Diabetic mastopathy
Case report

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Diabetic mastopathy is a rare fibro-inflammatory breast disease, which occurs in premenopausal women affected by long-standing type I insulin-dependent diabetes.
It is a benign disease and it is often misunderstood for its clinical and radiological features that may mimic a breast cancer.
The diagnosis of diabetic mastopathy is based on histological examination and it is characterized by lymphocytic lobulitis with glandular atrophy and perivascular lymphocytic infiltration.
The patients do not need to undergo surgery but it is necessary to plan an adequate clinical and radiological monitoring program.

KEY WORDS: Diabetic mastopathy, Diagnostic and therapeutic features.

Introduction

Diabetic mastopathy (DM) is a clinico-pathological entity, benign and rare (less than 1% of benign breast lesions) [1], which mainly affects pre-menopausal female population suffering from type 1 diabetes insulin-dependent of long duration, and it is usually associated with uncompensated blood glucose values and vascular complications such as nephropathy, retinopathy, neuropathy. Cases of DM have also been described in male patients with Type 2 diabetes but they are very rare [2]. DM often occurs in patients with autoimmune disorders such as thyroiditis and / or systemic lupus erythematosus.
Herein we present the case of a 36-year-old patient, suffering from type 1 insulin-dependent diabetes, who underwent an excisional biopsy for breast lump, clinically suspicious for neoplastic breast disease, in our General Surgery and Organ Transplantation Operative Unit.

Case report

In November 2010, a 36-year-old woman was admitted in our General Surgery and Organ Transplantation Unit for an excisional breast biopsy.
At the entrance, the patient was affected from diabetes type 1 insulin-dependent treated with insulin 58 IU / day; she was asymptomatic, apparently well-being, and her vital parameters were normal. The patient had no family history of neoplastic diseases; she denied any heart and / or pulmonary diseases.
She reported that her problems began in June 2008 when, during self-examination of her right breast, she felt the presence of a zone of hard consistency. The ultrasound examination of the breasts showed fibrocystic breasts in the absence of neoplastic lesions with nothing to report at the omolateral axillary region. On July 2010, the patient underwent breast ultrasound examination that showed breasts with glandular echotexture, with signs of

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ductal bilateral ectasia; in the lower right paracentral area, there were structural inhomogeneities, compatible in appearance with glandular plate, worthy of more detailed study through mammography and cytological examination. The patient, therefore, underwent a bilateral mammography that showed an asymmetric increase of the parenchymal density in the paracentral lower right breast area, which was referable to the gland plate; no microcalcifications or neoplastic lesions were observed. Subsequently, this breast lesion was studied by ultrasound-guided tru-cut biopsy that histologically revealed fragments of breast parenchyma with diffuse fibrosis.

On the basis of these inconclusive results and considering the clinical features suspicious for neoplastic disease, we decided to submit the patient to an excisional biopsy of the breast lesion, in agreement with the radiologists and the oncologists of the Breast Unit of Parma University Hospital.

With this clinical documentation, the patient was admitted to our Day Surgery Division.

Laboratory tests showed values of fasting plasma glucose of 156 mg / dL and normal tumor markers values. At the preoperative anesthesia evaluation, the patient was classified as American Society of Anesthesiologist (ASA) physical status score 1.

At the clinical examination, the patient had a palpable, hard-wood mass, localized in the paracentral inferior area of the right breast, without any sign of infiltration or involvement of the overlying skin.

On the day of admission, the patient underwent surgical biopsy of the palpable lesion.

No complications occurred in the early postoperative period and the patient was discharged on the evening of admission, with adequate pain relief. One month after surgery, the wound healed completely and no infectious complications was noted.

Histological examination of the removed breast parenchyma highlighted the presence of breast tissue with diffuse fibrosis associated with lobular and perivascular chronic inflammation, related to diabetic mastopathy; no neoplastic lesion was observed.

A six-month follow-up was decided with a physical examination of the patient at the Breast Unit of reference and a yearly bilateral mammography.

Discussion

DM is a rare benign breast disease, which was described for the first time in 1984 by Soler and Khardari, more frequently reported in female premenopausal population suffering from type 1 insulin dependent diabetes and from other autoimmune diseases; it is rarely found in men or in patients with type 2 diabetes.

