

Performance of Physiotherapy in Neoplastic Lymphedema in a Patient with Metastatic Breast Cancer: Case Report

doi: <https://doi.org/10.32635/2176-9745.RBC.2021v67n4.1293>

Atuação da Fisioterapia no Linfedema Neoplásico em Paciente com Câncer de Mama Metastático: Relato de Caso

Rendimiento de la Fisioterapia en la Linfedema Neoplásico en una Paciente con Câncer de Mama Metastático: Relato de Caso

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ABSTRACT

Introduction: Breast cancer is one of the most common neoplasms among women in the world, accounting for 29.7% (66,280) of new cases in Brazil, and also corresponding to the main cause of death in this group (16.1%, 16,724). Neoplastic lymphedema is a malignant process of breast carcinoma, not very common but related to the disease progression. The gold standard treatment for lymphedema is the complex decongestive therapy (CDT) in order to reduce and maintain limb volume and increase the patient's quality of life. However, treatment for neoplastic lymphedema is little explored in the literature. The objective of this study was to analyze and report the impact of CDT on the control of neoplastic lymphedema symptoms and volume. **Case report:** Patient with breast cancer in palliative treatment and neoplastic lymphedema in the homolateral upper limb. The proposed physiotherapeutic treatment for this patient was the adapted CDT, which was split in two phases. The first phase was to reduce the lymphedema volume with skin care orientations, passive exercises (because of monoplegia and joint restriction) and compressive bandaging. Even if the lymphatic drainage was not applied, the treatment brought significant improvement in reducing the left upper limb volume with loss of 1,045,58 mL between the beginning and end of the first phase. The second phase was targeted to maintenance, indicating the use of compressive clamp to control the volume. **Conclusion:** The adapted CDT may be an option to minimize the volume of neoplastic lymphedema.

Key words: Breast Neoplasms; Lymphedema/therapy; Physical Therapy Modalities; Palliative Care.

RESUMO

Introdução: O câncer de mama está entre as neoplasias mais comuns entre as mulheres no mundo, representando 29,7% (66.280) dos casos novos no Brasil. Também corresponde à principal causa de óbitos (16,1%, 16.724) nesse grupo. O linfedema neoplásico é um processo maligno do carcinoma de mama não muito comum, significando progressão da doença. O tratamento padrão-ouro para o linfedema é a terapia complexa descongestiva (TCD) com a finalidade de reduzir e manter o volume do membro, além de aumentar a qualidade de vida do paciente. Entretanto, o tratamento para o linfedema neoplásico é pouco explorado na literatura. O objetivo deste estudo foi analisar e relatar o impacto da TCD no controle da sintomatologia e volume do linfedema neoplásico. **Relato do caso:** Paciente com câncer de mama em tratamento paliativo com linfedema neoplásico no membro superior homolateral. O tratamento fisioterapêutico proposto para essa paciente foi a TCD adaptada, dividida em duas fases. A primeira consistiu em reduzir o volume do linfedema, por meio de orientações de cuidados com a pele, exercícios passivos (em razão da monoplegia e restrição articular) e enfaixamento compressivo. Apesar de não ter sido realizada drenagem linfática, o tratamento demonstrou melhora significativa na redução do volume no membro superior esquerdo com perda de 1.045,58 ml entre o início e o final da primeira fase. A segunda fase foi dirigida à manutenção, indicando o uso da braçadeira compressiva para controle do volume. **Conclusão:** A TCD adaptada pode ser uma opção para minimizar o volume do linfedema neoplásico.

Palavras-chave: Neoplasias da Mama; Linfedema/terapia; Modalidades de Fisioterapia; Cuidados Paliativos.

RESUMEN

Introducción: El cáncer de mama se encuentra entre las neoplasias más comunes entre las mujeres en el mundo, representando 29,7% (66.280) de nuevos casos en Brasil y es la principal causa de muerte en este grupo (16,1%, 16.724). La linfedema neoplásica es un proceso maligno de carcinoma mamario que significa progresión de la enfermedad. El tratamiento estándar para la linfedema es la terapia compleja descongestiva (TCD) con el fin de reducir el volumen de las extremidades y aumentar la calidad de vida del paciente, pero es poco explorado en la literatura. El objetivo de este estudio fue evaluar si el rendimiento de la TCD influiría en el volumen de linfedema.

