Diabetic mastopathy – a case report with emphasis on multimodality surveillance
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Patient: 38 years, female

Clinical History:
A 38 year-old female, with history of long-standing insulin-dependent diabetes mellitus type I, consulted for a palpable left breast mass.

Imaging Findings:
A 38 year-old female consulted for a palpable left breast mass. She had a previous history of diabetes mellitus type I diagnosed 30 years ago, treated with insulin and complicated with nephropathy and retinopathy. The mass was firm, painless, mobile, and located in the upper external quadrant. Mammography depicted extremely dense breast tissue. Focal asymmetry of density was identified in the upper left quadrant only visible on the mediolateral oblique view (Fig. 1). No other anomaly was visible and the study was further completed with ultrasound.
Ultrasound showed an ill-defined, markedly hypoechoic area with slight posterior acoustic attenuation, corresponding to the clinical palpable mass (Fig. 2). Core biopsy performed under palpation guidance revealed adenosis.

On the 6-month follow-up the mammography and ultrasound demonstrated stability of the abnormalities observed. Due to the persistence of the images and discordance between histologic and clinical findings, a second core biopsy under ultrasound guidance was performed. Histology was in favour of adenosis.

The patient was further studied with breast MRI which did not show any focal abnormality (Fig. 3).

Owing to the clinical and ultrasound suspicious findings, the case was revised in a multidisciplinary reunion. The clinical, imaging and histologic data were re-evaluated and correlated, and the diagnosis of diabetic mastopathy was established (Fig. 4).

The patient was reassured and managed conservatively with annual follow-up, which included clinical examination, mammography, ultrasound, and MRI. In the last follow-up, 9 years after the first evaluation in our institution, unchanged imaging and clinical findings were observed.
Discussion:

Diabetic mastopathy is a rare tumour-like, benign, fibro-inflammatory tissue proliferation on the breast seen in long-standing insulin-dependent diabetic patients. Its pathogenesis is poorly understood and likely multifactorial, possibly relating to an immunologic reaction. Diabetic mastopathy pathological hallmarks are perilobar and perivascular infiltrate of mature B-lymphocytes and varying degrees of keloidal fibrosis, lobular atrophy, epithelioid fibroblasts, and lymphoid nodule formation. It is a form of lymphocytic mastitis and is grouped together with others immunologic breast diseases such as Hashimoto thyroiditis, Sjogren syndrome, and lupus.

Although diabetic mastopathy is classically described in premenopausal women type I diabetes mellitus, it has been seldom reported in type II diabetes mellitus, postmenopausal women, and men. Diabetic mastopathy is associated with microvascular complications (retinopathy, neuropathy, cheiroarthropathy, and nephropathy) as well as others endocrine or autoimmune diseases.

Patients typically present painless, rock-hard, irregular breast lumps, indistinguishable from cancer. Multicentricity and bilateralism are frequent and more so at late stages.

Mammography can depict ill-defined masses or asymmetric densities but often these are masked by the typically elevated glandular density which is the most common diabetic mastopathy mammographic finding and underscores the systemic nature of diabetes.

Ultrasound characteristically reveals irregular hypoechoic masses with marked posterior acoustic shadowing but may less often display well-circumscribed and slightly hypoechoic masses without acoustic shadowing, the later being more common in early diabetic mastopathy and in less fibrotic forms.

Knowledge about diabetic mastopathy MRI findings is scarce and based on case reports and small series. MRI reported features are variable and nonspecific and include stippled, patchy or diffuse stromal enhancement. Therefore, the added value of MRI is more likely to rely on identifying suspicious areas of focal enhancement for histological verification and in its absence reassuring dubious conventional imaging findings rather than adding diagnostic information.

Indeed, since diabetic mastopathy clinical and imaging mimic cancer, a histologic proof is needed to establish diagnosis. Cytology is usually non-diagnostic because it is technically difficult due to the masses’ firmness and provides scant cellular material. Previously, surgical biopsy was required to exclude malignancy but nowadays core biopsy is considered adequate for diagnosing clinically suspected diabetic mastopathy.

Diabetic mastopathy is usually a self-limited but potentially recurrent disease. Surgery is associated with increased recurrence and should be avoided. Recurrence has been reported in 32-63% of cases and may manifest through unique or multiples, ipsilateral, bilateral, or contralateral masses, with a propensity for the subareolar region.

Although there is no increased risk of breast lymphoma or carcinoma associated with diabetic mastopathy, cases of superimposed breast cancer have been reported. Thus, routine follow-up is recommended and should integrate physical examination, multimodality imaging, and core biopsy when needed.

The case presented adds a mammographically, ultrasound, and MRI documented case of diabetic mastopathy to literature. The importance of careful clinical history and physical examination data collection and their correlation with radiological and pathological findings for accurate diagnosis and surveillance are underscored, in order to avoid unnecessary surgery.
Differential Diagnosis List: Diabetic mastopathy

Final Diagnosis: Diabetic mastopathy

References:

**Description:** Mediolateral oblique view: both breasts exhibited extremely dense glandular tissue, type 4 according to the American College of Radiology. In the anterior third of the left upper quadrant a focal asymmetry of density was seen. **Origin:**
Description: Craniocaudal view: no abnormality was shown, particularly in correspondence with the clinical mass and the focal density asymmetry observed in the mediolateral view. Origin:
Description: The abnormality was located at the 12 o’clock position, at 4 cm from the nipple, and presented as an irregular, ill-defined, markedly hypoechoic area, with slight posterior acoustic attenuation. Origin:
Figure 3

Description: T1 axial image: extensive and homogeneous glandular tissue is observed symmetrically.

Origin:

Description: T2 axial fat-suppressed (FS) image: the periphery of the glandular tissue exhibits symmetric and marked hypointense signal. No mass or focal abnormality was depicted. Origin:
**Description:** Early enhancement subtraction (axial image): no abnormal enhancement was seen.

**Origin:**

**Description:** Late enhancement subtraction (axial image): symmetric mild enhancement on the periphery of the glandular tissue was observed, translating fibrotic changes.
**Description:** Late enhancement subtraction (sagittal image): mild enhancement on the periphery of the glandular tissue was seen. **Origin:**
**Figure 5**

**a**

*Description:* Mature B cell lymphocytic infiltrate was seen on periductal, perilobular, and perivascular location (L) as well as under a nodular arrangement (N). *Origin:*

**b**

*Description:* Extensive keloidal fibrosis associated with lobular atrophy was shown. *Origin:*