RianCorp ILLUMINATIONS

Customer Quarterly Newsletter • September 2010

THERAPIST FOCUS

Name:

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Location of Practice:

Dominican Santa Cruz Hospital, Outpatient Lymphedema Management Program.

How long have you been using the LTU-904:

Since 2007. I first saw it at the 2006 NLN Conference and was intrigued; I've followed the use of laser and light therapy for over 20 years and waiting for the right instrument to clear FDA for human use (for many years they've been approved for veterinary use.) We were fortunate enough to have a demo laser in our clinic for a month and in that time I used it with 10 patients, all of whom had significant improvement. I did a retrospective patient satisfaction survey and presented data to our hospital foundation and they gave us their support to purchase our first laser.

Most inspiring or intriguing laser story:

Using the laser on myself, actually. I live surrounded by coastal oaks and redwoods, and poison oak is prevalent in my area. I have experienced severe skin outbreaks that took weeks to resolve requiring topical and oral steroid use. I used the LTU-904 at the beginning of a new outbreak and was elated when symptoms cleared within minutes.

What do you use the laser for:

I use it daily in my lymphedema clinic to treat surgical fibrosis, radiation fibrosis, post-cellulitis fibrosis and lymphostatic fibrosis. I also use it to facilitate wound healing and as an anti-inflammatory agent. Our philosophy of treatment is early intervention for the root causes of tissue damage to prevent or lessen a lifetime of lymphatic congestion.

WELCOME BACK

We are back with our second edition of RianCorp ILLUMINATIONS. We hope you enjoy this issue, and be sure to look out for our special Christmas edition in December as it will feature some fabulous competitions and giveaways. We will also have a review of the 9th NLN International Conference in Orlando, Florida held in August.

NEW RESEARCH:

This trial using the LTU-904 laser was recently published in the Australian Journal of Basic and Applied Sciences:

Laser Acupuncture Therapy Added to Inspiratory Muscle Training and Postural Drainage Improves Treatment of Children with Bronchopneumonia

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Abstract

BACKGROUND: Bronchopneumonia is the leading cause of child death worldwide, causing the deaths of more than 2 million of underprivileged and poor children every year.

OBJECTIVE: The aim of this study was to detect values of laser therapy addition to inspiratory muscle training and postural drainage in management of children with bronchopneumonia.

MATERIALS & METHODS: Forty children with bronchopneumonia, their age ranged between 3 to 5 years and were included into 2 equal groups; group (A) received low intensity laser therapy, inspiratory muscle training using incentive spirometer associated with postural drainage in addition to medical treatment at a frequency of 3 sessions per week for one month. The second group (B) received inspiratory muscle training using incentive spirometer associated with postural drainage in addition to medical treatment. Measurements of IgG, WBCs, CRP and SaO2 were obtained for both groups before treatment and after one month at the end of the treatment program.

RESULTS: The mean values of WBCs and CRP were significantly lower, where the mean values of IgG, and SaO2 were significantly higher in both groups after treatments. There were significant differences between mean levels of the investigated parameters in group (A) and group (B) after treatment.

CONCLUSION: Laser acupuncture therapy added to inspiratory muscle training combined postural drainage is of value in management of children with bronchopneumonia.

The full article can be accessed online here:
http://www.insipub.com/ajbas/2010/1001-1006.pdf

(The United States Food and Drug Administration has cleared the RianCorp LTU-904 for marketing as a tool as part of a therapy regime for the treatment of post mastectomy lymphedema.
The RianCorp LTU-904 is approved for sale in Australia and the European Union as a tool as part of a therapy regime for the treatment of post mastectomy lymphedema and for the treatment of muscular skeletal pain.)

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NEWS

The RianCorp website will soon have a worldwide Therapist Database. This will help potential clients find a relevant LTU-904 laser practitioner in their area. If you would like to be included on the database, please contact RianCorp for more information.

TIP

Want to check your laser output? Then use the supplied Invisible Laser Radiation Indicator card regularly. Leave the card out of the carry case for a few minutes before testing as it needs to be charged by white light (sunlight or electrical light). Point the laser tip close to the small square pad on the card and operate the unit in the usual way. The pad should emit an orange glow.

