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## CASE REPORT

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# Lupus Panniculitis of the Breast — Mammographic and Sonographic Features of a Rare Manifestation of Systemic Lupus

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### ABSTRACT

*This report is of a 48-year-old woman with systemic lupus erythematosus, who presented with a lump in the left breast and was subsequently diagnosed with lupus mastitis. This is a rare presentation, and only 15 patients have been reported in the literature.*

*Key Words:* Lupus erythematosus, systemic; Mammography; Mastitis; Panniculitis; Ultrasonography

### INTRODUCTION

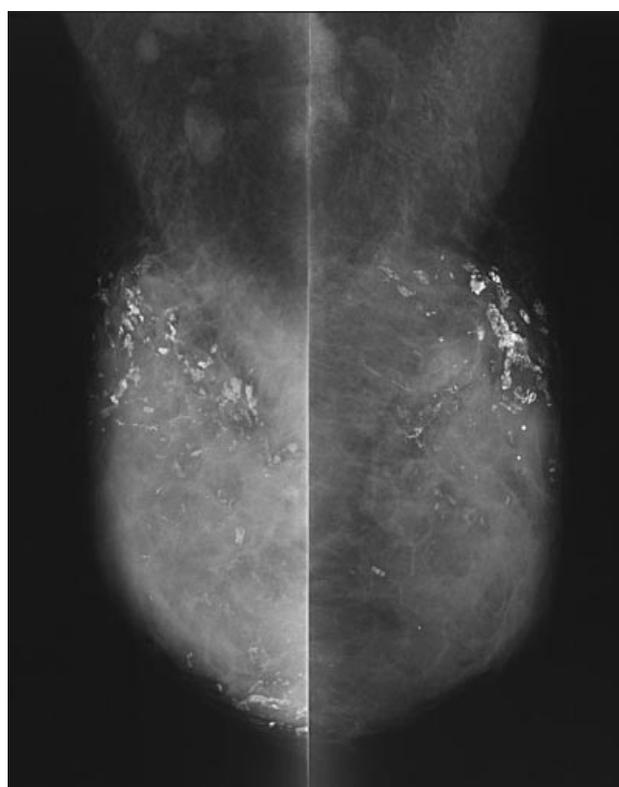
Lupus panniculitis is a chronic inflammatory reaction of subcutaneous fat, occurring in patients with systemic lupus erythematosus (SLE). Breast involvement, termed lupus mastitis, has been infrequently reported, and the clinical presentation has been likened to malignancy. This report describes a patient with lupus mastitis, and highlights the clinical and radiological characteristics of this rare disease entity.

### CASE REPORT

A 48-year-old woman with SLE presented in 2005 with progressive pain in her left breast for 1 week. She also had an enlarging lump in her left breast. She had no fever and no history of local trauma.

The patient was diagnosed with SLE in 1995 and was treated with prednisolone and hydroxychloroquine. In 2003, she developed significant proteinuria, and azathioprine was added to the treatment regimen. One year later, she noticed worsening facial rashes and alopecia. By 2006, she had cutaneous lesions over her upper arms and both breasts. At the time, mammography revealed diffuse patchy macrocalcifications in both breasts, with no definite mass or architectural distortion seen

(Figure 1). Ultrasonography similarly showed diffuse scattered coarse calcifications, with acoustic shadowing and dermal thickening in the bilateral periareolar regions. In view of the worsening symptoms, steroid therapy was intensified. However, the patient was later admitted to hospital after developing a painful left breast mass.



**Figure 1.** Medial lateral oblique view of a mammogram showing patchy macrocalcifications in both breasts.

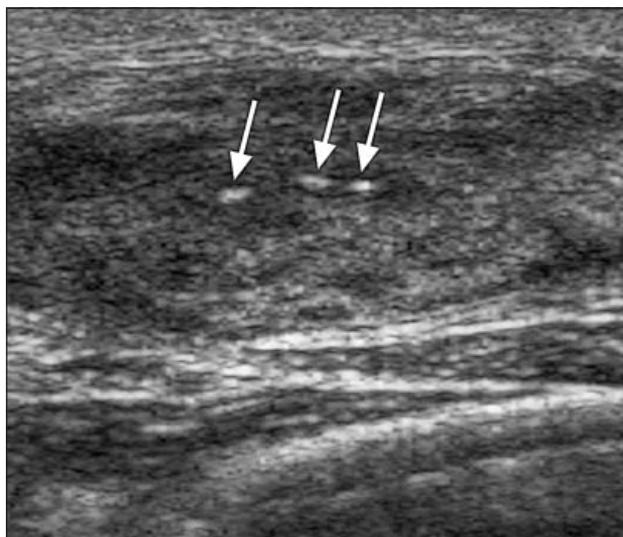
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**Figure 2.** Ultrasound image of the left breast showing background calcifications (arrows) in the glandular layer.

