DIABETIC MASTOPATHY IN AN ELDERLY WOMAN: A CASE REPORT

Atsuo Tsuchiya[1)], Rikiya Tsunoda[2)], Kageyoshi Seino[1)], Kazuo Akuzawa[1)]

[1)] Division of Surgery, Fukushima Dai-Ichi Hospital, Fukushima, Japan
[2)] Division of Pathology, Yonezawa City Hospital, Yonezawa, Japan

16-2, Kitasawamata-Nariide, 960-8251 Fukushima, Japan

Corresponding author: Atsuo Tsuchiya
E-mail:tsuchiya1204@ybb.ne.jp

Abstract:We report a case of diabetic mastopathy in an elderly woman with type II diabetes. The patient, a 66-year-old woman with a 6-year history of diabetes mellitus, has been received an oral diabetic agent. She noticed a lump in her right breast two months previously. Mammography of the breast showed a low density mass, but there was no microcalcification or architectural distortion. Ultrasonography of the lesion revealed a hypoechoic mass with a distinct margin. Fine needle aspiration cytology was performed but sufficient tissue was not obtained. However, a cluster of small epithelial cells with nucleus swelling and increased chromatin was demonstrated. Excisional biopsy was performed and diabetic mastopathy was demonstrated histologically.

Key words: diabetic mastopathy, breast neoplasm, diabetes mellitus
Running head: diabetic mastopathy

INTRODUCTION

Diabetic mastopathy has been described as a clinicopathologic entity based on the presence of a benign fibrous disease in breast tissue in patients with type I diabetes (1, 2). However, recent cases of diabetic mastopathy in type II diabetes mellitus have been reported (3, 4). Diabetic mastopathy represents less than 1% of benign breast lesions (2, 5-7). Patient with diabetic mastopathy present with hard, painless and irregular mass of the breast, which clinically simulates breast cancer, and misinterpretation of these masses as breast cancer has resulted in unnecessary mastectomy (5, 8). Here we report an uncommon case of diabetic mastopathy in type II diabetes.

CASE REPORT

The patient was a 66-year-old postmenopausal woman, who was diagnosed with type II diabetes in 2004. She has been treated with α-glucosidase inhibitor for 6 years and also suffered from ureterolithiasis for 5 years. However, she had no microvascular and macrovascular diabetic complications. She noticed a lump in her right breast two weeks previously. Physical examination revealed a hard, movable, and well-circumscribed mass in the upper outer quadrant of the right breast. The size was approximately 14x20 mm in diameter. No axillary lymph node swelling was noted and there was no nipple discharge. Blood sugar was 162 mg/dl and HbA1c was 6.6%. Thyroid function tests were all within normal limits:thyroid stimulating hormone(TSH), 1.7 μ U/ml; free triiodothyronine(fT_3), 3.2 pg/ml; and free thyroxine(fT_4), 1.2 ng/dl. Mammography of the breast showed localized increased density without microcalcification or architectural distortion (Fig. 1). Ultrasonography of the lesion revealed a hypoechoic mass with a distinct margin, containing high echo in the cavity and measured 20x8 mm in diameter (Fig. 2). Fine needle aspiration cytology was performed but sufficient tissue was not obtained. A cluster of small epithelial cells with nucleus swelling and increased chromatin was demonstrated. A core needle biopsy was advised but the patients requested resection of the mass.

In November 2009, removal of the tumor was performed under local anesthesia, and the procedure was completed successfully. An impression of benign tumor was gained from the cut surface of the resected specimen. Pathological findings showed that the lesion consisted of massive collagen fibers with keloid-like fibrosis and lymphatic infiltration around the lobules and ducts (Fig. 3, 4). These lymphocytes were composed predominantly of B-cells since they were immunohistochemically positive for CD20 (Fig 5). A diagnosis of diabetic mastopathy was determined.

