Diabetic mastopathy

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CASE REPORT

Please cite this paper as: Sankaye SB, Kachewar SG. Diabetic mastopathy AMJ 2012, 5, 6, 296-299.
http://doi.org/10.21767/AMJ.2012.1247

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Abstract

Diabetic mastopathy is the occurrence of lymphocytic mastitis and stromal fibrosis in men as well as women having long-standing diabetes. Clinical and radiological appearance can raise a suspicion of malignancy and result in unnecessary biopsy. As these lesions are known to recur; failure to recognise them can have devastating results. A case of diabetic mastopathy is therefore presented for the knowledge and benefit of all so that unnecessary surgery can be avoided.

Key Words: Breast cancer; Breast mass, Mastopathy, Diabetic mastopathy; Diabetes mellitus, B-lymphocytes, Lymphocytic mastitis.

Implications for Practice

1. Diabetic mastopathy can clinically present as breast masses raising the suspicion of malignancy.
2. A proper history, laboratory and imaging workup can establish the diagnosis in most cases.
3. Proper counselling and periodic imaging follow-up can prevent unnecessary surgery in these cases and also save the patient from an ordeal as these lesions recur following surgery.

Background

Diabetic mastopathy (DMP) was first described by Soler and Khardori in 1984 as a constellation of clinical, radiological and histopathogical features found in dense fibrous masses of the breast.[1] It constitutes less than 1% of benign breast lesions.[2]

The disease is associated with long-standing type 1 insulin-dependent diabetes mellitus [IDDM] as well as type 2 diabetes mellitus. [3-5]

It clinically presents as multiple palpable painless breast masses. X-ray mammograms of these patients show focal or diffuse dense glandular tissue which on the sonomammogram shows diffuse posterior acoustic shadowing.[6]

Such clinico-radiological findings often raise a suspicion of neoplastic breast mass that routinely would warrant a histopathological confirmation. These patients are therefore most often if not always; subjected to biopsy which then discloses the benign nature of this entity.

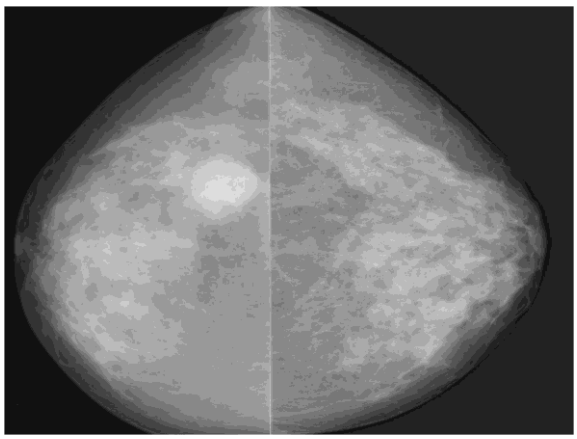
Case report

A 52-year-old female, with an eight-year history of type 1 IDDM, presented with a painless palpable lump in her right breast. Apart from IDDM, her personal as well as her family histories were unremarkable. Her fasting plasma sugar level was 148 mg/dl and the post prandial value was 238 mg/dl. Glycated haemoglobin (haemoglobin A1C) was 7.2. She was receiving six units of regular insulin before breakfast and six units before dinner per day.

On physical examination there was a firm, irregular, mobile, painless nodule in her right breast. There was no nipple discharge, skin abnormalities or any axillary lymphadenopathy.

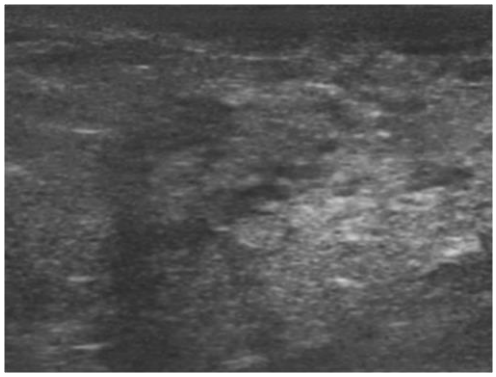
X-ray mammography revealed a nodule in the right breast in addition to the heterogeneous dense breast parenchyma, suspicious of malignancy. There were no abnormal micro calcifications, masses, or architectural distortions. Overlying skin was neither thickened nor was the nipple puckered (Figure 1).

Figure 1: Bilateral X-ray mammograms. Dense heterogeneously fibroglandular pattern of right breast parenchyma, with a radio-opaque nodule within.



Sonomammogram of the right breast showed a mixed echogenicity hypo-hyperechoic mass with irregular contours measuring 3.4 x 2.5 cm; parts of which demonstrated posterior acoustic shadowing (Figure 2).

Figure 2: Sonomammogram of right breast shows an irregular mixed echogenicity lesion with posterior acoustic shadowing.

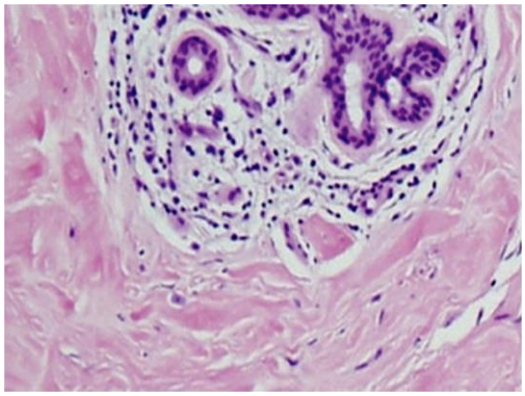


Breast MRI was not performed due to its local unavailability and lack of affordability by the patient.