A New Advance in Lymphedema Therapy

By Wilma Morgan-Hazelwood, OTR/L, CLT-LANA; Jenna Balaicuis, DPT, CLT

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Lymphedema, an excess of fluid and protein caused by impaired lymph flow from the tissue, is a common and debilitating complication of cancer surgery and radiation treatment.[1] Depending on which area and lymph nodes are affected, the areas of edema or swelling can be the arms, legs, head and neck, trunk, abdomen, or groin. Lymphedema is not a life-threatening condition but is one that has no cure. According to the American Cancer Society, complete decongestive therapy (CDT) is the recommended standand of care.[1] CDT is a combination of four elements: compression (including bandaging and garments), skin care, exercise, and manual lymph drainage. Developed in the 1930s, manual lymph drainage is a gold standard for care, and the same techniques are still used today. Although this technique is effective, research continues into newer methods for treating lymphedema. The newest device is the low-level laser. In 2006, the US Food and Drug Administration (FDA) approved low-level laser therapy (LLLT) for professional and self-treatment of lymphedema in postmastectomy breast cancer patients.

Laser therapy and applications

LLLT has been found to affect fibroblasts and collagen synthesis, influencing the tissue repair process.[2] This application could be used in the treatment of surgical scars that restrict movement, cause pain, and impede lymph flow, such as those after mastectomy. Some research suggests that LLLT also stimulates lymphatic motoricity and lymphangiogenesis through an invisible wavelength penetrating into tissue, where it is absorbed by cells and converted into energy used to reduce tissue swelling.[2] Other research has shown an increase in microcirculation and acceleration of collateral circulation after tissue injury.

Specifications of the laser

The LTU-904 (RianCorp) is a class I laser per FDA regulations and its use is approved for the treatment of postmastectomy lymphedema. The LTU-904 is a handheld, battery-powered, nonthermal, infrared laser, operating at a wavelength of 904 nm with a controlled series of 200-ns bursts of pulses along this spectrum. [3] At this wavelength, tissue penetration is up to 3 cm to 5 cm deep.[3] Treatment with the LTU-904 may be used in conjunction with manual lymph drainage and occurs directly in contact with the skin, on areas of lymph nodes or surgical scars, or on the limb in areas of textural change (ie, fibrosis). Its use requires a physician prescription and, initially, it should be used only under the supervision of a trained clinician. Because of its portability and ease of use, however, in the future, LLLT could be used at home by patients with lymphedema, including the elderly or those lacking dexterity for self-massage. Although there are no known contraindications to LLLT, its safety and effectiveness in treating postmastectomy lymphedema in pregnant women or those under 18 have not been evaluated. [3] If an affected limb becomes infected or if metastatic cancer develops, treatment should be discontinued. Should dizziness, nausea, or increased discomfort occur, the patient should reduce treatment and seek medical guidance. Safety and effectiveness of the device when used consistently beyond two 3-week treatment blocks (three times per week, every 2 days) has not been evaluated.[3]

Research that paved the way

Credited for the initial studies using LLLT in breast cancer patients, the School of Medicine at Flinders Medical Centre in South Australia laid the groundwork for LLLT in the United States. In 1998, Piller and Thelander studied 10 patients with unilateral arm lymphedema following mastectomy and radiation. These patients all received 16 treatment sessions of

LLLT over a period of 10 weeks, and seven of the 10 patients received long-term follow-up, up to 3 years.[4] Immediately posttreatment, volumetrics decreased, tissue softened, and patients reported improvement in sensation of aching, tightness, and heaviness. Although long-term follow-up subjective responses trended toward pretreatment values, arm circumference showed continued reduction patterns, and the affected forearm and chest areas lacked progressive induration.[4] In 2003, Carati and colleagues published results of the first double-blind, placebo-controlled trial of the use of LLLT to treat postmastectomy lymphedema.[2] The study, conducted over a 1- year period, included 64 patients, randomly assigned to a laser or placebo-laser group. It included a parallel study (within group comparison) aimed to assess one cycle versus two cycles of laser treatment. All treatment was directed to the axillary region of the affected arm, using a grid to demarcate 17 treatment points to guide application. Each laser treatment lasted 17 minutes, 1 minute per treatment point, and a cycle of treatment included nine sessions (three times per week for 3 weeks). Following two cycles of active LLLT, arm volume, tissue hardness, and extracellular fluid levels were significantly reduced on both 1- and 3- month follow-up. One cycle of active treatment or placebo treatment had no significant effect on limb volume, nor did any group show significant improvement in arm range of motion.

