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Case Report,

Evolution of Subclinical Systemic Lymphedema In-Patient with Lipedema and Axillary Dissection.

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Abstract:

Background: The surgical treatments of breast cancer associated or not with axillary drainage and radiotherapy constitute the main cause of secondary upper limb lymphedema. Obesity is a particularly aggravating aspect in patients with lymphedema. Novel concepts of subclinical systemic lymphedeman and clinical systemic lymphedema have recently been described. The aim of the present study was to evaluate the evolution of subclinical systemic lymphedema to upper limb lymphedema following treatment for breast cancer.

Case: A 36-year-old female patient had been submitted to treatment for breast cancer involving left-side mastectomy and lymph node drainage during a pregnancy three years earlier. She had undergone both chemotherapy and radiotherapy. The patient had a portacath in the right arm for chemotherapy, which was removed after the first evaluation. She was submitted to bioelectrical impedance analysis, which revealed an increase in intracellular and extracellular water and body water in all limbs and the trunk above the normal range. The patient returned approximately two years after the initial evaluation, complaining of edema in the left arm.

Conclusion: The treatment of breast cancer in patients with lipedema could lead to the development of subclinical lymphedema in patients with a BMI less than 30 kg/m2. Therefore, such conditions constitute a warning sign for the development of lymphedema.

Key words: Subclinical systemic lymphedema, Lipedema, Lymphedema.

Introduction:

The surgical treatment of breast cancer associated or not with axillary drainage and radiotherapy constitute the main cause of secondary upper limb lymphedema,[1] which occurs in 5 to 57% of cases, depending on the surgery performed. Lymphedema occurs in 5 to 15% of cases with the sentinel lymph node evaluation and more than 50% of cases in which axillary drainage was performed.[2] Regarding the diagnosis, studies consider lymphedema when the volume is more than 200 ml or 10% larger in relation to the contralateral limb. In the follow up of these patients, however, lymphedema is suggested with an increase of 50 grams.[2,3] A combination of physical therapies is the first option in the treatment of lymphedema, but lymphoactive drugs may be used.[4] Obesity is a particularly aggravating aspect in patients with lymphedema. Novel concepts of subclinical systemic lymphedeman and clinical systemic

lymphedema have recently been described.[5] Animal studies have shown that obesity causes damage to the lymphatic system, involving the lymph pumping mechanism, altered capillary pe rmeability and inflammatory processes.[6] The aim of the present study was to evaluate the evolution of subclinical systemic lymphedema to upper limb lymphedema following treatment for breast cancer.

Case report:

A 36-year-old female patient had been submitted to treatment for breast cancer involving left-side mastectomy and lymph node drainage during a pregnancy three years earlier. She had undergone both chemotherapy and radiotherapy. The patient had a portacath in the right arm for chemotherapy, which was removed after the first evaluation. The physical examination revealed no clinical evidence of edema, but the patient had a physical pattern and family history of lipedema. She was submitted to bioelectrical impedance analysis, which revealed an increase in intracellular and extracellular water and body water in all limbs and the trunk above the normal range (Table 1). The patient returned approximately two years after the initial evaluation, complaining of edema in the left arm. Volumetry was performed using the water displacement method, revealing an increase in volume of 1668 grams in the right arm and 1865 grams in the left arm (difference of 197 grams). Bioimpedance analysis revealed a reduction in volume from 2.16 L to 2.02 L with the removal of the portacath. The volume in the left arm went from 2.00 L to 2.30 L (Table 1). Medicinal treatment with daflon (500 mg every 12 hours) and manual lymphatic therapy were proposed, but the patient opted for medicinal treatment alone.

The patient returned after three months with an increase in weight from 73.5 to 75.2 Kg and an increase in body mass index (BMI) from 26.5 to 27.1 kg/m^2. The left arm volume had increased from 1865 to 2019 g and the patient had the sensation of having more edema. The bioimpedance analysis revealed progression to clinical lymphedema (Table 1). Manual lymphatic therapy was scheduled, which was adapted to post-breast cancer treatment lymphedema using the Godoy & Godoy method and a brace made from grosgrain fabric.