At physical examination, the patient was afebrile. She had a 4- x 2-cm mass in the left breast at 4 to 7 o'clock. The overlying skin was erythematous and hot. Discoid rashes were noted over both breasts, the extensor surface of the right forearm, back, and right flank. White blood cell count was normal.

Urgent ultrasound examination of the breasts was performed, which again revealed bilateral background macrocalcifications and diffuse skin thickening (Figures 2 and 3). At 5 to 6 o'clock in the left breast, there was an increase in glandular tissue thickness associated with increased vascularity, suggestive of mastitis (Figure 4). No focal mass or abscess was identified.

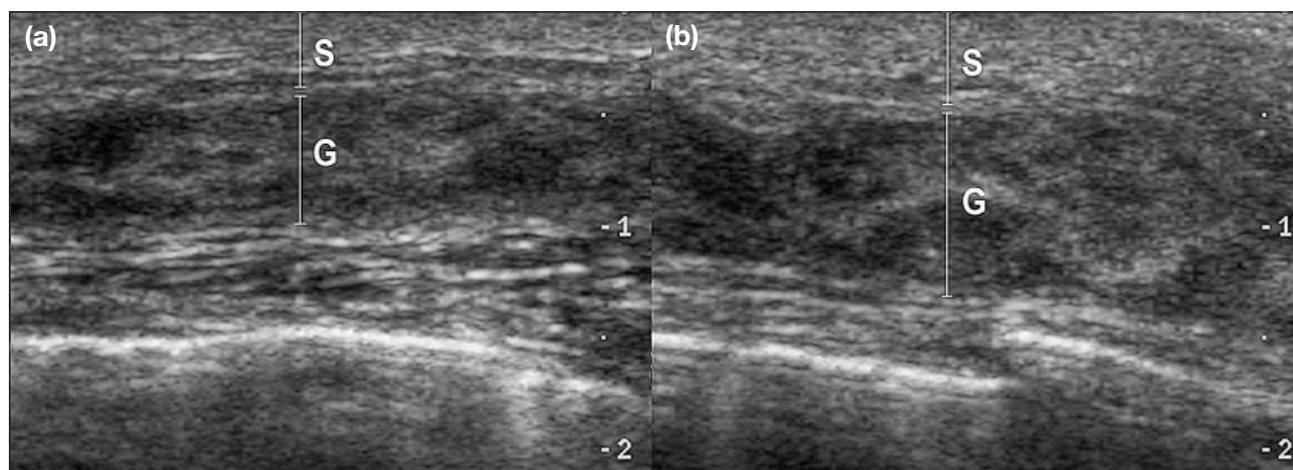
During her hospital admission, the patient had a skin biopsy of the right upper limb skin lesions, which revealed

various patterns of lupus erythematosus. These included bullous lupus erythematosus, interstitial neutrophilic dermatosis, dermal sclerosis, vasculitis, and panniculitis. Immunofluorescence study showed dermo-epidermal junction stain of immunoglobulin A (IgA), IgG, IgM, C1q, and C3. Breast biopsy was not performed due to the concern about aggravating the lesions. The patient was discharged with a course of antibiotics and the hydroxychloroquine dose was increased. The breast swelling subsequently subsided.

