CASE REPORT
https://doi.org/10.29289/2594539420240031

Mammary manifestation of Systemic Lupus Erythematosus in patient with associated scleroderma: a case report

Laura Ciarini[1], Tânia Silvia Fröde[2], Érica Elaine Traebert Simezo[1]*

ABSTRACT

Systemic Lupus Erythematosus is an autoimmune disease of ill-defined etiology that is presented in different forms throughout its natural history. The clinical manifestations end up affecting several tissues and organs of the body. A rare manifestation of this disease is lupus panniculitis, which, when affecting the breast tissue, is called lupus mastitis. Likewise, scleroderma can occur, an autoimmune disease that affects the connective tissue and can manifest systemically (systemic sclerosis) or locally and affect tissues in varying histologic grades. The prevalence is higher in women for both Systemic Lupus Erythematosus and scleroderma, justifying the importance of correlating the manifestation of these diseases with their impacts on women's health. The presented case is of a 58-year-old woman who presented a nodule in the left breast, with progression to hardening of the lesion and the breast. The evolution of the case was carried out with clinical follow-up of the condition together with the specialties of rheumatology and mastology. In the present study, we aim to report an atypical case of the manifestation of Systemic Lupus Erythematosus and scleroderma in the breast and to review the literature.

KEYWORDS: systemic lupus erythematosus; scleroderma; mastitis; women's health.

INTRODUCTION

Systemic Lupus Erythematosus (SLE) is an autoimmune disease with a varied nature and clinical manifestations in several tissues and organs of the body[1,2]. According to Zucchi et al., the expression of SLE results from the complex interaction between the innate and adaptive immune systems, together with genetic and epigenetic influences and environmental factors[2], which also corroborate the different responses to the adopted treatments.

A specific and rare manifestation of this disease is lupus panniculitis, which, when affecting the breast tissue, is called lupus mastitis, a breast condition that mainly affects women, whose symptomatology depends on subcutaneous inflammation and eventual concomitant epidermal involvement, in the form of plaques and/or nodules[3]. Until 2021, only 40 cases of mastitis due to SLE were documented in the literature, and no cases involving the concomitant presence of scleroderma were reported in the studied patients[4]. Due to the low prevalence of this specific breast manifestation, a possible source of difficulty in the study and adequate management of these patients is perceived, considering the little updated literature and the lack of related clinical practice.

In turn, scleroderma is a connective tissue disease, of ill-defined etiology, arising from the activation of the immune system, promoting vascular traumas and tissue lesions and resulting in the formation of scar tissue and collagen accumulation (fibrosis)[5].

There are two main forms of scleroderma: localized and systemic (also called systemic sclerosis). In localized scleroderma, the disease primarily affects the skin and underlying tissue, with the thickening and hardening of these tissues. The two main groups of localized scleroderma are linear scleroderma and morphea, the latter being the most common clinical form[5,6].

The increased prevalence in women is observed in both SLE and scleroderma, following the pattern of most rheumatic diseases, with the latter reaching 4.6:1 in relation to men[5].

In this case report, we describe an atypical presentation of SLE and scleroderma, affecting the breast tissue in a 58-year-old woman, in addition to carrying out a literature review on

[1]Universidade Federal de Santa Catarina, Department of Gynecology and Obstetrics, Health Sciences Center – Florianópolis (SC), Brazil.
[2]Universidade Federal de Santa Catarina, Health Sciences Center, Postgraduate Program in Medical Sciences – Florianópolis (SC), Brazil.
***Corresponding author:** ericatraebert@gmail.com
Conflict of interests: nothing to declare. **Funding:** none.
Received on: 11/04/2024. **Accepted on:** 01/31/2025.

the topic, seeking to contribute to knowledge of the area and optimize treatment options.