DISCUSSION

Soler and Khardori (1) first reported 12 cases of fibrous disease of the breast in association with type I diabetes mellitus of long duration in 1984. Diabetic mastopathy is considered as an uncommon tumor of fibrous tissue of the breast mimicking breast cancer. In addition, diabetic mastopathy has also been observed in type II diabetes mellitus, and until 2006 twenty-five cases of diabetic mastopathy have been reported in type II diabetes mellitus patients(9). This condition is also found in patients with other endocrine disorders, especially thyroid diseases (2, 6, 8). Honda et al. (10) reported differences of diabetic mastopathy between Japan and Western countries, showing that most cases in Western countries are in premenopausal women with type I diabetes, while in Japan, most cases are in postmenopausal women with type II diabetes. They speculated that differences of genetic factors, including HLA type, between Japan and the Western countries were the source of this finding.

Diabetic mastopathy involves a hard, irregular, movable, nontender, single or multiple, unilateral or bilateral mass(4, 7, 11). Seidman et al.(6) reported a mean duration of longer than 13 years (range 4-27 years) for diabetic mastopathy to develop. Mammographic appearances show the presence of a dense parenchymal structure with no distortions or microcalcifications (7, 12). Ultrasound findings vary from irregular hypoechoic mass with marked acoustic shadowing to a vague hypoechoic area without shadowing (7, 12). However no discrete solid or cystic masses were identified.

Diabetic mastopathy is a distinct clinicopathologic entity with specific histopathologic characteristics, which include keloidal fibrosis, epithelioid fibroblasts, wide spread perivascular/lobular lymphocytic infiltration, and widespread perivascular lymphocytic infiltration (2). The frequency of the four features is approximately 60-70% (4, 6, 13) and these cases are relatively specific for insulin-requiring diabetes mellitus. The lesion we studied is characterized by the presence of dense keloid-like fibrosis and perivascular lymphocytic infiltration, but lacks epithelioid fibroblasts. Epithelioid fibroblasts, although they may be an integral component of the lesion (6), are not necessary for the diagnosis of diabetic mastopathy (2) and they were also seen in patients without a diabetic history(3, 4). Thus, it seems that the proposed features are not as specific as previously maintained, or the appearance of diabetic mastopathy in the breast may precede the onset of clinical diabetes or another autoimmune process (4). Lymphatic infiltration in diabetic mastopathy consists predominantly of B-cells, in contrast to non-diabetic mastitis in which lymphocytic infiltration consists mostly of T-cells (2, 14). This B-cell predominance is similar to the lymphocytic infiltrate seen in other autoimmune disorders, such as Hashimoto's thyroiditis and benign

lymphoepithelial lesion of salivary gland (6). The present case also showed B-cell lymphatic infiltration in immunohistochemical findings, but we have not had the opportunity to examine our patient for autoimmune disorders.

Although the pathogenesis is still obscure and could be multifactorial, it is generally believed that these lesions are attributable to extracellular matrix expansion secondary to increased collagen production and decreased degradation, in part related to the hyperglycemic state(2). Another reason is autoimmune reaction, showing lymphocytic infiltration for B cells (1, 2, 4, 7). The role of autoimmunity in the case of diabetic mastopathy was first suggested by Soler and Khardori (1). Type II diabetes often have endogenous hyperinsulinemia and only patients on exogenous insulin developed diabetic mastopathy, suggesting that exogenous insulin use may be related to diabetic mastopathy. In type I diabetes, Kudva et al. (15) reported that diabetic mastopathy development is not associated with the use of insulin or degree of glycemic control and patients with sclerosing lymphocytic lobulitis show significantly higher prevalence of retinopathy and neuropathy. On the contrary, Tomaszewski et al.(2) described that diabetic mastopathy without epithelioid fibroblasts showed no secondary diabetic changes.