This breast disease is a form of mastitis, histologically characterized by lymphocytic lobulitis with perivascular stromal fibrosis. It has a multifactorial etiology: the exaggerated immune reaction to the accumulation of abnormal extracellular matrix, due to prolonged hyperglycemia and / or deposition of the final products of the process of nonenzymatic glycosylation of extracellular matrix proteins and neoantigen, would finally determine the glandular fibrotic process, with increased production and accumulation of collagen [3].

At the histological examination, DM is characterized by 3 primary lesions: diffuse hyaline fibrosis, lymphocytic lobulitis associated with lymphocytic perivascular and periductal inflammation, and the presence of dystrophic fibroblasts (epithelioid like fibroblasts) [1].

Tomaszewski et al. were the first authors to introduce the term DM in 1992 and they have described epithelioid cells (epithelioid-like fibroblasts, EFBs) and stromal fibrosis as the specific elements of this breast disease [4].

The histological picture that allowed us to make the diagnosis of DM was characterized by [5]:

1. lymphocytic lobulitis with glandular atrophy (Figg. 1, 2);
2. perivascular infiltrate, mainly represented by small lymphocytes admixed with some plasma cells (Fig. 3);
3. diffuse fibrosis.

At the clinical examination of the breast, DM may mimic breast cancer; in fact the typical patient presents a palpable hard, often painless, irregular, solitary, unilateral or bilateral sliding breast mass.

Neither mammography nor ultrasound provides important elements to make the diagnosis of DM; even MRI does not provide additional and determinant information. Instead, histological examination is diriment in excluding a neoplastic lesion for the final diagnosis. Usually, fine-needle aspiration cytology is not indicated, because the hard consistency of the mass does not allow to obtain an adequate cytological material.

Camuto et al. have reported that diagnosis of DM should be performed in the presence of the following elements [5]:

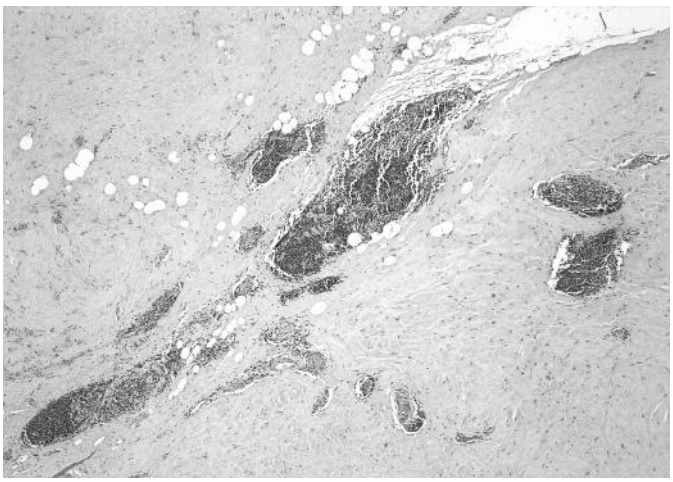

Fig. 1: At low power view, a nodular and dense lymphocytic infiltrate with perivascular and periductal distribution is observed. The stroma is diffusely fibrotic and atrophic.

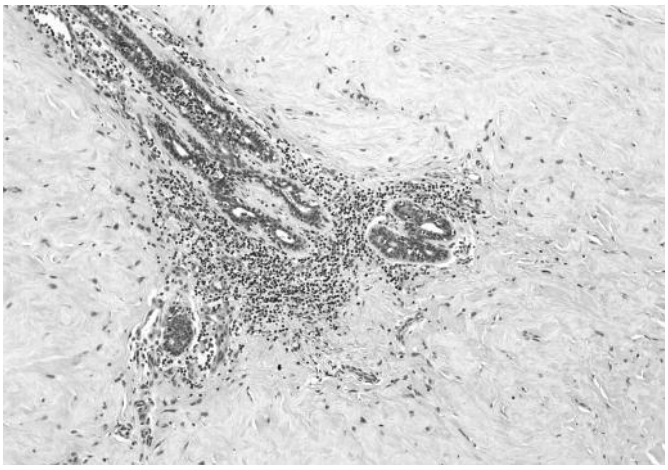

Fig. 2: The lymphocytic infiltrate is distributed around the ducts with sclerosis and involutional changes of the lobules.