CASE REPORT

Caucasian, 58-year-old woman, with history of one pregnancy and one c-section, menopause at 43 years old, who started with a nodule in the left breast three years ago, with progression to hardening of the lesion and the left breast one year ago. Patient with a previous history of type 2 diabetes mellitus, fibromyalgia, SLE, and scleroderma, without treatment at the time of the first appointment, where she was referred to a rheumatologist, who prescribed initial treatment with methotrexate.

On physical examination, the patient presented with asymmetry of the breasts, with significant deformation in the left breast, with areas of skin retraction and hypochromic spots in the superomedial and inferior quadrants (Figure 1). On palpation, she presented with hardening of the entire left breast, approximately 8 cm in length, without axillary lymph node involvement and negative papillary expression, right breast without changes.

Mammography showed coarse and heterogeneous calcifications, occupying almost the entire left breast parenchyma, which could be related to the underlying disease (scleroderma – SLE), not being possible to exclude another etiology. Correlation with biopsy was suggested (BI-RADS 4B) (Figure 2).

Breast ultrasonography (USG) showed an extensive area with hyperechogenic points that produced posterior acoustic shadowing, in the left breast, in correlation with the images of calcifications on mammography and that impaired the evaluation of the breast by the method.

Biopsies of the left breast were performed, with the following anatomopathological tests:

1. The left breast core biopsy showed breast stroma with fat necrosis, dystrophic calcifications, stromal fibrosis, and chronic inflammatory infiltrate. Absence of neoplasia in this sample (Figures 3A and 3B).
2. Left breast punch biopsy showed epidermis with interface lesion and some apoptotic keratinocytes associated with basal membrane thickening. In the dermis, thick and homogenized collagen fibers were observed, in addition to perivascular mononuclear infiltrate with plasmocytes and eosinophils. The pattern of tissue response showed overlapping alterations between SLE and morphea clinical conditions, considering the possibility of mixed connective tissue disease (Figures 3B and 3C).

Guidance was provided regarding the difficulties in screening for breast cancer in the left breast, due to radiological alterations, and options for screening, follow-up, and prophylactic surgery were discussed with the patient. The patient initially opted for control.

During follow-up, the patient had an episode of mastitis on the left, with phlogistic signs in the inferomedial quadrant. Breast ultrasound was performed, no breast abscess was detected, and antibiotic therapy was prescribed, with resolution of the condition.

In subsequent appointments for follow-up, the patient reported she wanted to have breast surgery, due to fear of breast cancer, obstacles to screening, and considerable aesthetic deformity.

This was discussed together with the mastology team and the patient. Preoperative tests were subsequently requested for the performance of left mastectomy and immediate breast reconstruction, upon agreement of the rheumatology team.

DISCUSSION

Breast involvement in the presence of rheumatic diseases is a challenging topic in the medical and academic fields, mainly due to the nebulous aspect of the pathophysiology of autoimmune diseases.

SLE and scleroderma are rare conditions that affect mainly women in a broad age spectrum (18 to 70 years), but especially those in the age group between 40 and 50 years[7].

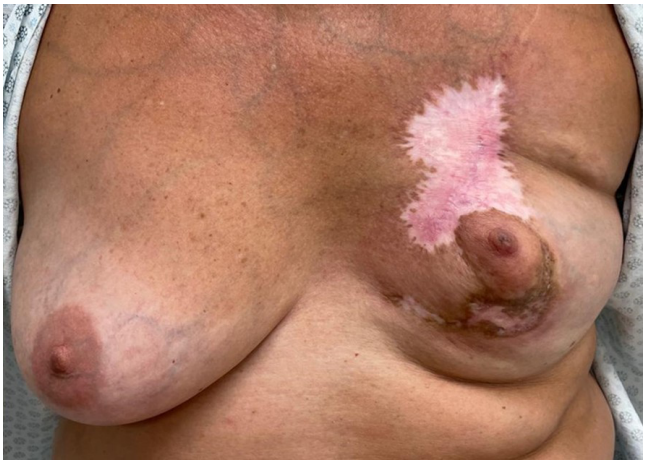

Figure 1. Left breast with retractions, hypochromic spots with lichenification of the skin and sclerosis in the inframammary region.