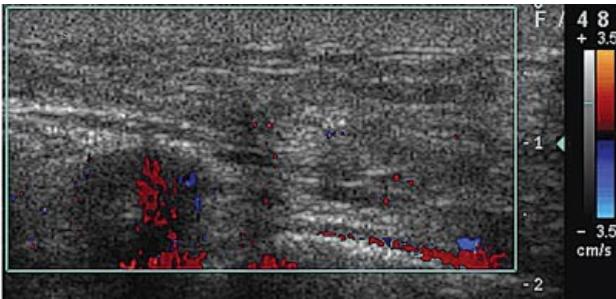
## DISCUSSION

Lupus panniculitis, or lupus erythematosus profundus, is a rare chronic inflammatory reaction of the subcutaneous fat that can occur in 2% to 3% of patients with SLE.<sup>1,2</sup> There is a tendency for lupus panniculitis to occur in the presence of discoid lupus. Typical locations involve the extremities, trunk, and facial areas. Besides the breast, other unusual locations include the eye and parotid gland.<sup>1</sup> Lupus mastitis is a rare presentation of lupus panniculitis, localised to the breast — only 15 cases have been reported.<sup>3</sup> Clinically, the overlying skin may appear normal or may exhibit diverse dermatological changes. Lesions have previously been considered as suspicious of carcinoma, both clinically and radiographically, necessitating histology to confirm the diagnosis. The disorder has been proposed to be precipitated by trauma and the disease process might be aggravated by taking biopsies for diagnosis.<sup>4,5</sup>

For histopathological diagnosis, the major criteria are fat hyaline necrosis, lymphocytic infiltration with lymphoid nodules surrounding the necrosis, periseptal or lobular panniculitis, and microcalcifications. Minor criteria are changes of discoid lupus erythematosus in



**Figure 3.** Ultrasound images of (a) the asymptomatic right breast; and (b) the painful left breast. Note the discrepancy in thickness of the subcutaneous tissue (S) and glandular tissue (G) between the left and right breasts, compatible with mastitis.



**Figure 4.** Colour Doppler image of the left breast showing increased vascularity in the glandular tissue.

the overlying skin, lymphocytic vasculitis, mucin deposition, and hyalinisation of subepidermal papillary zones. The combination of 4 major and 4 minor criteria is diagnostic of the condition and permits differentiation from other forms of panniculitis. Immunofluorescence studies show linear deposition of IgM and C3 along the dermo-epidermal junction, which were also the diagnostic features for this patient.<sup>4,6</sup>

Previous radiological descriptions are scarce. Mammography often shows macrocalcifications, as in this patient, ranging from thin curvilinear to diffuse coarse calcifications. This feature has been attributed to various stages of fat necrosis.<sup>2,3,5</sup> Presence of a non-specific breast mass as well as scattered microcalcifications have also been reported.<sup>1,7</sup> Sonography also demonstrates macrocalcifications.<sup>6</sup> In patients who present with a discrete mass, non-specific features such as solid, irregular, echogenic lesions with ill-defined margins have been described.<sup>1,7</sup> Cutaneous involvement has been frequently demonstrated radiologically,<sup>1,2,4,5</sup> and should not be misinterpreted as locally advanced carcinoma. In this patient, the presence of increased glandular tissue thickness and vascularity suggested superimposed inflammation of the breast tissue compatible with lupus mastitis.

Magnetic resonance imaging (MRI) of this uncommon condition has been reported for 1 patient, who exhibited high-signal intensity on both T1- and T2-weighted precontrast images. Postcontrast-enhanced study revealed an irregular mass with rim enhancement. The time-signal intensity curve showed strong initial

enhancement followed by washout (type 3 time-signal intensity curve). MRI was found to be particularly helpful for showing the extent of the disease and for demonstrating skin involvement, but it had low specificity because the features were indistinguishable from malignancy.<sup>7</sup>

The clinical course of lupus mastitis is usually chronic, often with flares and remissions. Large painful persistent masses or ulcers can develop in the absence of adequate treatment. Therapy is based on antimalarial drugs. Corticosteroids may be helpful initially, but if the lesions persist, a steroid-sparing immunosuppression drug can be used.<sup>6</sup> One reported patient required mastectomy due to persistent pain and poor tolerance of medication.<sup>2</sup> In general, surgical treatment should only be considered as a last resort when conservative treatment fails.

This report is of the mammographic and sonographic features of lupus mastitis, which is a rare condition, but should be included in the differential diagnosis for a patient with SLE presenting with a painful breast lump. Taking biopsies of the lesion has been reported to aggravate the condition and surgery should be considered only when conservative management fails. A trial of pharmacological therapy can be implemented, which would obviate the need for diagnostic biopsy or surgical treatment if the response is favourable.

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