Although the mass was mobile, it was firm to feel and appeared irregular. The patient was apprehensive and did not want to take any chances as far as the mass in the breast was concerned. Hence an excisional biopsy had to be done to address her anxiety and to get a proper tissue diagnosis. Post procedure the patient had an overwhelming sense of relief and was discharged after she was satisfied that there was no more danger to her life from the mass in her right breast.

Histologic evaluation of biopsy specimen from such lesion shows periductal lymphocytic infiltration without any evidence of atypia or malignancy amidst dense stromal fibrosis indicative of DMP (Figure 3).

Figure 3: Histopathology appearance of excisional biopsy shows pronounced stromal fibrosis and periductal lymphocytic infiltratration (Hematoxylin-eosin, x 40).



Discussion

The reported prevalence of DMP ranges from 0.6% to 13% in women with type 1 diabetes.[1, 2] It is a rare entity and is typically seen as a self-limiting fibro-inflammatory disease of the breast. In many patients with DMP; other associated complications arising from diabetes such as retinopathy, neuropathy and nephropathy have also been noted.[1] Fortunately our patient had no such associated complications of diabetes.

DMP has also been reported in patients with type 2 diabetes as well as those with thyroid diseases. Rarely, diabetic men too can have DMP.[3]

On palpation the patients often have firm, mobile, painless palpable, unilateral or bilateral breast masses. Such findings can raise the suspicion of malignancy.[1, 2, 5] Our patient had a firm, mobile and painless mass in her right breast.

X-ray mammography shows a localised increased density, with or without any distinct masses, spiculation or calcifications. Posterior acoustical shadowing from the palpable breast masses is the hallmark on sonomammogram, which was also seen in our case. This is said to occur due to the fibrotic nature of the lesions.[2, 5] As clinical and radiological imaging features are not specific of DMP, many times it is not possible to differentiate a benign mass from a malignant one without biopsy.[6, 7]

The firm resistance experienced during the back-and-forward motion of the needle while performing fine needle aspiration cytology is stronger than that of other benign and malignant breast conditions; and serves as a clue to the diagnosis of DMP.[8] The ductal epithelium

shows no signs of malignancy and typically has dense, hyalinised fibrous tissue.

Adipose tissue as well as cellular material is markedly absent or barely minimum. There are focal periductal, perivascular, and perilobular lymphocytic infiltrations with mature B-cell predominance. Epitheloid fibroblasts in the interlobular stroma may also be seen.[5, 8] Our patient too had similar pathological findings.

As DMP is known to recur after surgical removal, it should better be avoided.[2] The pathogenesis of DMP is supposed to be due to a secondary autoimmune reaction to abnormal extracellular matrix accumulation arising from the effects of hyperglycemia on connective tissue. Glycosylation induced by hyperglycemia, increases intermolecular cross-linkage and matrix expansion of altered quality and quantity which resists degradation. The triggered autoimmune response manifests with autoantibody production and B-cell proliferation.[2-4]

As reports on DMP have been few, no standard protocol exists for the long-term management of these patients. Hence annual follow-up by imaging studies would be useful in identifying the progression and detection of other abnormalities at the earliest.

To the best of our knowledge malignant transformation of these lesions has never been reported although, there has been a reported case of regression of this entity.[5] The current literature does not reveal any relationship between the duration and severity of the diabetes and extent of the mammary lesion. Moreover no change in the size of the lesion has been found either with proper or even with poor control of the diabetic status of the patient.

No active management is needed as majority of the patients are usually asymptomatic. Symptomatic medications for pain relief may be offered. There is a role of proper counselling to remove the fear of possible cancer that prevails in the mind of every female with a lump in breast. Periodic annual follow-up mammography has a good scope in addressing these issues. Excisional biopsy is the only way out for patients who are highly concerned about this unwanted breast lump. It must, however, be remembered that approximately 60% of such lesions tend to be bilateral or recur after surgical excision.[2] As the recurrence is usually in the same location and involves a larger area than it earlier was; the surgical biopsy should better be avoided. Moreover, in addition to ipsilateral; bilateral and even contralateral recurrences are known.[9]
In the past, it had been suggested that newer lesions in known diabetic mastopathy patients be assessed by fine-needle aspiration rather than biopsy if the clinical and imaging features are inconclusive or suspicious of malignancy.[8, 9]

But the current consensus on diagnostic procedures is on ultrasound-guided diagnostic breast biopsy technology which is now believed to be the most minimally invasive technique for evaluation of indeterminate and suspicious lesions seen on diagnostic breast ultrasound.[10] Modern research has shown that the 8-gauge vacuum-assisted biopsy approach to ultrasound-guided diagnostic breast biopsy appears to be advantageous to that of the spring-loaded 14-gauge core biopsy approach for providing the most accurate and optimal diagnostic information.[10] But nevertheless, one must keep in mind the disadvantages of a fine needle biopsy like the issue of the adequacy of tissue sampling and sampling from the appropriate representative area. A proper sample alone can minimise the risks for mis-estimation of any given breast finding and for reducing the risks of false negative results for finding a lesion to be due to diabetic mastopathy or to be due to breast carcinoma.[10]

Whenever clinico-cytological features are consistent with diabetic mastopathy, conservative clinical management and close follow up should be considered.[9]

To summarise, knowledge about this rare entity and a careful clinico-imaging-pathological correlation in the clinical setting of diabetes mellitus helps identify this condition and avoids unnecessary surgical biopsies, mental distress as well as the diagnostic uncertainty.

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PEER REVIEW

Not commissioned. Externally peer reviewed.

CONFLICTS OF INTEREST

The authors declare that they have no competing interests

FUNDING

None

PATIENT CONSENT

The authors, Sankaye SB, Kachewar SG, declare that:

1. They have obtained written, informed consent for the publication of the details relating to the patient(s) in this report.
2. All possible steps have been taken to safeguard the identity of the patient(s).
3. This submission is compliant with the requirements of local research ethics committees.