Physiotherapeutic Approach of a Patient with Upper Limb Lymphedema Prior to Surgery for Breast Cancer: Case Report

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Abordagem Fisioterapêutica de uma Paciente com Linfedema de Membro Superior Prévio à Cirurgia para Câncer de Mama: Relato de caso

Enfoque Fisioterapéutico de um Paciente con Linfedema de Miembro Superior Previo a la Cirugía para Cáncer de Mama: Relato de Caso

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Abstract

Introduction: Lymphedema is the most common complication after breast cancer treatment. When it manifests itself before surgical treatment, as a clinical condition alone, it is seen as a criterion of inoperability, representing a factor of poor prognosis. **Case report:** This article aims to describe the clinical evolution of a patient with upper limb lymphedema prior to surgery for breast cancer, the conduct of the physiotherapeutic treatment and the feasibility of the surgical procedure. **Conclusion:** Through this case report it was possible to describe the physiotherapeutic treatment of a patient with lymphedema prior to surgery for breast cancer. The physiotherapy team can work in partnership with the medical team, controlling the lymphatic decompensation and assisting in the way until the surgical procedure is performed. Physiotherapeutic care has been fundamental since the beginning of cancer treatment, in order to detect early symptoms and disorders, intervening effectively and resolutely and seeking to provide quality of life and the best possible outcomes for patients.

Key words: Breast Neoplasms; Lymphedema; Physical Therapy Modalities; Neoadjuvant Therapy; Mastectomy, Radical.

Resumo

Introdução: O linfedema é a complicação mais comum após o tratamento do câncer de mama. Quando se manifesta antes do tratamento cirúrgico, como condição clínica por si só, é visto como um critério de inoperabilidade, representando um fator de mau prognóstico. **Relato do caso:** Este artigo visa a descrever a evolução clínica de uma paciente com linfedema de membro superior prévio à cirurgia para o câncer de mama, à condução do tratamento fisioterapêutico e à viabilidade do procedimento cirúrgico. **Conclusão:** Por meio deste relato de caso, foi possível descrever o tratamento fisioterapêutico de uma paciente com linfedema prévio à cirurgia para o câncer de mama. A equipe de fisioterapia pôde atuar em parceria com a equipe médica, controlando a descompensação linfática e auxiliando no caminho até a realização do procedimento cirúrgico. O cuidado fisioterapêutico se mostra fundamental desde o início do tratamento oncológico, de forma a detectar precocemente sintomas e distúrbios, intervindo de maneira eficaz e resolutiva e buscando proporcionar qualidade de vida e os melhores resultados possíveis para as pacientes.

Palavras-chave: Neoplasias da Mama; Linfedema; Modalidades de Fisioterapia; Terapia Neoadjuvante; Mastectomia Radical.

Resumen

Introducción: El linfedema es la complicación más común después del tratamiento del cáncer de mama. Cuando se manifiesta antes del tratamiento quirúrgico, como condición clínica por sí solo, es visto como un criterio de inoperabilidad, representando un factor de mal pronóstico**. Relato del caso:** En este artículo se pretende describir la evolución clínica de una paciente con linfedema de miembro superior previo a la cirugía para el cáncer de mama, la conducción del tratamiento fisioterapéutico y la viabilidad del procedimiento quirúrgico. **Conclusión:** A través de este relato de caso fue posible describir el tratamiento fisioterapéutico de una paciente con linfedema previo a la cirugía para el cáncer de mama. El equipo de fisioterapia puede actuar en asociación con el equipo médico, controlando la descompensación linfática y auxiliando en el camino hasta la realización del procedimiento quirúrgico. El cuidado fisioterapéutico se muestra fundamental desde el inicio del tratamiento oncológico, para detectar precozmente síntomas y disturbios, interviniendo de manera eficaz y resolutiva y buscando proporcionar calidad de vida y los mejores resultados posibles para las pacientes.

Palabras clave: Neoplasias de la Mama; Linfedema; Modalidades de Fisioterapia; Terapia Neoadyuvante; Mastectomía Radical.

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INTRODUCTION

Lymphedema is the most common chronic post-treatment complication of breast cancer. Factors associated to hazard increase include advanced staging, axillary lymphadenectomy, radiotherapy, chemotherapy infusion of the ipsilateral limb of the tumor, infection, seroma and obesity [1,2].

