

USE OF COMPRESSION GARMENT IN THE TREATMENT OF MALIGNANT LYMPHEDEMA IN A PATIENT WITH RECURRENT BREAST CANCER: CASE REPORT

Utilização de vestimenta compressiva no tratamento do linfedema maligno em paciente com câncer de mama recidivado: relato de caso

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ABSTRACT

Introduction: Malignant lymphedema is a rapidly progressive condition, and its treatment is a major challenge. **Objective:** To demonstrate the benefit of using compression garments in reducing limb volume and improving the symptoms of a patient with malignant lymphedema with recurrent breast cancer. **Case report:** A 67-year-old woman, diagnosed with a 2.3 cm, triple negative, invasive ductal carcinoma in the left breast, submitted to quadrantectomy with axillary dissection (T2aN1bM0). The patient developed benign lymphedema after eight years of surgery, but only started complex decongestive physiotherapy three years after the diagnosis, presenting an important improvement. The following year, the patient returned with complaints of worsening lymphedema. At the examination, there was an expressive volume increase and areas of vascular alteration in the left upper limb (LUL) and in the anterior quadrant of the thorax. The exams confirmed axillary vein thrombosis due to tumor obstruction. Lymphoscintigraphy showed unsatisfactory lymphatic drainage. As a last treatment option, the use of LUL low elastic compression garment was adopted, after poor success after the use of multi-layered compression bandages. LUL volume was 6,158.1 mL prior to using the garment. After ten days of continuous use, the volume decreased to 5,174.2 mL. In the last evaluation, the volume was 4,510.8 mL, presenting a reduction of 1,647.3 mL (26.7%). The patient developed acute respiratory failure caused by pleural metastasis, and died. **Conclusion:** The compression garment provided benefits such as significant improvement in the feeling of heaviness in the limb due to the reduction of volume and in the ease of putting on and taking off the garment in or make the hygiene, when compared to the multilayer compression bandages. Other advantages were the reduction of costs and the promotion of well-being.

KEYWORDS: lymphedema; breast cancer; physiotherapy specialty.

RESUMO

Introdução: O linfedema maligno é uma condição com rápida progressão, e seu tratamento é um grande desafio. **Objetivo:** Demonstrar o benefício do uso de vestimenta compressiva na redução do volume do membro e na melhora dos sintomas de uma paciente com linfedema maligno após câncer de mama recidivado. **Relato de caso:** Colocar paciente de 67 anos, sexo feminino, com diagnóstico de carcinoma ductal invasor em mama esquerda com 2,3 cm e triplo negativo, submetida a quadrantectomia com esvaziamento axilar (T2aN1bM0). A paciente desenvolveu linfedema benigno após oito anos de cirurgia, porém só iniciou tratamento fisioterapêutico com terapia física complexa descongestiva três anos após o diagnóstico, apresentando melhora importante. No ano seguinte, retornou ao consultório com queixa de piora do linfedema. Ao exame, apresentava aumento de volume expressivo e áreas de alteração vascular no membro superior esquerdo (MSE) e no quadrante anterior do tórax. Os exames confirmaram trombose de veia axilar por obstrução tumoral. A linfocintilografia demonstrou ausência de drenagem linfática satisfatória. Adotou-se, como última opção de tratamento, o uso da vestimenta compressiva de baixa elasticidade de MSE, após

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baixa resposta do enfaixamento compressivo multicamadas. O volume do MSE era de 6.158,1 mL antes do uso da vestimenta. Após dez dias contínuos de uso, o volume diminuiu para 5.174,2 mL. Na última avaliação, o volume era de 4.510,8 mL, apresentando redução de 1.647,3 mL (26,7%). A paciente evoluiu com insuficiência respiratória aguda ocasionada por metástase pleural à direita, vindo a falecer. **Conclusão:** A vestimenta proporcionou benefícios como melhora importante da sensação de peso no membro devido à redução de volume e facilidade em colocar e retirar a vestimenta para fazer a higiene, quando comparada ao enfaixamento compressivo multicamadas. Outras vantagens foram a redução de custos e a promoção do bem-estar.

PALAVRAS-CHAVE: linfedema; câncer de mama; fisioterapia.

INTRODUCTION

Lymphedema is a chronic progressive disease that occurs frequently after cancer treatment with lymph node dissection due to breast cancer resulting from the accumulation of fluid in the interstitial tissues. According to meta-analysis, the incidence in cancer survivors is 15%¹. The incidence of lymphedema in patients with breast cancer submitted to axillary dissection is 17% at 2 years and 30% at 5 years postoperatively².