Relato del caso: El estudio fue un informe de una paciente con cáncer de mama y linfedema neoplásico en la extremidad superior homolateral. El tratamiento fisioterapêutico propuesto para este paciente fue el TCD adaptado, que se dividió en dos fases. La primera consiste en reducir el volumen de la linfedema mediante pautas de cuidado de la piel, ejercicios pasivos porque el paciente ha presentado plejía, restricción articular del hombro del miembro superior izquierdo y vendaje compresivo. Aunque en el estudio no se realizó drenaje linfático, el tratamiento mostró una mejoría significativa en la reducción de volumen en el miembro superior izquierdo con una pérdida de 1.045,58 ml entre el inicio y el final de la primera fase. La segunda fase dirigida al mantenimiento, en la que se indicó el uso de la pinza compresiva para control de volumen. **Conclusión:** La TCD adaptada puede ser una opción para minimizar el volumen y las quejas de un paciente con linfedema neoplásico.

Palabras clave: Neoplasias de la Mama; Linfedema/terapia; Modalidades de Fisioterapia; Cuidados Paliativos.

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INTRODUCTION

Breast cancer is one of the most common neoplasms among women in the world, accounting for 29.7% (66,280) of new cases in Brazil, and also corresponding to the main cause of death in this group (16.1%, 16,724)¹.

One of the main complications of breast cancer is upper limb lymphedema, defined as the accumulation of protein-rich fluid in interstitial spaces, damaging the axillary drainage. It can result from the surgical approach, reduction of the flow due to the resection of lymphatic nodes, radiotherapy, or progression of the locoregional disease². Neoplastic lymphedema is a malignant process of breast cancer, a signal of the disease progression. There is impairment of the lymphatic flow resulting from the compression of the tumor mass, spread of the tumor into lymphatic vessels or by metastasis. Typically, the patient reports diffuse pain by the tumor invasion and compression of the nerve root. The skin may present cyanotic coloration, reddish, brilliant, lesions and reduction or loss of the range of movement of the shoulder³⁻⁵.

Most of the times, lymphedema occurs during late postoperative breast cancer and nearly 10% can be malignant. Usually, is the first signal of tumor recurrence, with fast progression and discomfort for the patient because of the weight of the limb leading to psychologic stress and impact on the quality of life^{5,6}.

Kim et al.⁷ evaluated 44 sick individuals with breast cancer and metastasis in brachial plexus through a retrospective study from 2000 to 2016. Of these, 66% had neoplastic lymphedema and 52.3%, weakness of the upper homolateral limb to the disease as initial characteristic. Most of them had limitation of the range of movement and complained of pain.

The gold standard for lymphedema is the complex decongestive therapy to reduce the volume of the limb, maintain the reduction achieved and improve the quality of life of the patient^{3,4,8,9}.

The two-phase CDT consists of manual lymphatic drainage, compressive bandaging, skincare and myolymphokinetic exercises. In the first phase, compressive bandaging aims to mobilize the edematous fluid and reduce the alterations of the fibrosclerotic tissue. It is utilized in multi-layered low-stretch elastic compression bandages and must be effective to ensure the pressure exerted is adjusted both to rest and during the activity^{3,4}.

In the second phase, it prevents the return of the edematous fluid with the use of the compressive garment for maintenance, skincare and kinesiotherapy^{3,4,8}.

The present study had the objective of analyzing and reporting the impact of the CDT adapted to control

the symptomatology and volume of the neoplastic lymphedema.

CASE REPORT

White, 75 years old female patient evaluated by the physician and diagnosed with stage IV breast cancer (T4bN3M2) on June 13, 2016. The physical examination detected left breast node, axillary, supraclavicular and cervical lymph node enlargement. The histopathological result was grade 2 invasive ductal carcinoma and luminal B immunohistochemistry, Ki67 20%. Other exams showed cutaneous metastasis in the anterior thoracic area, multiple lung node lesions, multiple bone lesions, thoracic column, sternal and costal arches, abdominal and pelvic metastases, and suspected hepatic node.