In neoadjuvant therapy, in a study conducted in "Instituto Nacional de Câncer José Alencar Gomes da Silva (INCA)" with women referred for chemotherapy, it was observed the prevalence of the following symptoms of the upper limb: pain (54.6%), paresthesia (8.5%), restriction of the movements (4.7%) and lymphedema (6.6%)[3].

Lymphedema that onsets prior to surgical treatment was considered an inoperable criteria since 1943 because of its poor prognosis [4]. As far as physiotherapy is concerned, though lymphedema is a very explored theme in literature, there are no studies describing when it occurs prior to breast cancer surgery, that is, during neoadjuvant chemotherapy.

In literature, there are no studies that evaluate the possibility of dissemination of the disease using complex physical therapy, specifically compressive bandages and meshes. These studies approach only the manual lymphatic drainage. Hsiao et al.[5] assessed the hazard of dissemination of breast cancer in patients with lymphedema submitted to manual lymphatic drainage, demonstrating the technique is safe and does not increase the hazard of dissemination of the disease.

It was conducted a case report of a patient with breast cancer who developed lymphedema in the upper limb after neoadjuvant chemotherapy. The objective was to describe the complete evolution of the physiotherapeutic treatment before and after the surgical procedure. The INCA Institutional Review Board approved the study, number 1.630.52.

CASE REPORT

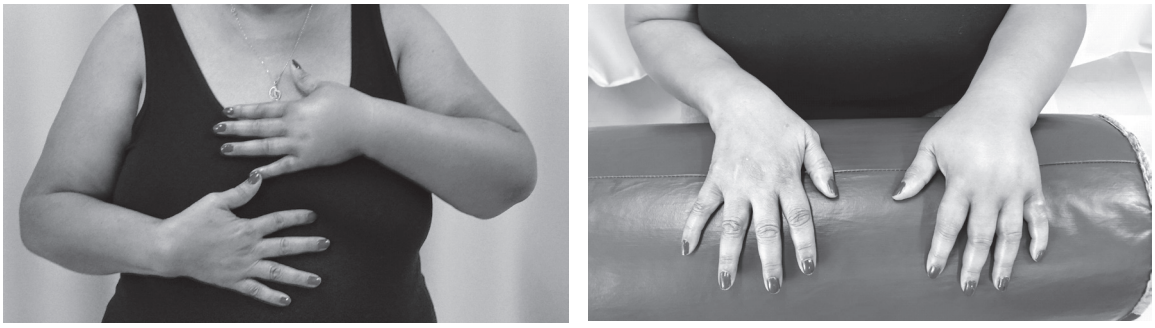
Female patient, 57 years old, hypertensive, BMI (Body Mass Index) of 46.8 kg/m^2, living in the municipality of Queimados (RJ), diagnosed with left breast cancer, locally advanced, infiltrating lobular histological carcinoma grade II[6], RH positive and HER2 negative, clinical staging IIIB, enrolled in INCA on November 4, 2014.

Initially, it was proposed neoadjuvant chemotherapy with four cycles of adriamycin and cyclophosphamide, followed by 12-week cycles of paclitaxel. All the infusions were conducted in the upper limb counterlateral to the tumor. After the last chemotherapy cycle, it was issued the first report of lymphedema in left upper limb.

She was referred for consultation at the mastology on July 31, 2015 when it was discussed the benefit of the surgery even with the diagnosis of lymphedema. In this occasion, ultrasound screening was requested with Doppler of the upper limb to evaluate the presence of profound venous thrombosis and Computerized Tomography – CT of the abdomen to evaluate the extension of the disease and operability. After profound venous thrombosis and the progression of the disease were discarded, she was eligible for surgery and referred for physiotherapy to reduce the lymphedema until the surgery.

At the physiotherapeutic evaluation, the patient had complete range of motion of the shoulder, lymphedema grade III[6] (Figures 1a and 1b), associated to lymphostatic fibrosis in the forearm and sensation of weight, painless and/or phlogistic alterations.