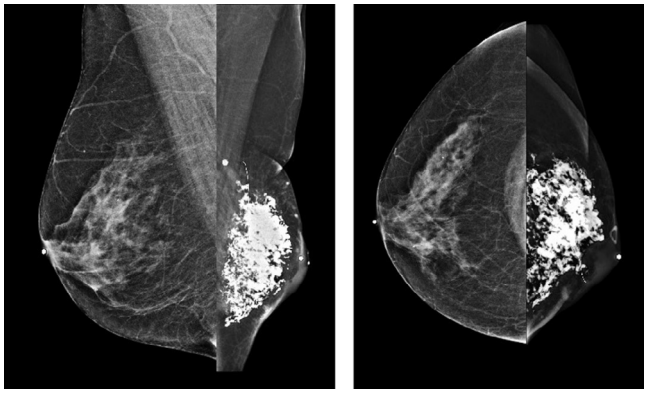

Figure 2. Mammography images in mid-lateral-oblique and craniocaudal incidences, showing coarse and heterogeneous calcifications occupying almost the entire left breast parenchyma.

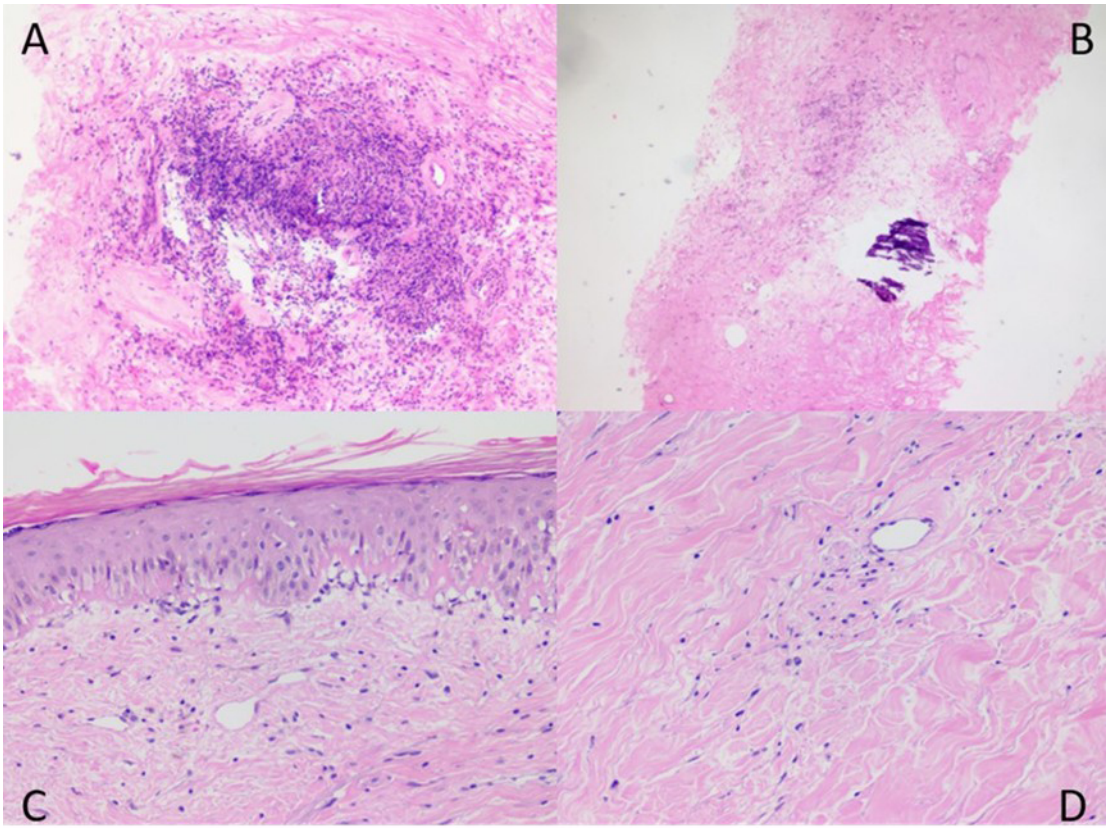

Figure 3. Histologic sections of core biopsy (**A and B**) and punch biopsy (**C and D**), in which each slide presents: (**A**) dense infiltrate of periannexal mononuclear cells with foci of fat necrosis, collagen rearrangement and fibrosis; (**B**) coarse calcification, with lymphocyte infiltrate and adiponecrosis; (**C**) epidermis with interface lesion, with apoptotic keratinocytes associated with basal membrane thickening; (**D**) collagen sclerosis and vessels with swollen endothelium, surrounded by mononuclear infiltrate with plasmocytes (hematoxylin and eosin, x100, x40, x400, and x400, respectively).

Lupus panniculitis, also known as deep lupus erythematosus, is a type of Chronic Cutaneous Lupus Erythematosus (CEL)[8] and also a rare manifestation of SLE, being characterized by inflammation of subcutaneous adipose tissue, resulting in firm and painful nodules or plaques that can progress to atrophy, scarring, and skin discoloration[4,9]. Approximately 3% of SLE patients have lupus panniculitis[4,10].

Conversely, Lupus Mastitis (LM) is a relatively rare form of lupus panniculitis, characterized by the extension of panniculitis to the mammary glands[8,11]. Breast lesions usually appear after SLE diagnosis with a variable latency interval between two and 37 years. However, in rare cases, they may present as the first manifestation of the disease[3,4,12].

Scleroderma does not have a specific manifestation of the breast, but skin alterations that can be found are characterized as localized scleroderma or morphea[5,6,13]. Patients can present with mastalgia, bilateral axillary lymphadenopathy, edema, epithelial and adipose tissue atrophy, erythema, hypertrichosis, ulceration, and nodulation, as well as breast deformities, stiffening and thickening of the skin, in the most chronic cases[9,10,13-15].