Because of the advanced stage of the disease, no surgical indication was advised, and the clinical treatment proposed was chemotherapy (fluorouracil, adriamycin and cyclophosphamide) associated with radiotherapy in the left breast and axillary. After radiotherapy (25 sessions), continued its treatment with oral chemotherapy (xeloda) and administration of zometa.

The patient evolved with lymphedema of the left upper limb (LUL) in July 2016 and was referred to physiotherapy, however, only one year and eight months later she attended the physiotherapeutic evaluation and was diagnosed with grade III neoplastic lymphedema with restriction of movement of the LUL, monoplegia, pain, and paresthesia.

The physiotherapeutic treatment proposed at *Hospital Pérola Byington* was a CDT adapted with compressive bandaging twice a week and recommendation of home passive exercises (elbow and hand) because of monoplegia and articular shoulder restriction of the LUL. The treatment of the first phase consisted of 25 sessions for three months. The second phase of the treatment included the use of 30-40mmHg compressive garment to control the lymphedema and periodic visits every 30 days for perimetry during two months (two return visits).

The volume of the upper limbs (ULS) was evaluated through the formula of the truncated cone adapted. The perimetry of the anatomical reference point in the cubital fossa was measured, collecting measures above (arm) at 7 cm and 14 cm intervals and below (forearm) at 7 cm, 14 cm and 21 cm^{5,10}.

The volume of the limb is quantified from the measures of the circumference, considering each segment of the limb as a pair of circumferences (trunk of the cone). The volume of the segment was given by the formula^{5,10}:

$$V = h \times \frac{C^2 + C \times c + c^2}{\pi \times 12}$$

(V) final volume of the limb segment.
 (C and c) circumferences between the measured points.
 (h) distance between C, c in each segment.
Note: The sum of the volume of each point corresponds to V.

There was a significant improvement of the volume of the LUL in the first four weeks of treatment and after this period, gradual reduction until stabilization as shown in Figure 1, which exemplifies the volume of the ULS in the first and second phases during five months (three months in the first phase and two months in the second phase).

There was loss of 1,945.58 ml between the beginning and end of the first phase of the treatment. Two months after the beginning of the maintenance phase, it is possible to notice the stabilization of the volume of the upper limb. Figures 2 and 3 show before and post-treatment respectively.

The Institutional Review Board of the “*Centro de Referência da Saúde da Mulher do Hospital Pérola Byington*” approved the study, report number 4.051.296.

DISCUSSION

Even without the complete CDT, there was reduction of the volume. Although the CDT described in the literature encompasses active myolymphokinetic exercises¹¹, in this case, the articular mobilization of the elbow and hand of the LUL was passive because of the monoplegia, restriction of the shoulder movement, diffuse bone metastases and lack of data of possible bone compromise in that area.



Figure 2. First phase of the treatment (1st day of the treatment). Beginning of the CDT adapted



Figure 3. Second phase of the treatment (25th day of the treatment). Maintenance using compressive sleeve Sigvaris® 30-40mmHg

