

Diabetic Mastopathy: A Rare Complication of Type 1 Diabetes

Haraj Nassim Essabah*, Chadli Asma, El Aziz Siham and Farouqi Ahmed

Endocrinology Department of CHU Ibn Rochd of Casablanca, Faculty of Medicine and Pharmacy of Casablanca, Morocco

Abstract: Diabetic mastopathy is a rare complication encountered in type I diabetes.

This observation relates diagnostic, morphological, therapeutic and evolutionary characteristics of diabetic mastopathy.

Our case consist of a young woman aged 30 years, type 1 diabetic for 20 years with chronic blood sugar imbalance (HBA1C 13%); at the stage of microvascular complications.

During the last year, she has had a painless bilateral breast induration, while physical examination found very hard breasts without inflammatory signs or well-individualized nodule.

The echo-mammography showed a heterogeneous appearance of the two breasts with a nodule in the upper inner quadrant of the left breast rated ACR4 at the BI-RADS classification. The surgical biopsy showed dense fibrous tissue with a chronic inflammatory infiltrate, predominately lymphocytic, related to diabetic mastopathy. Abstention and monitoring were recommended.

Indeed, clinical and radiological signs of diabetic mastopathy are nonspecific and can leave a suspected breast cancer. The pathogenesis is not known. The duration of diabetes and hyperglycemia could be contributing factors. After histological diagnosis, in agreement with the clinic (old and complicated diabetes), surgical abstention is the rule.

Keywords: Breast disease, mastopathy, diabetes, insulin, histology.

INTRODUCTION

Diabetic mastopathy is a rare lesion, found in the complicated type 1 diabetes, representing less than 1% of benign breast lesions [1].

Called "diabetic fibrous breast disease" in the English literature, it was described for the first time by Soler *et al.* in 1984 [2].

Clinical and radiological signs, associated with it, are not very specific and can leave a suspected breast cancer.

The diagnosis is suspected in clinical situations and confirmed histologically [3]. Surgical abstention is the rule.

This observation relates diagnostic, morphological, therapeutic and evolutionary characteristics of diabetic mastopathy.

CASE PRESENTATION

Our case consist of a young woman aged 30 years, type 1 diabetic for 20 years with chronic blood sugar imbalance (HBA1C = 13%), at the stage of microvascular complications (stage III nephropathy and proliferative diabetic retinopathy).

She has had a painless bilateral breast induration for the last year.

Physical examination found very hard breasts without inflammatory signs or well individualized nodules.

The mammography was inconclusive and showed no anomaly, given the dense nature of—the breasts (Figures 1).

Breast ultrasound reveals an expansive process rated ACR4 at the BI-RADS classification, located above the areolar part of the left breast, and retro-areolar part of the right breast (Figures 2).

Surgical biopsy showed dense fibrous tissue with a chronic inflammatory infiltrate, predominately lymphocytic, related to diabetic mastopathy.

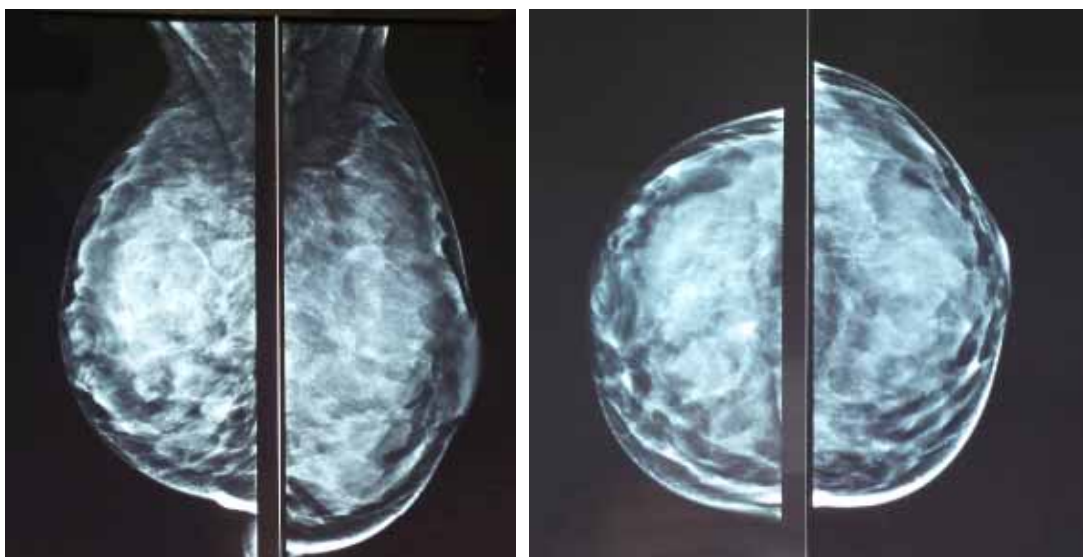
Abstention and monitoring were recommended; and showed a stationary appearance of the lesions.