Malignant lymphedema occurs when there is lymphatic flow impairment in the lymphatic channels and / or lymph nodes due to the spread of the malignant tumor, which can be acutely onset with rapid progression, resulting in changes in skin color and muscle weakness, which may be the first tumor recurrence signal³.

Complex decongestive physiotherapy (CDPT,) is divided into two phases: the intensive phase, which must occur daily or on alternate days and the maintenance phase, which the patient commences when the limb volume does not present further reduction, appropriate elastic compression (compression arm sleeve) must be used and skin care and exercises should be maintained⁴.

CDPT is recognized as a treatment for malignant lymphedema and consists of inelastic compression bandaging, exercises and skin care, and may or may not use manual lymphatic drainage (MLD)^{5,6}.

CDPT helps to reduce limb volume and lymphedema severity, it also aids the improvement of range of motion, pain and weight. However, patients with malignant lymphedemas need prolonged follow-up time, which requires more physiotherapy and consequently additional costs⁵.

Few studies have examined the treatment of malignant lymphedema. A systematic review on the management of cancer-related lymphedema in palliative care showed the subject to be a major challenge for health professionals. Most of the studies were case reports, and there was no randomized clinical trial. One retrospective study on MLD; two case studies on compression therapy; and three case studies on CDPT were identified⁷. However, none of them used garments as part of the treatment.

The objective of this case report was to demonstrate the benefit of using compression garments in reducing limb volume and consequently improving the symptoms of a patient with malignant lymphedema after recurrent breast cancer.

CASE REPORT

Female, 67 years old, with diagnosis of a 2.3 cm, triple negative invasive ductal carcinoma of the left breast. She was submitted to quadrantectomy with left axillary dissection on November 1st, 2003. Fifteen lymph nodes were removed, of which six had lymph node metastasis, classified as stage T2aN1bM0. The patient underwent six sessions of chemotherapy (December 2003 to May 2004) and radiotherapy in breast and supraclavicular fossa (June to August 2004).

During a consultation with the doctor in 2006, the patient reported feeling of heaviness and volume increase in the left upper limb (LUL), however in the following appointments she did not have any further complains. In 2011, the patient suffered a fall on her LUL and, after this episode, noticed the appearance of benign lymphedema. She started treatment with CDPT for lymphedema on August 28th, 2014 through MLD, limb hydration, compression bandaging, and exercises. The patient was also given orientation regarding skin care and self-massage. Because she lived in a city that did not offer this treatment, she had to travel to our institution.

In the manual perimetry applied to the truncated cone formula, the volume of the right upper limb (RUL) was 2,760 mL and 5,108 mL in the LUL, i.e., there was a difference of 2,348 mL (85.1%) between the limbs. The diagnosis of lymphedema is made when the difference is greater than 10%. Lymphedema was classified as severe according to the Stillwell classification^{8,9} (normal: 0-10%, mild: 10-20%, moderate: 20-40%, marked 40-80%, and severe: over 80%).

After six weeks of treatment, LUL volume reduced to 4,274.3 mL, a reduction of 833.7 mL (16.3%). The patient also presented improvement of fibrosis upon palpation. The difference in volume between the limbs was 1,514.3 mL, which corresponds to 54.9%. The patient was discharged from the intensive phase of the CDPT on October 9th, 2014, and continued to the maintenance phase because there was no further reduction in limb volume.

Two monthly evaluations were performed, in which limb volume maintenance was verified through the use of a compression arm sleeve associated with exercises and self-drainage. On January 5th, 2015, however, the patient returned complaining of worsening lymphedema, significant feeling of heaviness and pain. Upon examination, the patient had increased volume and areas of neovascularization in the LUL and in the anterior quadrant

of the thorax (Figure 1). The difference in volume between the limbs was 2,012.3 mL (72.9%).

The patient was referred to the doctor for suspicion of axillary vein thrombosis, which was confirmed with echocardiography. It was suspected that the thrombosis was caused by tumor obstruction, a hypothesis also confirmed by biopsy. Malignant lymphedema was diagnosed in the LUL and quadrants (breast and back).

The patient returned to the physiotherapy and began to undergo chemotherapy in April 2015. It was expected that the limb volume would be reduced by tumor reduction, but even with the chemotherapy and the physiotherapy (hydration, multilayer compression bandaging using short extensibility bandages, application of kinesio tape in axillary and axillo-inguinal lymphatic anastomoses and exercises), there was no significant improvement. The patient had difficulty attending the physiotherapy appointments twice a week and could not do the compression bandaging because she lived alone.

