ORIGINAL ARTICLE

Godoy method for treatment of arm lymphedema women's after breast cancer

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Abstract

Background: Lymphedema is a chronic progressive condition its development is an active dynamic process. *Aim and Objectives*: The aim of this study is to report the rapid reduction in volume of breast cancer treatment-related arm lymphedema women's with five days of intensive treatment. *Material and Methods:* The intensive treatment of breast cancer treatment-related lymphedema in thirty-one consecutive female patients aged between 40-76 years old with a mean age of 58.0 years was evaluated in a prospective clinical trial. Daily treatment sessions comprised 15 minutes of cervical lymphatic therapy (cervical stimulation), between 4 and 5 hours of mechanical lymph drainage, 3 to 4 hours of manual lymph drainage adapted to the pathophysiology of edema and a compression sleeve made from grosgrain fabric that was adjusted once or twice every day because of the reductions in the size of the arm. The study was carried out in the Clinica Godoy in 2013-2015. The limb volumes of all patients were measured using water displacement volumetry at the start and end of each treatment session. The paired t-test with an alpha error of 5% ($p < 0.05$) being considered statistically significant. *Results:* Reductions in limb volume were detected for all lymphedematous limbs (paired t-test: $p < 0.0001$). *Conclusion*: Intensive treatment enables significant reductions in the volume of the limb in one week with breast cancer treatment-related lymphedema women's.

Keywords: Breast Cancer, Cervical Lymphatic Therapy, Lymphedema

Introduction

Lymphedema is a chronic progressive condition; its development is an active dynamic process, characterized by abnormal accumulation of macromolecule-rich fluid in the tissue resulting from dysfunction of the lymphatic system caused by an imbalance between the formation of lymph and drainage from the initial lymph vessels [1-3].

Lymphedema disease can decreased ability to work and decreased financial outcomes for the patients however, there are few clinical studies in specific areas to support and guide treatment. Patients experience severe physical and psycho-social problems and, for most, the disease directly affects their quality of life [4-6].

The causes may be congenital or acquired with filariasis and neoplasms being the main secondary causes of the disease. Of particular concern is arm lymphedema after the treatment of breast cancer where surgery and radiotherapy can lead to failure of drainage pathways; [7-8] in this case prevalence ranges from seven to more than 50% of patients, depending on the type of surgical approach and the complementary therapy used [9-10].

A combination of conservative techniques is recommended in the treatment of lymphedema, with the main approaches including manual and mechanical lymph drainage, bandaging, hygienic care, and exercise, included preventive exercise

during chemotherapy [11], myolymphokinetic activities and drug therapy [12-15]. The intensive 8-hour daily treatment program suggested by Godoy and Godoy uses several of these techniques aiming at reducing the lymphedema over a short period of time, thereby facilitating maintenance of the results [12] The program includes manual lymphatic therapy (Godoy and Godoy technique), mechanical lymphatic therapy (by using RAGodoy ® device), and the continuous use of an inelastic compression garment made of grosgrain [12, 16-17]. The aim of this study is to report the rapid reduction in volume of breast cancer treatment-related arm lymphedema with five days of intensive treatment.

Material and Methods

Ethical consideration

This study was approved by the research ethics committee of the Medicine School in Sao Jose do Rio Preto, Brazil (FAMERP-n0 531.574) and all participants signed written consent forms.

The intensive treatment of breast cancer treatment-related lymphedema was evaluated in a prospective clinical trial, using manual lymphatic therapy, mechanical lymphatic therapy (RAGodoy®), cervical stimulation and a compression mechanism made of grosgrain fabric (sleeve). The study was carried out in the Clinica Godoy in 2013-2015.

Thirty-one consecutive female patients aged between 42-76 years old with a mean age of 58 years were enrolled in this study. All patients had breast cancer treatment-related arm lymphedema and agreed to participate in the intensive treatment program. Patients with shoulder immobility, neurological damage, and infections, and those who were unable to use grosgrain sleeve or lie down for a long period were excluded.

The limb volumes of all patients were measured using water displacement volumetry at the start and end of each treatment session. Daily treatment sessions comprised 15 minutes of cervical lymphatic therapy (cervical stimulation), between 4 and 5 hours of mechanical lymphatic therapy, 3 to 4 hours of manual lymphatic therapy adapted to the pathophysiology of edema and a compression sleeve made from grosgrain fabric that was adjusted once or twice every day because of the reductions in the size of the arm. Manual lymphatic therapy, using the Godoy and Godoy technique, was performed taking into account the clinical pathophysiological of the edema. In this approach, draining of the cephalic and posterior chains (alternative routes) is performed with manual compression along the route of the lymphatics [18]. When edema of the hand was observed, drainage of the cephalic chain was not performed. Mechanical lymphatic therapy used the RAGodoy® electro-mechanical device, which makes passive flexion and extension movements of the elbow. Cervical lymphatic therapy comprises of slight displacement of the skin in the cervical region without compression of the lymph nodes.

Statistical analysis

Descriptive statistics were used with an evaluation of the mean, median and standard deviation employing the paired t-test with an alpha error of 5% (p-value < 0.05) being considered statistically significant.

Results

Reductions in limb volume were detected for all lymphedematous limbs (paired t-test: $p < 0.0001$). Figure 1 show compares the volume between normal and lymphedematous limbs, before and after treatment.