Regarding the diagnosis, there are currently no fully defined radiological or clinical algorithms for the approach of rheumatic manifestations in breast tissue, with each case being individually addressed[9]. The radiological arsenal for the diagnosis, especially of LM, is mammography and breast USG and, in some cases, magnetic resonance imaging of the breasts may be included[10,15].

The most consistent characteristics of LM on mammography include microcalcifications or coarse dystrophic calcifications (45%), representing areas of steatonecrosis, skin thickening, and the presence of an ill-defined mass with variable radiopacity and focal to diffuse asymmetry, represented by lymphocyte infiltrates[4,14]. USG may show ill-defined hypoechoic areas, with posterior acoustic shadowing, which may be related to calcifications, nodules, edemas, and axillary lymphadenopathies[14,15].

In turn, regarding scleroderma, imaging tests show thickening, both of the skin and the scattered fibroglandular breast tissue, along with coarse superficial calcifications[14].

In this case report, the patient's mammography presented coarse and heterogeneous calcifications occupying almost the entire left breast parenchyma and breast ultrasound with an extensive area containing hyperechogenic points that produced posterior acoustic shadowing, findings compatible with the literature.

As these alterations in imaging tests can mimic breast cancer[14], it is worth correlating these findings with the clinical history

and histopathology in order to rule out malignancy and adopt the most appropriate cause-specific treatment, thus avoiding iatrogenesis and sequelae for the patients.

In this sense, according to epidemiological data, patients with SLE have a lower risk of breast cancer than women in the general population. Shah et al. demonstrated that, in SLE, anti-DNA antibodies bind to cells with DNA defects, promoting the repair of these cells. Thus, it can be inferred that, possibly, this may be a protective effect for cancer[16].