DISCUSSION

Diabetic mastopathy is called fibrous breast disease; it is a rare benign pathology, and it represents less than 1% of all benign breast lesions, but can range from 0,6 to 13% in type 1 diabetic women [1, 4].

Diabetic mastopathy is usually observed in young patients with long-term type 1 diabetes, and multiple complications [5]. This situation corresponds to our

*Address correspondence to this author at the Endocrinology Department of CHU Ibn Rochd of Casablanca, Morocco; Tel: 212 (0) 6 67 52 71 12; E-mail: haraj.nassim@gmail.com



Figures 1: Mammography is inconclusive and showed no abnormality given the dense nature of the breasts.



Figures 2: Breast ultrasound reveals an expansive process classified ACR4 at the BI-RADS classification, located above the areolar part of the left breast, and the retro-areolar part of the right breast.

patient, who has been diabetic for 20 years, with complications (diabetic retinopathy and stage III nephropathy).

The diagnosis can be difficult to make, because this condition can closely mimic the clinical presentation of breast cancer [4, 5]. In our patient's case, the presence of hard breasts at the examination, along with the mammographic ultrasound features, is in favor of a suspicious ACR4 lesion.

Indeed, the symptoms of diabetic mastopathy are not pathognomonic and can simulate a breast cancer. One can find a single or multiple breast lumps, either unilateral or bilateral, with irregular contours and hard or stony consistency, and no nipple discharge and no inflammatory phenomenon.

Radiological examinations provide little information and have low sensitivity and specificity [6, 7].

Mammography frequently shows overdensities, more or less regular, sometimes dense breasts but without architectural distortion or clusters of microcalcifications, as in our patient's case.

Ultrasonography often reveals irregular hypoechoic masses with strong posterior acoustic shadowing [8, 9].

Breast magnetic resonance imaging has been tested in some patients, but the results were disappointing, as it does not allow to distinguish between diabetic mastopathy and breast cancer [10, 11].

The diagnosis of diabetic mastopathy is histological [3, 12].

Fine needle aspiration cytology is difficult to perform and the number of poor and uninterpretable cell cytology is high, reaching 50% in some series [9, 13].

Tomoszewski *et al.* [14] were the first to describe the distinctive pathological finding associated with diabetic mastopathy.

Specific histopathologic characteristics of diabetic mastopathy include keloidal fibrosis, epithelioid fibroblasts, widespread perivascular/lobular lymphocytic infiltration, and widespread peri-vascular lymphocytic infiltration [11, 15].

Histological aspects are explained by the pathophysiology of diabetic mastopathy.

The autoimmune response also explains the association with autoimmune diseases.

On the first 12 observations described by Soler *et al.* 5 cases of thyroiditis and 11 cases of arthropathy are found [2].

The pathogenesis of diabetic mastopathy is not fully elucidated. It is multifactorial and many hypotheses have been advanced: Hyperglycemia is the cause of an abnormal decrease of the degradation of connective tissue in the extracellular matrix. Some authors suggest the hypothesis of a secondary immune response to excess glycation involving B lymphocytes and macrophages. The presence of cytokines and mast cells promotes the secretion of collagen [3, 6, 16].

Others suggest the presence of exogenous insulin toxicity through inflammatory or immune reaction. Cases of diabetic mastopathy have been described in type 2 diabetic patients on insulin [3].

When diabetic mastopathy is suspected, a biopsy should be performed to confirm the diagnosis and conservative management is adequate. When improper excision surgery is performed, the evolution is characterized by recidivism rates ranging from 20 to 100% [17].

In our patient's case, clinical and radiological monitoring has been recommended and showed a stationary appearance of the lesions.

No relationship between diabetic mastopathy and breast cancer has been reported in literature. Patients with diabetic mastopathy have a risk of developing breast cancer similar to the general population [3].

CONCLUSION

Diabetic Mastopathy is a benign lesion that we must consider in any resembling clinical context. A biopsy

can provide a diagnosis and prevent abusive mastectomy.

The authors declare that there is no conflict of interests regarding the publication of this paper.