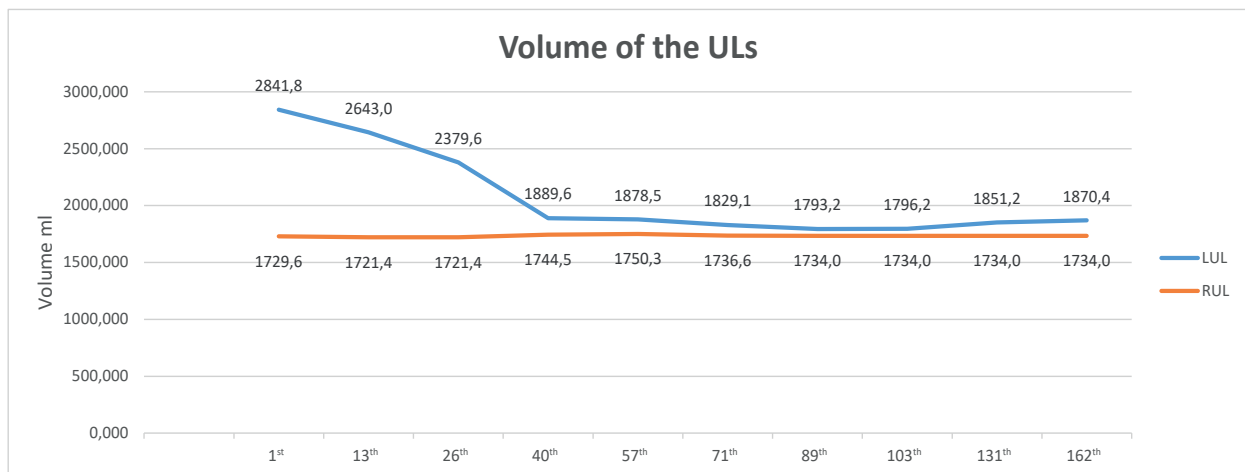


Figure 1. Volume of the Upper Limbs (1st and 2nd phases)

In the first month of the treatment, it was noticed a remarkable improvement compared with the second and third months, which corroborates the work of Liao⁴, whose most significant results occurred during the first sessions of the treatment.

The manual lymphatic drainage, a procedure belonging to the CDT was not applied in this case, however, the result achieved revealed improvement of the volume, which concurs with Hwang et al.⁵ who reported reduction of malignant lymphedema utilizing the same principles of CDT without lymphatic drainage in 22 patients.

The results of this study were influenced by the continuity of chemotherapy and radiotherapy sessions with reduction of the tumor volume, facilitating the lymphatic drainage of the limb and diminished impairment caused by tumor compression which, associated with compressive bandage, boosted the positive results and symptoms relief. The Consensus International Society of Lymphology recommends CDT is applied in palliative patients with neoplastic lymphedema in association with chemotherapy and/or radiotherapy because they achieve better results in reducing the limb volume¹². CDT is a treatment option for patients with lymphedema by tumor obstruction, promoting improvement of the quality of life through pain reduction, feeling of heaviness, tension, and range of movement, as long as there are no tumor thrombi or infiltrative diffuse carcinomatosis^{11,13}.

Several articles have addressed the efficacy of CDT for lymphedema treatment, reinforcing Paz et al.¹⁴ systematic review of seven articles describing physiotherapeutic treatment, concluding that CDT is the most effective and frequent protocol for these cases¹⁴.

Despite not been evaluated through scores of quality of life and instruments assessing her satisfaction, she reported improvement of the pain and heaviness of the limb, concurring with Hwang et al.⁵ since they demonstrated that CDT reduced the volume, improved the pain and quality of life similar to other studies^{2,15}.

The patient's assiduity to the treatment may have impacted the result because she attended 25 sessions for three months, only one missed during the first phase. She started to wear the sleeve compressive bandage daily in the second phase of maintenance. An article by Forner-Cordero et al.¹⁶ evaluated the adherence of the treatment with CDT in 171 patients, showing a positive influence in the results with a correlation between great reduction of the volume (25%) in assiduous patients (81.3%) in comparison with those who failed to adhere. This data demonstrates that the physiotherapist should encourage and clarify the importance of keeping the bandage for better response to the treatment¹⁶.

CONCLUSION

The CDT adapted reduced the volume of the LUL of the patient with malignant lymphedema because there was loss of 1,045.58 ml in relation to the beginning of the treatment, in addition to the subjective report of improvement of the pain and feeling of heaviness. It can be an option to minimize the volume of the antineoplastic lymphedema.

CONTRIBUTIONS

All the authors contributed substantially for the design and/or conception of the study, collection, analysis and/or interpretation of the data, wording, critical review and approved the final version to be published.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

FUNDING SOURCES

None.

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Recebido em 17/11/2020
Aprovado em 31/3/2021