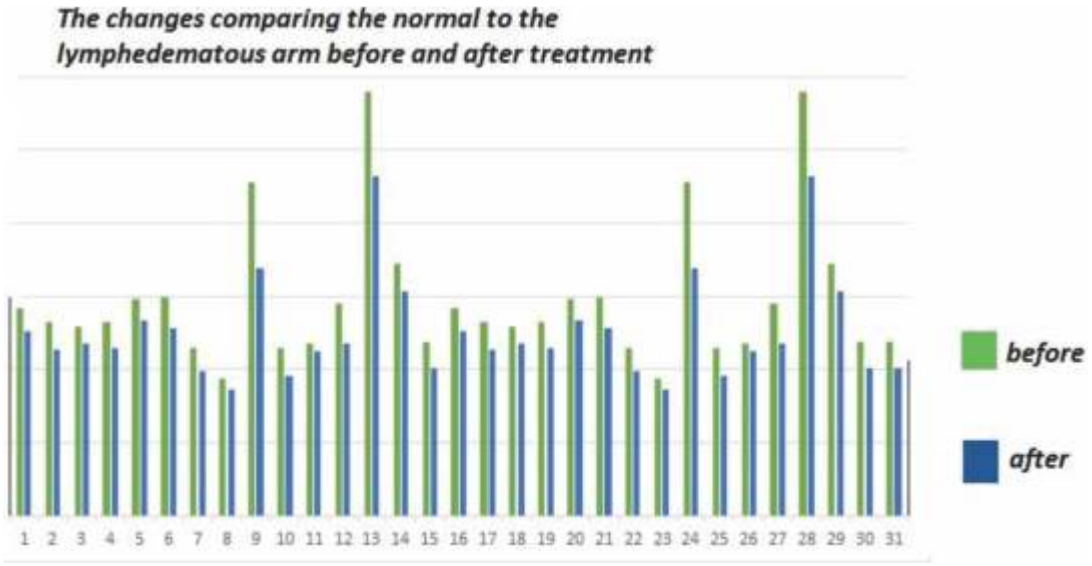

Figure 1: Comparison of the volume between normal and lymphedematous limbs, before and after treatment

Discussion

The present study evaluated five days of intensive treatment for breast cancer treatment-related lymphedema and shows that it is possible to obtain significant reductions in a short period of time. A combination of techniques including cervical stimulation [19-20], mechanical lymphatic therapy [17], manual lymphatic therapy [20-21], and a handmade compression garment (sleeve) made from a grosgrain fabric [22] was used. In this approach, the mechanical and manual lymphatic therapy causes fast reductions in the edema; the reduction is slower when only compression therapy associated with exercises and myolymphokinetic activities is used.

There is no cure for lymphedema, but it is possible that, with treatment, the size of the limb is reduced to its normal size or close to normal. The intensive regimen has the advantage of rapid reductions with the possibility of the patient seeing the goals of treatment and the care that is necessary. In intensive treatment, frequent adjustments of the compression mechanism are essential. Moreover, the patient learns about taking care of the arm and of the complications that may occur. If the compression garment is not adjusted well, its effectiveness is lost and the sleeve can rub the skin causing sores. During the week long treatment program, the patient is constantly counseled on the necessary precautions and accompanies the reduction in limb volume.

Intensive treatment of either upper and lower limbs allows reductions of around 50% in the first week; reductions in the second week are approximately 10 to 30%, but the size of the limb continues to decrease until it is normal or close to normal. These details are important in the clinical practice to establish a time schedule for the patient's treatment plan. It is suggested that at least 70% of the limb volume should be reduced during intensive treatment because then the adjustments of the compression garment are less frequent and it is easier to put on and remove. From this moment

the patient can continue treatment at home using grosgrain compression garments associated with normal, albeit carefully controlled, daily activities. Some patients even continue to do mechanical lymphatic therapy at home for one to two hours per day until the edema has been reduced completely. Another option is to continue the intensively regimen until the limb size is about normal.

The maintenance phase starts after total reduction of edema at which time adaptations are necessary depending on the reality of each patient. Many use a grosgrain garment every day while others use this type of garment for a few days per week, interspersed with other types of compression garments (elastic sleeve). The goal is to keep the limb size normal or close to normal. A therapeutic flexibility is possible such as no treatment for days or even weeks as long as no swelling is observed. Patients should counseled to try to use the compression sleeve every day to see whether it fits well or has started getting tighter; in the latter case its use is essential. Grosgrain is a low-stretch fabric made with 100% polyamide, 100% polyester or one of these mixed with cotton.

Manual lymphatic therapy is important and we recommend volumetry or another examination suitable to the conditions of the patient to assess the progress of treatment. Moreover, the use of medications is important, especially during the summer when vasodilation and edema due to venous insufficiency may contribute to aggravate lymphedema.

The proposed lymphatic therapy technique for breast cancer treatment-related lymphedema is tailored to the pathophysiology of the lymphatic system after the surgical removal of axillary lymph nodes [13]. After treatment the head and the back lymphatic pathways are patent with the rest probably being blocked by surgical ligation. One study, which will be published shortly, shows that when the hand is swollen, draining the cephalic chain for one hour does not lead to any reduction in the edema, however when the hand is not swollen, the edema reduces significantly.

Intensive treatment is the fastest option to reduce the volume of lymphedema, but non-intensive treatments are also effective and more indicated in the day-to-day practice [12]. The implementation of intensive regimens is difficult not only for treatment center but also for patients making this approach limited too few individuals. However, it is essential that the patient and the staff try to reduce the edema totally or almost totally.

Conclusions

Intensive treatment enables significant reductions in the volume of the limb in one week with breast cancer treatment-related lymphedema women.

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