Histologic findings are necessary for the diagnosis of diabetic mastopathy, but fine needle aspiration cytology cannot obtain sufficient material for a diagnosis because of the hard tumor. Core needle biopsy is recommended to avoid unnecessary surgical procedure because surgery may exacerbates the condition. Additional data in the literature shows that approximately over half of lesions are bilateral or recurrent or both (4, 11). With reference to recurrence Camuto et al. (11) reported that about 60% of diabetic mastopathy tends to recur after surgical excision in the same location and involves more breast tissue than the preceding lesion, and surgical biopsy should not be considered. This suggests that the natural history of diabetic mastopathy involves a multicentric field effect of diabetes on breast tissue. Recognition of this capacity for disease recurrence is considered to be important as it might help to avoid repeated biopsy (4). In our case, a correct diagnosis was not obtained using fine needle aspiration cytology, and an excisional biopsy was performed by the patient's request. We were aware of the disease of diabetic mastopathy, but it was not included in differential diagnosis in this case. If we had recognized the entity of diabetic mastopathy, we might have taken core needle biopsy in consideration of the possibility of recurrence of this disease.

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LEGENDS

Fig. 1 Mammography demonstrated localized increased density.

Fig. 2 Ultrasound showed hypoechoic mass with distinct margin, containing high echo.

Fig. 3 Bands of dense collagen with keloid-like features.(HE stain x4)

Fig. 4 Lymphocytic infiltration around the lobules and ducts.(HE stain x10)

Fig. 5. Immunohistochemical stain for CD-20 antibody(x4). Infiltrative lymphocytes with predominant B-cell were positively stained.