Lymphoscintigraphy (Figure 2) demonstrated that there was no satisfactory Lymphatic drainage in LUL, and no marking of lymph node drainage even after imaging performed six-hours after. No dermal reflux was observed. Therefore, upon receiving the result of the lymphoscintigraphy, the MLD treatment was stopped as it did not present benefits, and only the use of compression bandages was used in order to reduce limb volume associated with exercise and skin care.

After several attempts to decrease limb volume in order to improve functionality, aesthetic and joint pain of the shoulder due to the weight, the use of an inelastic LUL garment associated with home exercises was adopted as the last option. This decision was made because the patient was missing many appointments and the limb volume was increasing.

Neoprene low elastic compression garment (Figure 3) was proposed as an alternative to reduce visits to physiotherapy, since the patient lived in another city and was too weak to travel due to the chemotherapy treatment. The garment allowed the patient to readjust the pressure in the limb several times a day.



Figure 1. Neovascularization with indefinite limits in limb and quadrants in a patient with breast cancer with tumor recurrence.

The LUL volume was 6,158.1 mL before using the compression garment and the RUL volume was 2,760 mL, a difference of 3,408.1 mL (123.9%). The garment was tailor-made and adjusted for the patient on November 16th, 2015. After 10 days of use, the volume decreased to 5,174.2 mL, a difference of 983.9 mL. In the evaluation on December 21th, 2015, the volume had further reduced: 4,609.3 mL, with a difference of 2,424.2 mL (88.1%) between the limbs. The last evaluation occurred on February 4th, 2016 with a volume of 4,510.8 mL, i.e., a reduction of 1,647.3 mL (26.7%) since the beginning of the use of the compression garment. The difference between limbs was 1,760.8 mL (64.0%) (Figure 4).

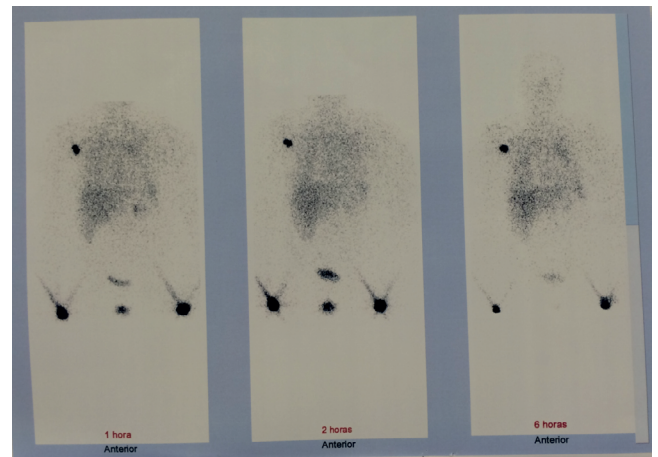


Figure 2. Lymphoscintigraphy of a patient with lymphedema related to breast cancer. The exam shows absence of marking of drainage lymph nodes even in the image delay of six hours and absence of dermal reflux.



Figure 3. Garment for treatment of lymphedema of upper limb. The first picture shows the first day of use; the second photo, ten days of use; and the third photo, six weeks of use. The garment had to be adjusted twice by new seams in the interval between the photos.

After the reducing the volume of the malignant lymphedema, the patient reported an improvement in the feeling of heaviness and pain in the shoulder joint, as well as in the practicality of removing the garment and during self-hygiene. In the last evaluation, a new garment was requested, since the previous one was very loose, even after being readjusted twice by a seamstress. Table 1 shows the evolution of lymphedema from benign to malignant, as well as the degree of lymphedema during the proposed treatments.

The patient underwent several thoracentesis due to consecutive pleural effusions, as she presented with right pleural metastasis. The patient was hospitalized in March 2016 for the above procedures, and did not return for reassessment due to acute respiratory failure, and passed way on April 5th, 2016.

DISCUSSION

There is a shortage of studies on the efficacy of physiotherapy for malignant lymphedema. Most research cites medical treatment for pain relief and is comprised of case reports. Early physiotherapy

is indicated because malignant lymphedema tends to progress, causing discomfort, pain and psychological problems³. Compression bandaging treatment is one of the main tools for decreasing limb volume, but requires correct pressure applied by a specialist physiotherapist. By replacing it with a compression garment, activities such as taking a bath and performing activities of daily living become easier and thus improve the patient's daily routine.

It is common for the patient to present symptoms such as heaviness, pain and discomfort, which significantly reduce the physical function, mobility and ability to perform daily activities, with consequent worsening of quality of life. Patients with lymphedema with obstruction due to tumor recurrence tend to present more psychological and emotional concerns^{10,11}.

