the postural therapy has solved the symptom but not the cause that is more difficult to control. The association or the continuation with postural might be a solution for better results [14-18].

There are no data on the durability of response but it is assumed that the post-traumatic group have had greater success. It can therefore be concluded that the issuance is used, which differs from that combined only for specifying synchronization MLS, is able to exercise a significantly greater therapeutic effect. The findings of this study show that the specific emissions continue synchronization and MLS pulsed is capable of inducing synergistic enhancement of therapeutic effects and their analgesic anti-inflammatory drug respectively of the two issues and that such expansion do not get with the superposition of two types of issue.

In conclusion, this study shows that the MLS Therapy exerts a significant therapeutic effect for contemporary and synergistic action on both edemigen and

inflammatory process on transmission mechanism of pain. This helps to ensure a greater benefit to the patient, and ensures a consistent decrease in stroke treatment. With regard to physical therapy with other principals the answer seems faster, with undoubted advantage in drug consumption and recovery of hours of sleep.

## REFERENCES

1. Travell JG, Funt LA. Myofascial pain: diagnosis and treatment. A DM special interview. *Dent.Manage.* 1985;25:44-53.
2. Travell J. Identification of myofascial trigger point syndromes: a case of atypical facial neuralgia. *Arch.Phys.Med.Rehabil.* 1981;62:100-06.
3. Mense S, Simons DG, Hoheisel U, Quenzer B. Lesions of rat skeletal muscle after local block of acetylcholinesterase and neuromuscular stimulation. *J.Appl. Physiol* 2003;94:2494-501.
4. Simons DG, Mense S. [Diagnosis and therapy of myofascial trigger points]. *Schmerz.* 2003;17:419-24.
5. Cooper BC. The diagnosis of extracapsular craniomandibular disorders. *J.Prosthet. Dent.* 1990;64:506-07.
6. Gerwin RD. Classification, epidemiology, and natural history of myofascial pain syndrome. *Curr.Pain Headache Rep.* 2001;5:412-20.
7. L. Vignali, F. Cialdai and M. Monici Effects of MLS laser syste (multiwave locked system) on myoblast cell line (c2c12) *Energy for Health - n.07/11 pag 11-19*
8. S. Palladini, M. Glazar. and L. Dragone MLS laser therapy in dogs with pressure ulcers and open wound: case reports. *Energy for Health - n.07/11 pag 20-24*
9. A. Csapo Efficiency of MLS therapy in abarticular rheumatism revealed by digital thermography and visual analog scale. *Energy for Health - n.08/11 pag 12-17*
10. Corti L et al. Trattamento laser della spalla algica dopo ecografia. *Laser&Technology* 1991; 1: 17-22
11. Hakguder A, Birtane M, Gurcan S, Kokino S, Turan FN. Efficacy of low level laser therapy in myofascial pain syndrome: an algometric and thermographic evaluation. *Lasers Surg Med.* 2003;33(5):339-43.
12. Sandmark H, Nisell R. Measurement of Pain Among Electricians with Neck Dysfunction. *Scand J Rehab Med* 1994; 26: 203-9
13. Fairbanks CT, Couper C, Davies JB, O'Brien JP. The Oswestry low back pain disability questionnaire. *Physio Ther* 1980;66:271-273.
14. Gouilly P, Petitdant B, Woltrager E. Dorsalgies d'Origine Cervicale. *Kinésithérapie Scientifique* 1994; 337: 19-22
15. Kaneoka K, Ono K, Inami S, Hayashi K. Motion analysis of cervical vertebrae during whiplash loading. *Spine* 1999; 15;24(8):763-9
16. Rober L. La Kinesitherapie dans le Traitement des Cepheales de Tension. *Kinésithérapie Scientifique* 1994; 339:15-22
17. Selvaratnam PJ, Matyas TA, Glasgow F. Non-invasive Discrimination of Brachial Plexus Involvement In Upper Limb Pain. *Spine* 1994; 19 (1): 26-33
18. Verhagen A, Scholten-Peeters G, Bie R, Bierma-Zeinstra S. (2004). Conservative treatments for whiplash. *Cochrane Database Syst Rev.* 1:CD03338.