

Grograin Stockings in the Treatment of Primary Congenital Lymphedema

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ABSTRACT

Aim: The aim of the present study was to evaluate grograin c stockings in the reduction and maintenance of the results of treatment for lymphedema.

Method: A prospective clinical trial was performed with 45 patients who made use of grograin stockings as monotherapy for the treatment of lower limb lymphedema with the analysis of the volumetric reduction using bioimpedance at the Clinica Godoy-Brazil. These stockings are hand-crafted and adapted to each patient, with adjustments made as necessary.

Results: The mean reduction in volume was from 7.1 to 6.0 L (standard deviation: 1.56 L). This reduction was statistically significant (p-value < 0.0001, paired t-test). A total of 17 (18.8%) of the 90 limbs did not undergo reductions, but rather had discrete numerical increases. However, these increases were not statistically significant in this group of patients (p-value = 0.08, paired t-test).

Conclusion: Grograin stockings are effective for the treatment of primary congenital lymphedema when used in accordance with the recommended instructions.

Keywords: lymphedema, treatment, grograin stockings, primary congenital

INTRODUCTION

Lymphedema is a clinical condition stemming from a failure of the lymphatic system in the formation or drainage of lymph. The cause can be congenital or secondary and aggravating factors can contribute to the increase in edema [1]. The combination of therapies is recommended, such as compression mechanisms (stockings and bandages), manual and mechanical lymphatic drainage, exercises and activities of daily living [2].

Stocking or sleeves are fundamental to both treatment and the maintenance of the results. For such, circular elastic stockings or a flat fabric are the most indicated [3,4]. In recent years, Godoy & Godoy have developed a novel concept involving hand-crafted stockings made of grograin fabric. These stockings develop both working and resting pressure and therefore meet the criteria for the compression mechanism [5-9].

Several studies have shown that these stockings can be used at all ages and reduce the volume of the limb, thereby treating lymphedema [10]. Proper continual adjustments are

fundamental to achieving the best results. For such, the patient needs to be counseled and trained for the adequate use of these stockings. Weekly adjustments enable better results in comparison to bi-weekly and monthly adjustments.

The aim of the present study was to evaluate grograin c stockings in the reduction and maintenance of the results of treatment for lymphedema.

METHODS

Patients

Forty-five consecutive patients who made use of grograin stockings for lymphedema treatment of limbs who returned for follow up in a two-week period at the Clinica Godoy-Brazil in December 2018.

Design

A prospective clinical trial was performed with 45 patients who made use of grograin stockings as monotherapy for the treatment of lower limb lymphedema with the analysis of the volumetric reduction using bioimpedance.

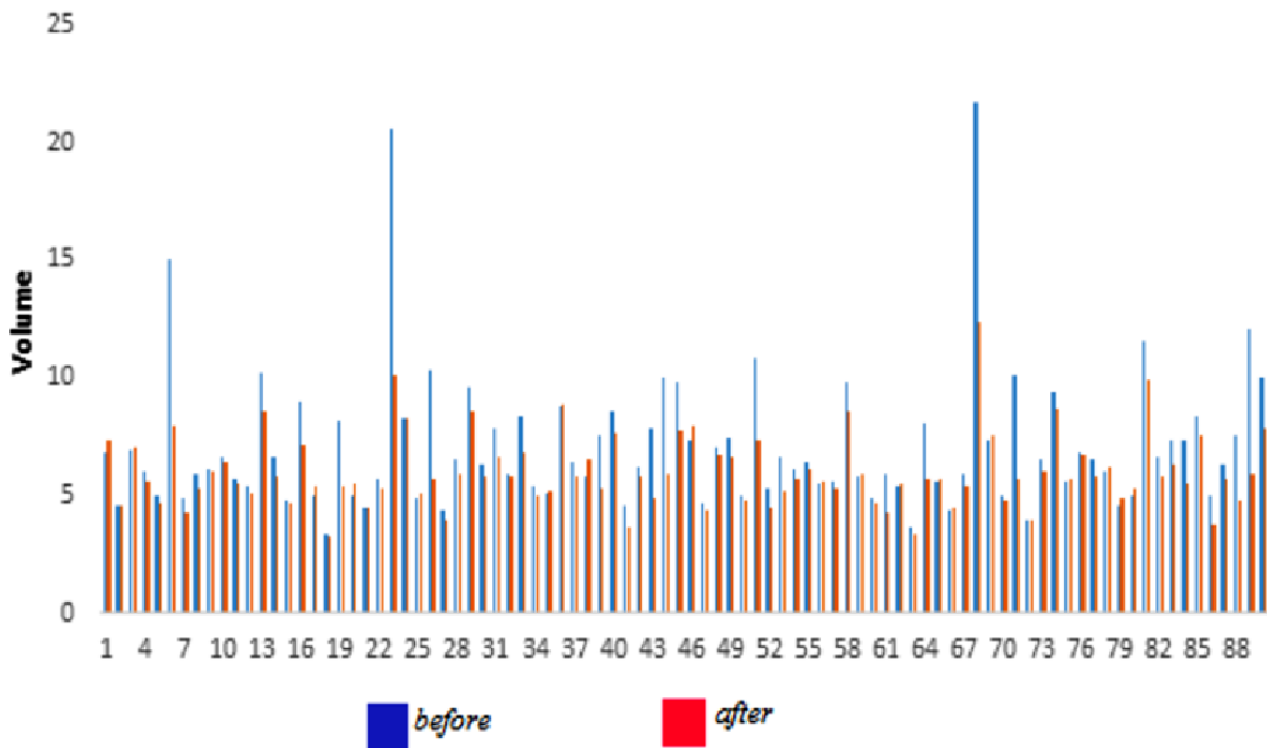


Figure 1. The variation of the volume of each limb before and after the treatment with the grosgrain stockings as monotherapy

Inclusion Criteria

Patients with primary lymphedema making use of grosgrain stockings.