REFERENCES

- [1] Schienger JL, Dale G. Chenard Gynecomastia caused by diabetic mastopathy: 2 cases. *Rev Med Interne* 2001; 22(3): 307-8.
- [2] Soler NG, Khardori R. Fibrous disease of the breast, thyroiditis, and cheiroarthropathy in type 1 diabetes mellitus. *Lancet* 1984; 1(8370): 193-5.
[http://dx.doi.org/10.1016/S0140-6736\(84\)92114-7](http://dx.doi.org/10.1016/S0140-6736(84)92114-7)
- [3] Fatnassi R, Ben Regaya L, Zrig H, Landolsi N, Naifer R, Bibi M, *et al.* Diabetic mastopathy. *Journal de gynécologie obstétrique et biologie de la reproduction* 2011; 40(3): 267-70.
<http://dx.doi.org/10.1016/j.jgyn.2010.09.004>
- [4] Francisco C, Júlio C, Fontes AL, Silveira Reis I, Fernandes R, Valadares S, *et al.* Diabetic mastopathy: a case report. *Clin Imaging* 2012; 36(6): 829-32.
<http://dx.doi.org/10.1016/j.clinimag.2012.01.003>
- [5] Camuto PM, Zetrenne E, Ponn T. Diabetic mastopathy: a report of 5 cases and a review of the literature. *Arch Surg* 2000; 135(10): 1190-3.
<http://dx.doi.org/10.1001/archsurg.135.10.1190>
- [6] Mak CW, Chou CK, Chen SY, Lee PS, Chang JM. Case report: Diabetic mastopathy. *Br J Radiol* 2003; 76(903): 192-4.
<http://dx.doi.org/10.1259/bjr/51145312>
- [7] Baratelli GM, Riva C. Diabetic fibrous mastopathy: sonographic-pathologic correlation. *J Clin Ultrasound* 2005; 33(1): 34-7.
<http://dx.doi.org/10.1002/jcu.20077>
- [8] Leconte I, Féger C, Berlière M, Weynand B, Galant C, Fellah L. Mastopathie diabétique. *Imagerie de la femme* 2005; 15(3): 161-3.
[http://dx.doi.org/10.1016/S1776-9817\(05\)80654-6](http://dx.doi.org/10.1016/S1776-9817(05)80654-6)
- [9] Leroux-Stewart J, Rabasa-Lhoret R. Diabetic Mastopathy: Case Report and Summary of Literature. *Can J Diabetes* 2014; 38: 305-306.
- [10] Wong KT, Tse GM, Yang WT. Ultrasound and MR imaging of diabetic mastopathy. *Clin Radiol* 2002; 57(8): 730-5.
<http://dx.doi.org/10.1053/crad.2002.0936>
- [11] Accurso A, Della Corte GA, Rocco N, Varone V, Buonaiuto R, Compagna R, *et al.* Unusual breast lesion mimicking cancer: diabetic mastopathy. *Int J Surg* 2014; 12(Suppl 1): S79-82.
<http://dx.doi.org/10.1016/j.ijsu.2014.05.048>
- [12] Kim A, Ely, Tse G, Simpson JF, Clarfeld R, Page DL. Diabetic Mastopathy. A Clinicopathologic Review. *Am J Clin Pathol* 2000; 113(4): 541-5.
- [13] Miralles TG, Gosalbez F, Menendez P, Manjon JA, Sampedro A. Fine needle aspiration of sclerosing lymphocytic lobulitis of the breast. A report of two cases. *Acta Cytol* 1998; 42(6): 1447-50.
<http://dx.doi.org/10.1159/000332184>
- [14] Tamaszewski JE, Brooks JS, Hicks D, Livolsi VA. Diabetic mastopathy: a distinctive clinicopathologic entity. *Hum Pathol* 1992; 23(7): 780-6.
[http://dx.doi.org/10.1016/0046-8177\(92\)90348-7](http://dx.doi.org/10.1016/0046-8177(92)90348-7)
- [15] Hadj Ali I, Ben Abdellah N, Khiari K, Ben Salem L, Cherif L, Mrad K, *et al.* Mastopathie fibreuse diabétique. A propos d'un cas. *Ann Endocrinol* 2002; 63(3): 235-239.

- [16] Kudva YC, Reynolds CA, O'Brien T, Crotty TB. Mastopathy and diabetes. *Curr Diab Rep* 2003; 3(1): 6-9.
<http://dx.doi.org/10.1007/s11892-003-0054-5>
- [17] Croce S, Chaney G, Bretz-Grenier MF, Wittershein A, Casnedi S, Mathelin C. La mastopathie diabétique: une

lésion mammaire bénigne sujette à récurrence. *Gynécologie obstétrique et fertilité* 2010; 38(11): 686-9.
<http://dx.doi.org/10.1016/j.gyobfe.2010.05.016>

Received on 10-03-2015

Accepted on 30-03-2015

Published on 10-04-2015

DOI: <http://dx.doi.org/10.12970/2310-9971.2015.03.01.2>