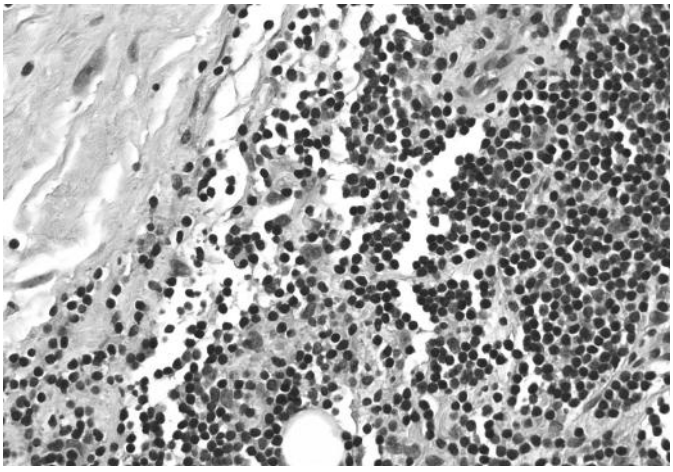

Fig. 3: The infiltrate is predominantly composed of small lymphocytes, admixed with some activated elements and plasma cells.

1. Female patient suffering from type 1 diabetes of long duration;
2. At clinical examination of the breast, the presence of a hard, irregular, sluggish but mobile mass;
3. Breast Ultrasound that shows a marked acoustic shadow;
4. Mammography that reveals an increase of glandular breast tissue density;
5. Needle biopsy or excisional biopsy showing an histologic pattern characterized by keloid fibrosis, perivascular, periductal, and perilobular B-cell lymphocytic infiltrate and the presence of epithelioid cells.

DM is a rare and benign breast disease. In some cases, DM has been reported in association with ductal carcinoma in situ. It is important to make an early diagnosis to prevent patients being subjected to unnecessary and mutilating breast surgery. Furthermore, DM lesions have a high relapse rate, single or multiple, in the same or in the contralateral breast. Camuto et al. have also reported that 60% of DM lesions recur after surgical removal and they tend to be more voluminous. There is no statistically significant association between MD and the occurrence of breast cancer.

DM frequently mimics the clinical and radiological features of breast cancer and it should be always considered in those patients affected by insulin-dependent diabetes presenting with a breast palpable mass to avoid unnecessary breast surgery.

The diagnosis should be made on histological examination of the breast tissue; the pathological features are not specific, but highly suspicious in the correct clinical context. The main morphological features are: diffuse fibrosis, perivascular lymphocytic infiltrate, mononuclear lobulitis and epithelioid fibroblastic cells.

If the tru-cut biopsy is not diagnostic, as in our case, it may useful to submit the patient to surgical biopsy, even though we must consider the high recurrence rate of DM lesions and the risk of infection or impaired wound healing in case of uncontrolled blood glucose levels.

A patient with DM could be a candidate for quadrantectomy or mastectomy only in cases of severe pain and disability [6] or for aesthetic reasons, according to the patient's statement; in those patients where the risk of malignancy of the lesion cannot be totally excluded from the surgical biopsy, we are allowed to perform quadrantectomy or mastectomy [7-8].

The patients affected by DM need a long term follow-up program that includes clinical examination every six months, yearly ultrasound examination or mammography, and microbiopsy of any highlighted breast lesions to exclude neoplastic transformation [9-10].

Riassunto

La mastopatia diabetica è una rara lesione fibro-infiammatoria che colpisce soprattutto le donne affette da diabete tipo I insulino-dipendente da parecchi anni, in età premenopausale.

È una patologia del tutto benigna, misconosciuta che, per le sue caratteristiche cliniche e radiologiche, può mimare un carcinoma mammario.

La diagnosi di mastopatia diabetica è istologica tramite agobiopsia e gli elementi che la contraddistinguono sono: la lobulite linfocitaria con atrofia ghiandolare e l'infiltrato linfocitario perivascolare.

Le pazienti affette non necessitano di essere sottoposte ad un intervento chirurgico sulla mammella ma di rientrare in un programma di sorveglianza clinica e radiologica.

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