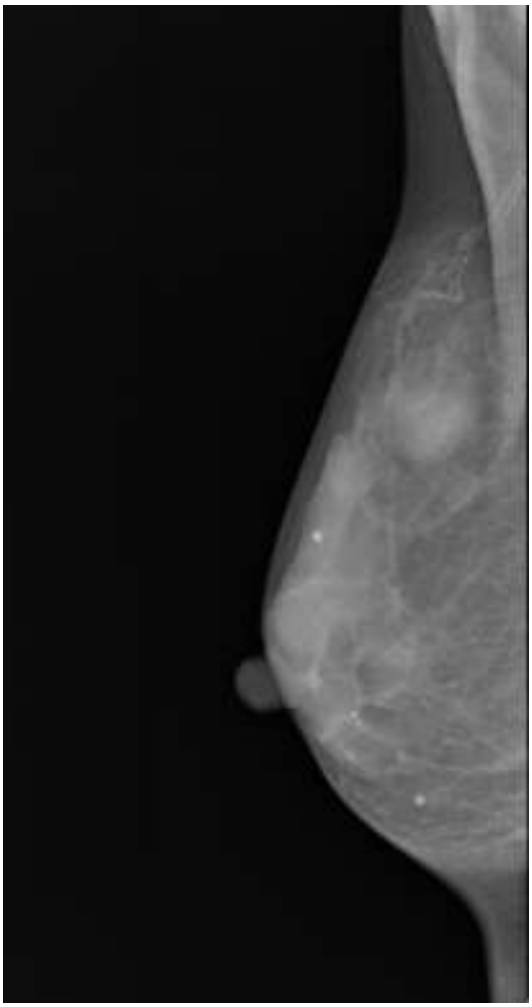

Fig. 1

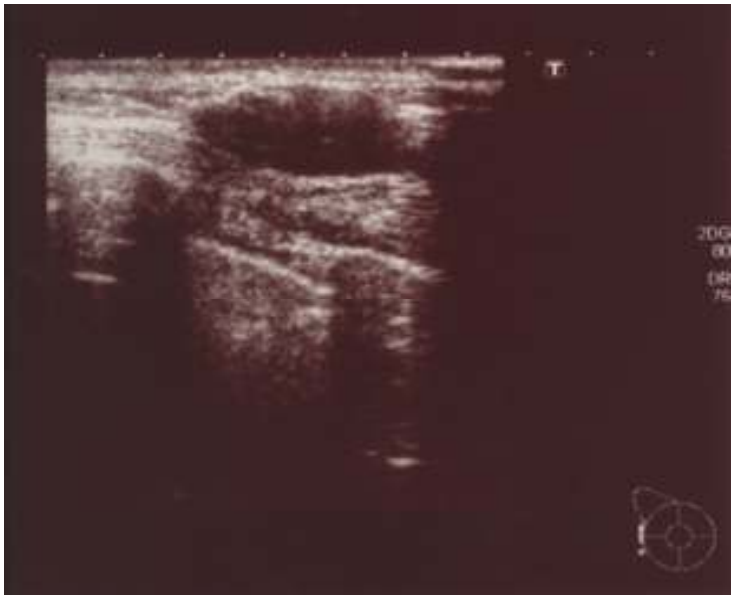

Fig.2

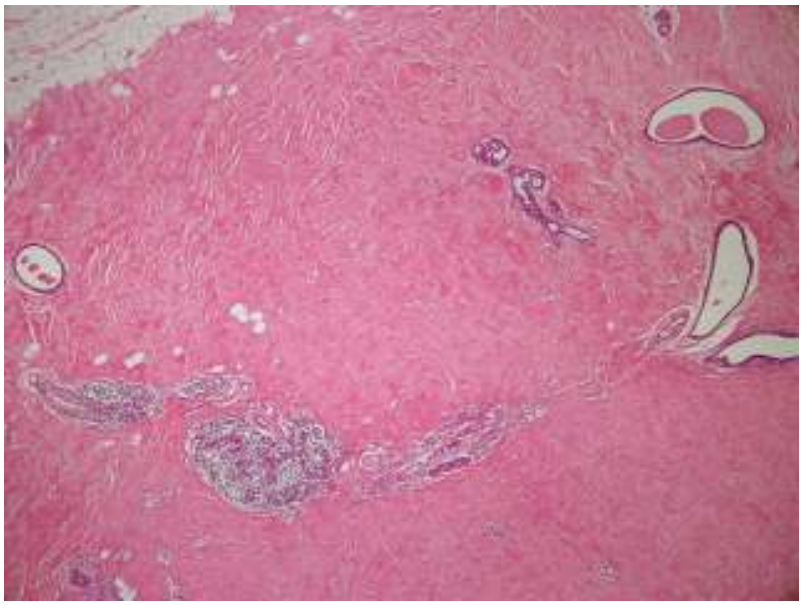

Fig. 3

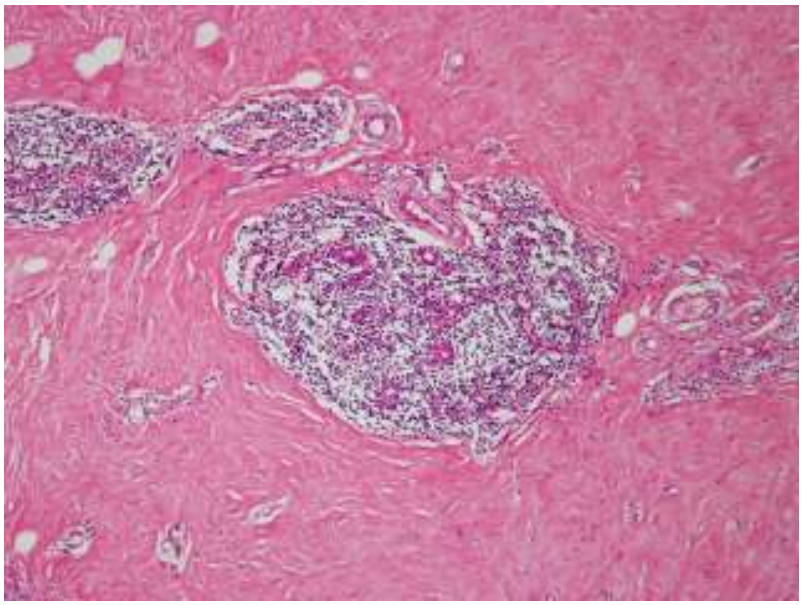

Fig. 4

Fig. 5