In this case reported, the feeling of heaviness was quite expressive, which improved with the use of the compression garment. Based on manual perimetry, it is known that there is a strong correlation between the feeling of heaviness and limb volume increase¹². The feeling of heaviness is improved when the volume of the limb is reduced.

In a study with patients who had malignant lymphedema undergoing treatment with CDPT, but without MLD, Hwang et al.⁶ demonstrated that quality of life was improved and upper and lower limb pain and volume was reduced, even without MLD. Therefore, MLD may not present benefits for patients with malignant lymphedema, as opposed to inelastic compression, as observed in the present study. MLD was not performed when the patient was using the compression garment since lymphoscintigraphy showed significant obstruction due to tumor recurrence.

A recent pilot study evaluated 12 individuals with malignant lymphedema, demonstrating that CDPT was effective for a cohort of patients with palliative cancer and limited survival. The authors, however, applied an individualized program using: bandaging, MLD, compression mesh, kinesio tape, exercises, deep breathing techniques, education and skin care. There was improvement in limb volume, quality of skin and quality of life related to lymphedema¹³, however, for the patient in this study,

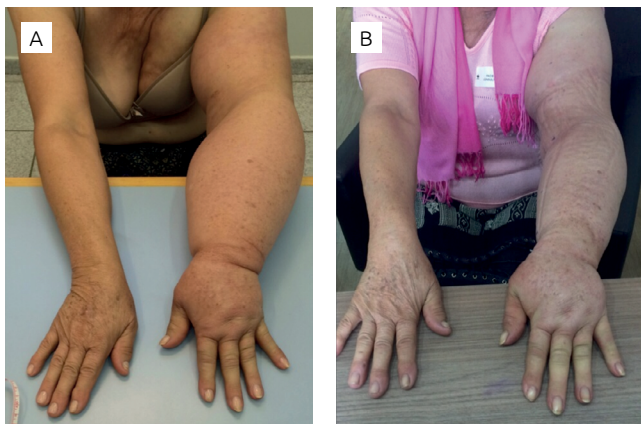


Figure 4. Lymphedema of the left upper limb after axillary lymph node dissection as treatment for breast cancer before the use of garment (A) and after six weeks of continuous use (B).

Table 1. Evolution of benign lymphedema treatment that became malignant, with respective dates, left upper limb volume, difference between the volume of the affected limb and the control in mL and in%, lymphedema grade and proposed treatment.

Evaluation date	Treatment	LUL volume (mL)	Difference between limbs (mL)	Difference between limbs (%)	Level of lymphedema ^{8,9}
08/28/2014	No treatment	5,108.0	2,348.0	85.1	Severe
10/09/2014	CDPT – IP	4,274.3	1,514.3	54.9	Marked
01/05/2015	CDPT– MP	4,782.0	2,012.3	72.9	Marked
11/16/2015	CDPT– IP	6,158.1	3,408.1	123.9	Severe
12/21/2015	Garment	4,609.3	2,424.2	88.1	Severe
02/04/2016	Garment	4,510.8	1,760.8	64.0	Marked

LUL: left upper limb; CDPT: complex decongestive physiotherapy; IP: intensive phase; MP: maintenance phase.

bandaging did not present good results and volume reduction was more effective after using the garment.

The use of compression garments for the treatment of lymphedema helps to reduce limb volume, is more practical than traditional compression bandaging, and useful for patients who live far from the treatment center or who are not available for physiotherapy¹⁴. The compression garment was a good alternative, since the patient lived in another city, where there was no specialized physiotherapeutic treatment services. The patient could readjust the cord during the course of the day, when she noticed that the limb volume was diminishing and the garment was loose. This was an important advantage over the compression bandage, because in order to use the compression bandages, she would have had to move from her city every other day. She was able to make less trips due to compression garment and thus reducing the cost of the treatment.

The inelastic compression garment is a very useful tool in the treatment of malignant lymphedema, as it results in a reduction

in the number of visits to the physiotherapist, facilitates self-care and provides more independence, well-being and cost effective¹⁵.

CONCLUSION

The compression garment provided benefits such as reducing limb volume and consequently improve in the feeling of heaviness, shoulder pain, well-being and ease of putting on and taking off the garment in order to perform personal hygiene, and it is presented as a good treatment option for malignant lymphedema. In addition, it provides more convenience and practicality to the patient when compared to the compression bandage. Until now, there has not been any study demonstrating the use of compression garments in the treatment of malignant upper limb lymphedema. The performance of new studies, with more expressive samples and good designs is suggested in order to test the efficacy of the management of malignant lymphedema in palliative care.

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