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Hilterapia[®] and lymphoedema.

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ABSTRACT

Lymphoedema is a wide spread disease which consists in the swelling of soft tissues as a result, initially, of accumulation of protein rich fluid in the extracellular spaces. If untreated, this is eventually replaced by fibrous tissue, with reduced oxygenation. Lymphoedema has four main characteristics:

- Excessive protein in the tissues.
- Excessive fluid in the tissues
[both intra and extracellular fluids]
- Excessive deposition of fibrous tissue.
- Chronic inflammatory reactions.

Lymphoedema can be classified as primary and secondary:

1. Primary lymphoedema develops in people with inadequate, insufficient or poorly functioning lymphatics.

2. Secondary lymphoedema develops in response to damage, disease and surgical removal of nodes or irradiation of tissues in radiotherapy.

Lymphoedema develops in people with impaired lymphatic system because of hypoplasia (not enough vessels or nodes), or defective function. Primary lymphoedema is generally genetically inherited. A secondary and more common form of lymphoedema occurs when the lymphatic system has been damaged by surgery or radiotherapy or other kinds of trauma. For example, the trauma of removal of varicose veins or other veins in surgery can lead to overload of the previously normal lymphatic system.

Classical symptoms of lymphoedema are: swelling with severe impairment of mobility and problems in daily activities,

chronical pain. This condition can cause patient depression.

In the treatment of lymphoedema, the goal is to reduce swelling, to increase the mobility of the affected area, to reduce pain, to improve the quality of life.

Traditional treatments for lymphoedema are: manual lymphatic drainage (MLD), compressing treatment with bandages, exercises, informing the patient on his/her new situation. Also low level laser therapy has been proposed with the aim to stimulate the regeneration of lymphatic vessels and improve their function and, in turn, favour the removal of accumulated protein, the removal of fluid [Piller NB, Thelander A. Treatment of chronic postmastectomy lymphoedema with low level laser therapy: a 2.5 year follow-up. *Lymphology*. 1998 Jun;31(2):74-86.] [Young S, Bolton P, Dyson M, Harvey W, Diamantopoulos C. Macrophage responsiveness to light therapy. *Lasers Surg Med*. 1989;9(5):497-505]. In our center a clinical study has been carried out using Hilterapia in women with post mastectomy lymphoedema after the fail of the traditional therapy.

Inclusion criteria : age at least 18 year, sex female, diagnosis of clinically manifested post mastectomy lymphoedema.

Exclusion criteria : presence of comorbidities as metastases, history of severe trauma/disruptive surgery to the arm, instability of conditions, significant changes in the affected arm in the past 3 months, occurrence of cellulitis, inability to abduct the affected arm sufficiently for measuring purposes,

presence of primary lymphoedema in the lower limbs.

Two groups of patients have been formed:

1) Hilterapia group – 15 patients were treated for 3 weeks with Hilterapia, MLD, bandage and exercises 2) control group - 15 patients were treated as (1) but without Hilterapia.

The following protocol was used for Hilterapia: pulsed high power laser Nd:YAG, λ 1064nm, manual scansion. Two phases of treatment have been chosen. In each phase fluence has been increased

[510-610-710 J/cm²] and frequency has been decreased [15-12-10 Hz]. The total energy administered was 3000J. The total session duration was 20 minutes.

Patient assessment was performed as follows:

1) A subjective questionnaire was administered to the patients before and after the 3 week treatment block and at each follow-up visit. The patients were asked about their ability to perform specific activities of daily living, their quality of life, and also to rate their symptoms (pain, tightness, heaviness, pins and needles, cramps, burning feelings, limb size difference, limb temperature difference and range of movement limitation) on a scale 1-10.

2) Objective measures were carried out at the start of every visit. Perometry, by use of infrared sensors to measure the limb circumference every 4mm's, giving extremely accurate volume measures. Tonometry measures, in order to obtain an indication of the extent of fibrotic induration in a limb. Shoulder range of movement and body mass index were also monitored.

All the participants completed the study. The findings showed that extra cellular fluid was significantly reduced after Hilterapia, and this effect was maintained at 1 and 3 months follow up. Tonometry measurements indicated that, in the posterior thorax and in the

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upper part of the arm on the treated side, after the treatment the tissues were softer than before.

Subjective questionnaire answers showed statistically significant decreases in pain, tightness, heaviness, cramps, limb temperature difference, size difference between the limbs, pins and needles.

No significant side effects were reported during the trial. A few participants reported a slight increase in pain or a feeling of lightness in the upper arm but overall there was no difference in reported side effects between Hilterapia group and control group.

In conclusion, the results of our study suggest that Hilterapia can be effective in reducing the symptoms of lymphoedema by decreasing the fluids accumulated in the affected limb and, consequently, making the tissue softer, thus improving life quality of patients.

This study was carried out by the author with an independent decision. Energy for Health only reports the protocol and results of the study as received from the authors.

The use of lasertherapy to treat oncologic patients is a much discussed subject. Even if there are medical centres where lasertherapy is used to treat oncologic patients, many physicians have the opinion that great caution must be used in this matter seeing that the actual knowledge on the effect of laser on tumor cells is not enough to exclude all possibility of doubt on possible dangerous consequences.

The Editorial board of Energy for Health decided to publish the above note, reporting the protocol and results of the study as received from the authors and in respect of their research autonomy, with the aim to promote the discussion on such an important subject and to stimulate research activity in this field. All the researchers are invited to contribute to the discussion sending us their opinion (in the form of a note) and their studies.

Frozen Shoulder Syndrome

weighted comparison from “static & dynamic” treatment with Nd/YAG 10W pulsed laser.

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ABSTRACT

The use of laser methodical in dynamic is lot, at our physiotherapy centre of Aosta, after observation that other electro-medical methods used by us and that commonly are used in dynamic, allowed to amplify the results obtained by the same in static.

From this premise, we started to treat different orthopedic pathologies, both primitive and post-traumatic or surgical, with this method, by observing that this type of laser, particularly effective on both the pain that on the articular function, allowed to obtain better results on the patient's response.

Between all the diseases tested, in our opinion, the one that had more important results in this therapy was the frozen shoulder syndrome, and so we have begun to study what could be the dynamic exercises that could amplify this potential, never observed with any other method.

The machine we used is a 10W HIRO 3.0 pulsed Nd:YAG laser, with which we could appreciate a powerful analgesic and, consequently, functional effect.

The study on the dynamic method was played from November 2006 to April 2007 on 6 patients (4 women and 2 men) but only 2 we had the opportunity to acquire images and video.

The method used initially consisted of simple exercises of Codman (pendulum exercises), carried out in the total absence of pain and strictly in orthostasis, shining the skin surface under which the patient said he feels the pain at the active/passive mobilisation. Then move in the second phase to exercises of wider shoulder mobilisation, both active and passive.

We are currently studying the possibility of use more complex exercises, both of proprioception that of force.

In the preliminary results of dynamic treatment with pulsed Nd:YAG laser on 6 patients with frozen shoulder disease, this method has made clear the very important additional contribution of results both on the pain that on the mobility of shoulders affected by that syndrome.

Even if this report does not have a scientific validity about the effective additional results of dynamic than the static laser method, because the number of cases treated is too small to be considered scientifically, in our opinion the outcome obtained deserve particular attention, from the point of view of physiological-functional study, because it could open the way for future more effective and quick methods of orthopaedic diseases.