According to Shah et al.[16], positivity for multiple autoantibodies in SLE is associated with a lower risk of breast cancer, supporting the hypothesis that a highly diverse immune response may exert an antineoplastic effect against some types of cancer.

However, in the face of a suspicious alteration, investigation is required to rule out other pathologies. The main differential diagnoses include infection, inflammatory carcinoma, idiopathic granulomatous mastitis, diabetic mastopathy, subcutaneous panniculitis-like T-cell lymphoma (SPTCL)[4,15] and, in rare cases, with bilateral breast enlargement and sensitivity, non-Hodgkin's lymphoma[4,11]. When both radiological and ultrasonographic and clinical characteristics are compatible with malignancy, histopathological study is the only method for differentiating it from lupus mastitis[3,14].

Histologic study is the gold standard to support and confirm the presence of rheumatic breast alterations[10]. The main histologic findings of the core biopsy or punch biopsy in LM are vacuolization of the basal layer, infiltration of periannexal and perivascular mononuclear cells, apoptotic keratinocytes, epidermal atrophy, and thickening of the basal membrane[8,9]. Researchers suggest hyaline fat necrosis as the most important characteristic of lupus mastitis[11,12]. Dense lymphocytic[10] and unequal histiocytic infiltrates, hyaline adiponecrosis, mucin deposition, hyalinization of interlobular connective tissue, coarse calcifications, and fibrosis may also be related[3,7,8]. When performing the indirect immunofluorescence test, a linear deposition of IgG and IgM antibodies is observed, in addition to the C3 protein of the complement system, distributed in the basal membrane of the mammary vessels and in the dermoepidermal junctions[7,12]. Other diseases also present with lymphocytic infiltrates in the breast (namely, diabetes), but in SLE they are more abundant and present lobular distribution, thus being distinguishable[12]. The histologic characteristics resulting from the mammary involvement of scleroderma are not very well described; however, the participation in the fibrotic component can be inferred by the pathophysiology of the disease.

Thus, the breast biopsy of the patient in this report showed results characteristic of lupus and scleroderma, compatible with those demonstrated in the literature.

Currently, the treatment of the disease is multidisciplinary and based on the approach of the underlying disease[3], seeking clinical results after controlling the activation of the immune system, along with the use of cause-specific treatment of possible complications of lupus/sclerosing mastitis.

In both SLE/CEL and morphea (localized or generalized), treatment involves systemic corticosteroid therapy for rapid action on symptoms, use of immunosuppressants, topical corticosteroid therapy, and phototherapy. A particularity of SLE is the first-line treatment with antimalarials, usually hydroxychloroquine[1,3,5].

In case of permanent deformities of the breast, a surgical approach can be adopted, considering pre- and postoperative complications and risks[3].

CONCLUSION

In this article, we presented a rare case of breast involvement by SLE associated with scleroderma in a patient with prolonged history of such rheumatic pathologies, highlighting the importance of considering these diseases in cases of breast alterations, especially when associated with other clinical manifestations of the condition.

The initial approach and management should take into account the age and sex of the patient, history of previous autoimmune diseases, physical examination of the breasts, radiological findings and, mainly, the classic histopathological findings of the biopsy. Histomorphology is highly specific, and a histologic diagnosis of lupus mastitis and scleroderma in the breast does not require support from serological and laboratory tests. With this case report, we seek to raise awareness among physicians, radiologists, and pathologists, hoping for accurate diagnoses that accelerate the treatment and management of the disease.

AUTHORS' CONTRIBUTION

LC: Investigation, Writing – original draft. TSF: Visualization, Writing – review & editing. EETS: Project administration, Supervision, Writing – review & editing.