She initiated the physiotherapy on August 12, 2015 (Figure 2), with complex adapted physical therapy, according to institutional routine[7], where it were given guidelines about skin care, home-based exercises twice a day, avoid overload with the limb and submitted to compression bandage twice a week [8]. After seven weeks of physiotherapy treatment, it was observed a difference of



(1a) **(1b)**

Figure 1a and 1b. Images of the upper limb in the beginning of the treatment

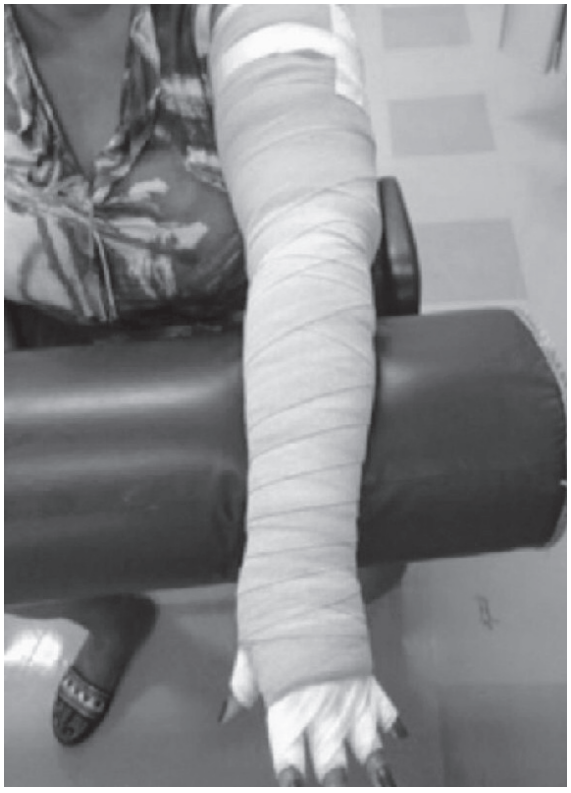


Figure 2. Compression bandaging with bandages in affected upper limb

volume of the upper limbs from 624.44 ml to 168.87 ml.

On September 28, 2015 the patient was submitted to left radical modified mastectomy whose pathological report evidenced neoplasm-free surgical margins and four lymph nodes compromised. Returned to physiotherapy in the following week, but evolved with hematoma, seroma and abscess in plastron that needed hospitalization on November 4, 2015 with suspension of compression bandage.

She was reassessed on November 12, 2015, with incomplete range of the left shoulder, decompensation of the lymphedema (difference of volume between the upper limbs of 635.91 ml) and seroma. Resumed the treatment of the lymphedema to recover the range of the movements. On November 18, 2015, initiated adjuvant hormone therapy and was referred to radiotherapy.

She was submitted to compression bandage until November 27, 2015 and because of the stabilization of the volume of the affected upper limb, moved to control of the lymphedema using compression brace. Continued with physiotherapy until December 14, 2015 and then she was referred to proceed with physiotherapy in her origin municipality.

Returned to physiotherapy in March, April and October 2016 showing functional range of motion of the left upper limb (140º for flexion and 150º for abduction), painless, controlled lymphedema (grade II)[5], continued use of compression brace, with preventive care and home-based exercises.

Figure 3 shows the difference of volume of the upper limbs during the treatment. The volume was estimated based in the calculation of the Formula of Truncated Cone[9]. It was considered lymphedema the difference of volume between the upper limbs >200 ml.

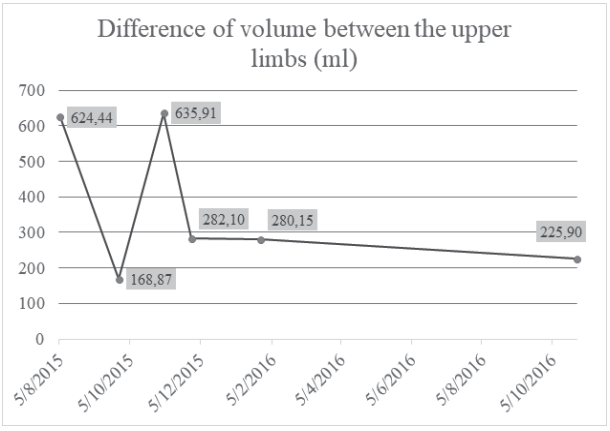


Figure 3. Difference of volumes of the upper limbs during the treatment (ml). 5/8/2015 - beginning of the treatment; 25/9/2015 - before the surgery; 3/11/2015 – infection in operative wound; 27/11/2015 – end of the compression bandaging and adaptation to compression glove; 26/1/2016 - 2 months after the adaptation of compression glove and 26/10/2016 – last visit

DISCUSSION

It was addressed in this report the physiotherapeutic treatment of the upper limb before the breast cancer surgery. There are not works related to this theme because in general, the patients are referred for physiotherapy after surgery or in palliative care, which hampers the elaboration of more studies. It is necessary that the physiotherapy follow up begins right in the beginning of the oncologic treatment, acting in the prevention of complications, early detection, granting the fast beginning of the proper treatment.

