



Breast Imaging Case Report

Atypical sonographic presentation of diabetic mastopathy: A case report and literature review

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ABSTRACT

Diabetic fibrous mastopathy (DFM) is a relatively rare condition that most often occurs in insulin-dependent diabetics with a characteristic hypoechoic appearance on ultrasound (US). DFM frequently poses a diagnostic challenge in radiology due to malignant imaging similarities, and core needle biopsy is often required. If DFM is in the differential, fine-needle aspiration should not be considered as it will likely be non-diagnostic due to insufficient sampling and excisional biopsy should be avoided as it may worsen the disease process. Therefore, high clinical suspicion of DFM is important for diagnostic intervention consideration. We report the case of a 57-year-old who presented with a firm breast lump which on mammography was seen as a new 5.8 by 5.3 cm global asymmetry. US was performed and a diffuse area of increased echogenicity without posterior shadowing was identified. Given the appearance and patient history, DFM was considered unlikely. However, core needle biopsy revealed diabetic lymphocytic mastopathy consistent with DFM. Even though DFM is uncommon and has been reported to have a specific US appearance, it should be included in the differential for a palpable breast lump in any diabetic patient regardless of glucose control or atypical imaging findings.

Keywords: Diabetic fibrous mastopathy, Lymphocytic mastopathy, Breast fibrosis, Breast ultrasound

INTRODUCTION

Diabetic fibrous mastopathy (DFM) is a known complication of patients with insulin-dependent diabetics resulting in large, painless, firm breast masses on clinical examination.^[1] DFM was first described in 1984 by Soler and Khardori and was initially found in patients with long-standing, juvenile-onset, insulin-dependent diabetes.^[2] Since then, DFM has typically been reported in patients with type 1 diabetes mellitus, but occasionally has been described in type 2 diabetics with poor glucose control.^[3] While DFM is a benign lesion, clinical and imaging findings are often concerning for a malignant process and can pose a diagnostic challenge.^[4] Classical imaging findings include dense, glandular tissue on mammography and hypoechoic areas on breast ultrasound (US) with marked posterior acoustic shadowing.^[5] These findings have also been reported in other autoimmune disorders such as Hashimoto's thyroiditis and Sjogren's syndrome and are classified under the broader diagnosis of lymphocytic mastopathy.^[1]

We herein discuss an unusual case of DFM in a patient with well-controlled type 2 diabetes whose imaging findings have, to our knowledge, not yet been described in the current literature. It is important to consider DFM in the differential of breast masses in diabetic patients even without the classic US appearance and use US-guided biopsy to confirm the diagnosis.

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Figure 1: A 57-year-old woman who presented with a new breast lump. Current mediolateral oblique screening mammography images of the right (a) and left (b) breast demonstrating fatty replaced breast parenchyma and a global asymmetry involving the right superior lateral breast.

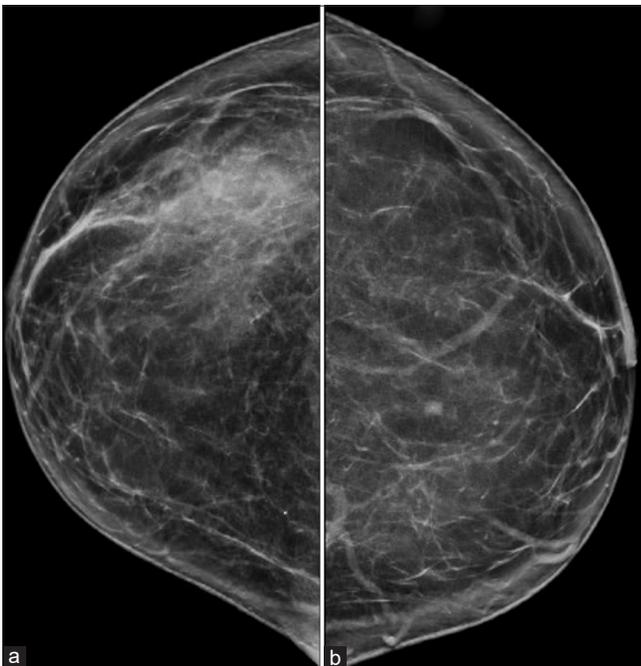


Figure 2: A 57-year-old woman who presented with a new breast lump. Current craniocaudal screening mammography of the right (a) and left (b) breast demonstrating fatty replaced breast parenchyma and a global asymmetry involving the right superior lateral breast.