REFERENCES

1. Lazar S, Kahlenberg JM. Systemic lupus erythematosus: new diagnostic and therapeutic approaches. Annu Rev Med. 2023;27(74):339-52. https://doi.org/10.1146/annurev-med-043021-032611

2. Zucchi D, Silvagni E, Elefante E, Signorini V, Cardelli C, Trentin F, et al. Systemic lupus erythematosus: one year in review 2023. Clin Exp Rheumatol. 2023;41(5):997-1008. https://doi.org/10.55563/clinexprheumatol/4uc7e8

3. Delbello MCBV, Duarte JPC, Basan NP, Ruiz DG. Mastite como uma das manifestações iniciais de lúpus eritematoso sistêmico: um relato de caso. Revista de Patologia do Tocantins. 2020;7(1):37-40. https://doi.org/10.20873/uft.2446-6492.2020v7n1p37
4. Sharma A, Blank A, Komforti MK. Rare initial manifestation of lupus as lobular panniculitis of the breast–a case report and review of the literature. Am J Dermatopathol. 2021;43(5):381-85. https://doi.org/10.1097/DAD.0000000000001846
5. Odonwodo A, Badri T, Hariz A. Scleroderma. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025.
6. Wenzel D, Nazgol-Sadat Haddadi, Afshari K, Richmond JM, Rashighi M. Upcoming treatments for morphea. Immun Inflamm Dis. 2021;9(4):1101-45. https://doi.org/10.1002/iid3.475
7. Herzum A, Gasparini G, Cozzani E, Burlando M, Parodi A. Atypical and rare forms of cutaneous lupus erythematosus: the importance of the diagnosis for the best management of patients. Dermatology. 2022;238(2):195-204. https://doi.org/10.1159/000515766
8. Oktay A, Esmat HA, Aslan Ö, Mirzafarli I. Lupus mastitis in a young female mimicking a breast carcinoma; a rare entity through a case report and review of the literature. Eur J Breast Health. 2022;18(1):13-5. https://doi.org/10.4274/ejbh.galenos.2021.6361
9. Stull C, Sprow G, Werth VP. Cutaneous involvement in systemic lupus erythematosus: a review for the rheumatologist. J Rheumatol. 2023;50(1):27-35. https://doi.org/10.3899/jrheum.220089
10. Guo CY, Chen L, Sun L, Yang XS, Mao R, Li BC, et al. Rare and first manifestation of lupus panniculitis as lupus mastitis: a case report and literature review. Curr Med Imaging. 2023. https://doi.org/10.2174/1573405620666230804092737
11. Roongta R, Joshi S, Chattopadhyay A, Ghosh A. Lupus mastitis. Reumatol Clin (Engl Ed). 2022;18(5):312-13. https://doi.org/10.1016/j.reumae.2021.05.006
12. Goulabchand R, Hafidi A, Van de Perre P, Millet I, Maria ATJ, Morel J, et al. Mastitis in autoimmune diseases: review of the literature, diagnostic pathway, and pathophysiological key players. J Clin Med. 2020;30;9(4):958. https://doi.org/10.3390/jcm9040958
13. Careta MF, Romiti R. Localized scleroderma: clinical spectrum and therapeutic update. An Bras Dermatol. 2015;90(1):62-73. https://doi.org/10.1590/abd1806-4841.20152890
14. Matsumoto RAEK, Catani JH, Campoy ML, Oliveira AM, Barros N. Aspectos radiológicos do envolvimento mamário em doenças sistêmicas benignas e malignas. Radiol Bras. 2018;51(5):328-33. https://doi.org/10.1590/0100-3984.2016.0125
15. Wang Y, Feng Z, Ma B, Li S, Guo W, Song J, et al. Diagnosis of lupus mastitis via multimodal ultrasound: case description. Quant Imaging Med Surg. 2024;14(4):32358. https://doi.org/10.21037/qims-23-1279
16. Shah AA, Igusa T, Goldman D, Li J, Casciola-Rosen L, Rosen A, et al. Association of systemic lupus erythematosus autoantibody diversity with breast cancer protection. Arthritis Res Ther. 2021;23(1):64. https://doi.org/10.1186/s13075-021-02449-3