For decades, lymphedema in an upper limb was one of the inoperability criteria for breast cancer because of poor prognosis [4]. Current literature suggests that during the neoadjuvant treatment, if there is any sign of progress of the disease because the tumor grew or a new metastasis site was found, it should be indicated palliative radiotherapy for local control [10]. This report demonstrated that it was possible the physiotherapy treatment for the reduction of the lymphedema before the surgery after discarding profound venous thrombosis and tumoral progression.

Studies that evaluated the sociodemographic and clinical characteristics associated to lymphedema quote

age, BMI ≥ 30 and advanced staging as hazard factors unrelated to the oncologic treatment [11]. The patient of this case presented these characteristics, which can justify the onset of lymphedema before the surgery, in addition to the indication of neoadjuvant chemotherapy.

The principal physiopathological mechanism for the onset of the lymphedema described is the result of the blockage of the lymphatic flow in the axillary lymph nodes [12]. In this study, the patient presented lymphedema after the last cycle of neoadjuvant chemotherapy. There are not many studies showing the incidence of lymphedema after neoadjuvant chemotherapy or before the surgery; one of the causes could be the subclinical edema of the upper limb that most of the times is underestimated. A study with women referred to breast cancer surgery certified, through bioimpedance, lymphedema in 17.7% of those women who did not have clinical symptoms, nor alteration of the circumference of the upper limbs[13].

Specht et al.[14] evaluated 229 patients submitted to axillary emptying and observed that there were no difference in the development of lymphedema of the upper limb in patients that went through chemotherapy before or after the surgery, but certified that lymphedema in women submitted to neoadjuvant chemotherapy was associated to residual disease in axillary lymph node. In our study, the patient developed lymphedema after the neoadjuvant chemotherapy and the histopathological report confirmed four compromised lymph nodes. Iyigun et al.[13] affirmed that the involvement of axillary lymph nodes is a hazard factor for subclinical lymphedema.

Another possible cause for previous lymphedema to the surgery is the use of certain chemotherapeutic agents. Hidding et al.[15] evaluated the incidence of lymphedema before, during and after the adjuvant chemotherapy with docetaxel, doxorubicin and cyclophosphamide. They observed that no change of volume occurred in the limb during the treatment, but there was change of the volume one month after the end of the chemotherapy with doxorubicin, cyclophosphamide and paclitaxel and it was reported swelling of the limb in the end of the treatment. A recent study affirmed that the use of docetaxel is a hazard factor with five-fold more chance to develop lymphedema compared to other treatment regimens [16]. A research that addressed the side effect of taxanes demonstrated that docetaxel provoked an increase of the extracellular fluid, mainly in the extremities [17]. Swaroop et al.[11] demonstrated that the use of docetaxel was a hazard factor for mild edema in an upper limb when compared to non-chemotherapy as well as chemotherapy without taxanes.

The complex physical therapy is the golden-standard treatment for lymphedema [18] and in this study, it showed efficacy to reduce the lymphedema previous to surgery. In addition, after the surgery, even with decompensation of the edema because of the interruption of the treatment and infection in plastron, there were improvement of the volume of the limb when the compression therapy was resumed, which allowed the adaptation to the compression brace and granted an improvement of the symptoms and quality of life. The physiotherapy approach of patients with postoperative lymphedema can contribute for the control of this injury, favoring a more beneficial and proper clinical treatment.

CONCLUSION

In this report, it is described a physiotherapeutic treatment for lymphedema before surgery of breast cancer. Because it is a theme scarcely approached in literature, it is believed to be relevant that should be more studied.

Cases of previous lymphedema before surgery, but without evidence of progression of local disease, should be evaluated profoundly. It was seen that the physiotherapeutic treatment can be conducted, it is able of reducing the volume and does not negatively interfere in the prognosis.

The physiotherapy can act conjointly with the medical team, controlling the lymphatic decompensation and helping the process through the surgery.

CONTRIBUTIONS

Eduardo Camargo Millen participated of the conception and planning of the study. Erica Alves Nogueira Fabro, Marianna Brito de Araujo Lou, Flávia Oliveira Macedo, Tamara Schwartz Reinoso and Rejane Medeiros Costa participated of the conception and planning of the study, analysis and gathering of the data, wording and critical review. All the authors approved the final version of the article.

DECLARATION OF CONFLICT OF INTERESTS

There are no conflicts of interests to declare.

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None.

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