Exclusion Criteria

Patients in other forms of treatment that could affect the results, such as lymphatic therapy, infection and other causes of edema diagnosed clinically.

Development

Evaluated patients with primary lymphedema of the lower limbs who made use of grosgrain stockings as monotherapy. These stockings are hand-crafted and adapted to each patient, with adjustments made as necessary. There are two types of adjustment. One is performed by the patient himself/herself, with the tightening of the stocking by adjusting the laces as needed, accompanying the reduction in edema (**Figure 1**). The other is made by a seamstress as the limb reduces in volume and the stocking no longer performs the function of compression. The patients were trained to place and adjust the stockings properly, returning after one week for reevaluation, during which those who were not placing the stocking properly were trained further. After the learning phase, the patients were instructed to seek adjustments with a seamstress whenever necessary. The patients then returned for reevaluations when they were able, allowing for the difficulties in returning due to the distance to the clinic and other considerations. Upon each return visit, routine evaluations were performed, such as the measurement of circumferences, volumetry using the water displacement method and bioelectrical impedance analysis. For the present study, only the bioimpedance results were considered.

Randomization

Consecutive patients who returned to the clinic in the period were evaluated.

Statistical Analysis

The paired t-test was used, considering a 5% alpha error.

Ethical Considerations

This study received approval from the Human Research Ethics Committee of São José do Rio Preto School of Medicine # 58462.

RESULTS

The sample was composed of eight men and 37 women. Mean age was 49.9 years. The mean reduction in volume was from 7.1 to 6.0 L (standard deviation: 1.56 L). This reduction was statistically significant (p -value < 0.0001, paired t-test). A total of 17 (18.8%) of the 90 limbs did not undergo reductions, but rather had discrete numerical increases. However, these increases were not statistically significant in this group of patients (p -value = 0.08, paired t-test). **Figure 1** shows the variations of the volumes of each limb before and after the treatment with the gorgurão socks as monotherapy.

DISCUSSION

The present study is part of a line of research on the use of grosgrain stockings and confirms their effectiveness in the treatment of primary lymphedema of the lower limbs. A number of previous studies evaluating different aspects of these stockings have shown that they are effective for treatment as well as maintaining the results.

This study examined the evolution of edema in a sample of patients without rigorous control of the use of the stockings, which is closer to the real-life situation. Initial counseling and training are essential for patients to place the stockings properly and make the adjustments as needed. Reevaluations are important, as some patients follow the instructions rigorously, whereas others do not place the stocking properly. Therefore, the initial evaluations are educational, emphasizing the need to follow the proper placement and adjustment of the stockings.

Many patients are able to put the stockings on by themselves, whereas others have difficulties due to age, obesity or other factors. Such individuals require the assistance of others, who also need to receive instructions for proper placement and adjustments; otherwise, the stocking will not achieve the desired results. The reduction in volume is dynamic and the change in volume can often lead to a change in the positioning of the stocking, which can be uncomfortable and even cause injury. Therefore, counseling on these aspects is fundamental, as with any other stocking.

An increase in the volume of the limb can occur at any time due to the incorrect use of the stockings. Therefore, it is better to have as many reevaluations as possible. This study demonstrates that patients who routinely use the stockings correctly will experience a reduction in volume and the maintenance of the results with no need for constant reevaluations. However, studies have shown that weekly reevaluations lead to a greater reduction in comparison to bi-weekly or monthly reevaluations. Therefore, a certain degree of flexibility can be allowed in some cases, but more frequent reevaluations lead to the normalization of the limb within a shorter period of time.

Another aspect is the combination with elastic stockings after the normalization or near normalization of the edema. Elastic stockings are simpler, easier to wear and esthetically more pleasing. When alternated with grosgrain stockings, elastic stocking can maintain the results of treatment.

CONCLUSION

Grosgrain stockings are effective for the treatment of primary congenital lymphedema when used in accordance with the recommended instructions. Another aspect is the combination with elastic stockings after the normalization or near normalization of the edema.

Author contributions: Study Design: **MFGG, SB, PPGC, HJPG, JMPG**. Data Collection: **MFGG, SB, PPGC, HJPG, JMPG**. Statistical Analysis: **HJPG, JMPG**. Data Interpretation: **HJPG, JMPG**. Manuscript Preparation: **MFGG, SB, PPGC, HJPG, JMPG**. Literature Search: **MFGG, SB, PPGC, HJPG, JMPG**. All authors have sufficiently contributed to the study, and agreed with the results and conclusions.

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