Present research

Although research into the use of LLLT in the postmastectomy lymphedema population continues, there have been few studies that compare with the design and magnitude of those of Carati and colleagues. Recently, a randomized controlled trial of 64 participants looked at volume reduction and pain, comparing 1 month of LLLT (20 minutes, three times per week) to 1 month of pneumatic compression pump therapy (twenty 2-hour sessions).[5] Although initial follow-up at 1, 3, and 6 months posttreatment showed a reduction in arm volume in both groups, only the LLLT group continued to show a significant decrease after 12 months. Likewise, both groups noted reduction in pain immediately after treatment, but this reduction remained significant only in the LLLT group at 3-, 6-, and 12 month follow-up. Another study with a small sample size and a 1 month follow up period did attempt to measure quality of life along with arm volume and tissue resistance.[6] Disabilities of Arm, Shoulder, and Hand (DASH) outcome measure scores showed improvement in the LLLT treatment group, which continued to the 1 month follow-up. Currently, Ridner and associates of Vanderbilt University School of Nursing are studing the impact of different types of lymphedema treatment, including LLLT and manual lymph drainage, on patient symptoms, arm volume, and quality of life under a grant from the Oncology Nursing Society (ONS). The study will include 90 participants at a Florida clinic over the course of 2 years.[7] Patients will be randomized into three groups: laser only, manual lymph drainage only, and a combination of the two. The study also aims to determine what treatment dose of laser therapy is effective.

Laser trial at Fox Chase Cancer Center

Before purchasing the device, our clinic had the opportunity to test the laser and determine its effectiveness in our population to justify the cost of purchase. Because of a lack of broad-based research, we conducted case studies to determine its effectiveness. Even in “Putting Evidence into Practice,” the ONS lymphedema management team ranked LLLT as “evidence not established.”[8] Our clinic followed the treatment protocol for upper limb secondary lymphedema and treatment frequency in the manufacturer’s manual.[3]

For the case studies, we used three patients with similar criteria:

- Breast cancer in remission
- Chronic moderate, but stable, lymphedema
- Successfully completed one to two courses in CDT
- Followed a dedicated home program of exercise, skin care, self-massage, and compression therapy.

We applied LLLT to the axillary region of the affected arm, covering approximately 17 points (each point covering a 2-cm area). Each point received 1 minute of laser treatment. We also expanded our area to cover scar tissue and fibrotic tissue for the affected arm, chest, trunk, or hand. The maximum dose received in an individual treatment session was 36 points to the affected quadrant, with only 25 minutes of laser therapy. Following the manufacturer's guidelines, some points were held for only 30 seconds. While performing LLLT, the therapist also provided manual lymph drainage massage, specifically to the lasered area as well as the affected quadrant. Throughout the LLLT sessions, patients continued to follow their previous home maintenance program of skin care, exercise, and compression therapy.

Findings

Each of the three patients lost more than 200 mL (233-279 mL), which is a 6% to 11% change in the affected limb. The patients' skin quality improved throughout the entire limb, but each of the areas treated for scar or fibrotic tissue showed marked improvement with softening and pliability. In Patient B, the effects were evident after the second treatment, with a 203-mL decrease (a 6% change). In Patient A, however, the effects went unnoticed until the sixth treatment, with a 141-mL decrease (a 5% change). The patients found it easier to put on their compression garments and looser areas of compression. All three needed new custom compression garments at the end of treatment. Surprisingly, even during the month long treatment break, patients noted improvement in skin texture and a 0% to 3% decrease in volume. Each patient will be followed at 3-month intervals for reassessment of the affected limb and volumetrics.

Although LLLT is not a cure for lymphedema, it is a tool that can contribute to patients' treatment programs and further enhance their progress. From this limited study, all three patients demonstrated positive results without any side effects or contraindications.

References

1. Lawenda BD, Mondry TE, Johnstone PAS. Lymphedema: a primer on the identification and management of a chronic condition in oncologic treatment. CA Cancer J Clin. 2009;59:8-24.
2. Carati JC, Anderson SN, Gannon BJ, Piller NB. Treatment of postmastectomy lymphedema with low-level laser therapy: a double blind, placebocontrolled trial. Cancer. 2003;98:1114-1122.
3. LTU-904 portable laser therapy unit [user manual]. Richmond, South Australia: RianCorp; 1998.
4. Piller NB, Thelander A. Treatment of chronic postmastectomy lymphedema with low level laser therapy: a 2.5 year follow-up. Lymphology. 1998; 31:74-86.
5. Ridner SH. An assessment of the role of low-level laser therapy in the treatment of lymphedema. NLN LymphLink. 2009;21:8-9,31.
6. Lau RWL, Cheing GLY. Managing postmastectomy lymphedema with low-level laser therapy. Photomedicine and Laser Surgery. 2009;27:763-769.
7. Hast L. Laser treatment studied to ease lymphedema. Vanderbilt-Ingram Cancer Center News. November 10, 2009. www.vicc.org/news/?p=1013. Accessed January 20, 2010.
8. Poage E. Case study: low-level laser therapy in complicated post-breast cancer lymphedema. NLN LymphLink. 2009;21:5-6

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