Table 1 – Intracellular and extracellular fluid, fluid in limbs and trunk and reference values

	Total 18-5-2016	Total 28-8-2018	Total 2-1-2019	Normal water values	Total extracellular water/total body water ratio
Total intracellular water	23.1	23.9	24.1	18.8 to 23.0	
Total extracellular water	14.5	14.2	14.7	11.5 to 14.1	
BMI	27.1	26.5	27.1	18.5 to 25.0	
Body weight	75.0 kg	73.5 kg	75.2 kg		
Total extracellular water/total body water ratio	0.385	0.372	0.378	0.36 to 0.39	
Right arm	2.16	2.02	2.02	1.53 to 1.87	0.384 limit (0.36-0.39)
Left arm	2.00	2.30	2.41	1.53 to 1.87	0.388 limit (0.36-0.39)
Trunk	17.3	17.8	18.0	14.0 to 17.1	0.399 limit (0.36-0.39)
Right leg	6.23	6.02	6.41	4.86 to 5.94	0.399 limit (0.36-0.39)
Left leg	6.32	6.01	6.27	4.86 to 5.94	0.419 limit (0.36-0.39)

Discussion:

The present study illustrates the evolution of subclinical systemic lymphedema in a patient without obesity, but with the physical appearance of lipedema. She had undergone breast cancer treatment with a total mastectomy combined the lymph node drainage, radiotherapy and chemotherapy, for which she had a portacath in the right arm. The patient was submitted to routine bioimpedance analysis, which revealed subclinical systemic lymphedema. This condition is characterized by an increase in intracellular and extracellular liquid in the limbs and trunk beyond the normal range. Moreover, the right arm had a larger amount of liquid than the left arm, which was the side submitted to surgery. The hypothesis for this difference was the presence of the portacath in the right arm, the removal of which

resulted in a reduction in the edema. Upon the patient's return after approximately two years, reductions were found in the edema in the right arm and lower limbs, body weight and BMI, but an increase in volume had occurred in the left arm to a value close to that considered indicative of lymphedema diagnosed by bioimpedance (0.389) and a change in volumetry with a difference of 197 grams. The option for daflon alone stemmed from the therapeutic ease and the end of the year holiday season. The personal experience of the authors with daflon shows that lymphedema less than 150 ml is possible to control with medication for a time, followed by the need for specific lymphatic therapy. The patient returned after three months with increases in weight, BMI and left limb edema. The volumetric analysis revealed an increase from 197 to 341 grams. The bioimpedance analysis confirmed the lymphedema in the limb as well as the lower limbs and trunk. Manual physical therapy combined with a grosgrain brace was proposed. Waiting until a limb has a volume 200 ml greater in comparison to the contralateral limb for the definition of lymphedema is very big mistake. We do not need to wait until the progression to this volume. We suggest monitoring before and immediately after surgery with bioimpedance or volumetric analysis. When the volume is 50 grams above the normal standard, lymphedema should be considered and treated.The most alarming aspect of the patient in the present report was the occurrence of subclinical systemic lymphedema, which is identified in patients with obesity and some patients with lipedema. Thus, bioimpedance analysis is an important exam for these patients so that more rigorous preventive measures can be taken to avoid lymphedema. It is extremely important for the patient not to increase in weight and to maintain routine physical activity. Another important aspect that the authors have observed is that the combination of aggravating factors of both the venous and lymphatic systems of the limb predisposes the patient to the earlier development of lymphedema in the limb.

Conclusion:

The treatment of breast cancer in patients with lipedema could lead to the development of subclinical lymphedema in patients with a BMI less than 30 kg/m^2. Therefore, such conditions constitute a warning sign for the development of lymphedema.

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