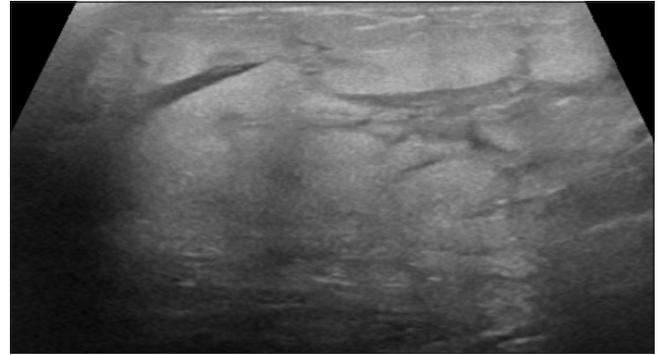


Figure 3: A 57-year-old woman who presented with a new breast lump. The right breast ultrasound of the global asymmetry at 10 o'clock demonstrating diffuse hyperechoic changes in the breast parenchyma without a focal mass or posterior acoustic shadowing.

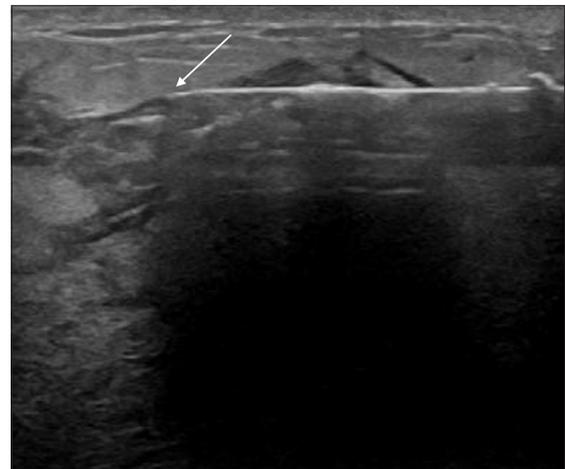


Figure 4: A 57-year-old woman who presented with a new breast lump. The right breast ultrasound guided biopsy at 10 o'clock with tissue sampling of the hyperechoic breast parenchyma. Posterior shadowing seen in this image is an artifact due to the biopsy needle (as indicated by arrow).

CASE REPORT

A 57-year-old woman with a medical history of type 2 diabetes mellitus presented for a screening mammogram. Her previous mammogram 21 months earlier was unremarkable [Figure 5]. A developing global asymmetry involving the right breast upper outer quadrant measuring 5.8 by 5.3 cm was identified on mammography as seen in [Figure 1 and 2]. There were no microcalcifications or areas of architectural distortion identified. At the time, the patient denied a history of trauma, breast pain, or skin changes. However, on palpation, a lump was present corresponding to the mammographic abnormality. Her history was pertinent for type 2 diabetes treated with metformin for the past 10 years with her most recent A1C at 7.5%. US was performed and demonstrated diffusely echogenic

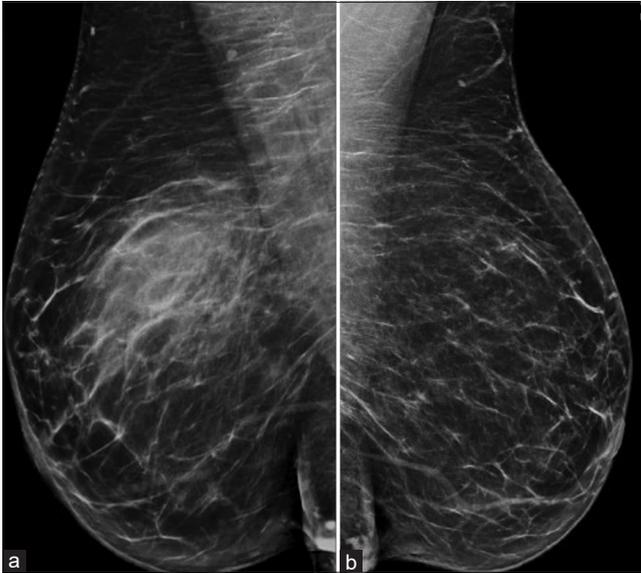


Figure 5: A 57-year-old woman who presented with a new breast lump. Current mediolateral oblique screening mammography images of right (a) compared to previous right breast mammography from 21 months prior (b) showing new fatty replaced breast parenchyma and a global asymmetry involving the right superior lateral breast.

breast tissue in the 10 o'clock location with no visible mass, associated posterior shadowing, or architectural distortion [Figure 3]. Differential considerations of hyperechoic breast masses include hematoma, fat necrosis, inflammatory processes, or sarcoma. Breast magnetic resonance imaging was recommended but the patient did not want to pursue this avenue due to insurance reasons. Given the unusual imaging findings combined with the clinical presentation, US-guided percutaneous core needle biopsy was performed and pathology revealed lymphocytic mastopathy [Figure 4].

DISCUSSION

DFM is an uncommon diagnosis occurring in 0.6–13% of women with type 1 diabetes and typically occurs in patients with longstanding type 1 diabetes requiring insulin treatment.^[6] It has also been described in patients with other immunological diseases including Hashimoto's thyroiditis, Sjogren's syndrome, and lupus erythematosus.^[1] While the clinical presentation of a large firm breast lump with a new global asymmetry on imaging is concerning for malignancy, DFM has not been associated with increased rate of malignant transformation or breast lymphoma [Table 1].^[1] DFM is typically self-limited although recurrences and multicentric or bilateral involvement is common.^[5] Imaging findings are additionally concerning for breast carcinoma and diagnostic mammography typically reveals dense glandular tissue without a discrete mass.^[7] US consistently reveals hypoechoic masses with significant posterior acoustic shadowing.^[5] The US differential

Table 1: Types of breast asymmetries.

Type	Description	Examples
Global asymmetry	Visible on two projections and occupies more than 1 quadrant	Normal variant, malignancy, trauma, mastitis, diabetic mastopathy
Focal asymmetry	Visible on two projections and does not occupy more than 1 quadrant	Normal variant, cyst, fibroadenoma, fibrocystic change, PASH, malignancy
Developing asymmetry	Focal asymmetry that is new or increasing in size	Malignancy, trauma, PASH, fibrocystic change, hormone replacement therapy
Asymmetry	Only visible in one projection	Superimposition of glandular tissue

PASH: Pseudoangiomatous stromal hyperplasia

diagnosis of these findings includes malignancy, stromal fibrosis, or fibromatosis.^[8] However, DFM frequently cannot be diagnosed on imaging alone and histologic correlation is necessary.

The pathology findings of DFM include perilobar and perivascular lymphocytic infiltrate of mature B cells, lobular atrophy, keloidal fibrosis, and characteristic myofibroblastic epithelioid cells consistent with lymphocytic mastopathy.^[9] An etiology that has been suggested for this disease is increased collagen production and decreased collagen degradation due to the hyperglycemic environment found in these patients which lead to extracellular matrix expansion.^[7] However, the exact pathophysiology of this disease is still not completely understood.

Pathologic diagnosis is important to rule out malignancy in this subset of patients. Fine-needle aspiration is not recommended due to the high rate of insufficient sampling due to the fibrotic nature of the lesion.^[1] In the past, surgical excision was often performed in DFM to exclude malignancy. It is important to recognize that surgical excision may increase the number and extent of recurrences and US-guided percutaneous core needle biopsy is preferred for diagnosis of DFM.^[10]

This particular case is unusual in regard to the distinct imaging findings and that the patient had Type 2 diabetes and was insulin naïve with adequate glucose control on metformin. The imaging findings on mammography showing a developing global asymmetry and the US correlate demonstrating a region of diffuse increased echogenicity without posterior acoustic shadowing or focal masses is unique and suggests a diagnosis other than DFM. However, US-guided biopsy of this abnormal region revealed DFM. This case demonstrates that DFM can have a variable appearance on mammography and US and that it should not be excluded from the differential diagnosis even if the classic US findings are absent.

CONCLUSION

DFM can occur in non-insulin-dependent patients as well as patients with other autoimmune disorders. Our case shows that the US appearance can be variable and present as an echogenic region of glandular tissue without posterior acoustic shadowing and should be included in the differential diagnosis of a breast lump in diabetic patients regardless of glucose control. The diagnosis should be achieved with US-guided percutaneous core needle biopsy.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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