
CASE REPORT

Lymphocytic Mastitis and Rheumatoid Arthritis

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ABSTRACT

Lymphocytic mastitis is an uncommon condition associated with type I diabetes mellitus, which is known to be a T-cell mediated autoimmune disease. Hence, it is thought that lymphocytic mastitis is linked with autoimmune disorders. This report is of a patient with type II diabetes mellitus and rheumatoid arthritis who developed lymphocytic mastitis. Since rheumatoid arthritis is a T-cell mediated disease, it is postulated that this autoimmune condition could be the underlying aetiology of lymphocytic mastitis in this patient.

Key Words: Arthritis, rheumatoid, Autoimmune diseases, Diabetes mellitus, Mastitis

INTRODUCTION

Lymphocytic mastitis is an uncommon condition of the breast, which is associated with long-standing type I diabetes mellitus (DM), and is therefore also known as 'diabetic mastopathy'. In fact, a spectrum of disease can be seen in diabetic mastopathy, varying from lymphocytic mastitis to fibromatosis of the mammary stroma. The condition occurs in premenopausal women, and presents as a painless hard mobile lump in one or both breasts. Lymphocytic mastitis can occur in patients with type II DM and in non-diabetic patients, but is even more rare in these groups. We report a patient with a history of type II DM and long-term rheumatoid arthritis (RA), who developed lymphocytic mastitis.

CASE REPORT

A 60-year-old woman with type II DM and long-term RA presented with a painless, irregular, firm mass in her right breast. The patient had been taking metformin for 3 years and multiple medications for the management of RA. Mammography and breast sonography were performed. Mammography showed moderately dense, focal asymmetrical density in the retroareolar region of her right breast (Figure 1). There was no associated architectural distortion or abnormal microcalcification.

Ultrasound of the corresponding region showed an irregular hypoechoic mass with acoustic shadowing (Figure 2), suggestive of malignancy. Ultrasound guided core biopsy was therefore performed. Histology identified the lesion as lymphocytic mastitis (Figure 3).

DISCUSSION

Diabetic mastopathy is an uncommon condition, first described in 1984 by Soler and Khardori.¹ These authors reported an association between fibrous breast lumps and type I DM. Later, lymphocytic mastitis, which was at first a pathological diagnosis, was noted to have a strong association with type I DM.² Microscopic examination showed dense intralobular, perilobular, and perivascular lymphocytic infiltrate. A number of studies have described a strong association between type I DM and fibrosis of mammary stroma and/or lymphocytic mastitis, including a large case series by Kudva et al.² A few studies have also reported this condition in

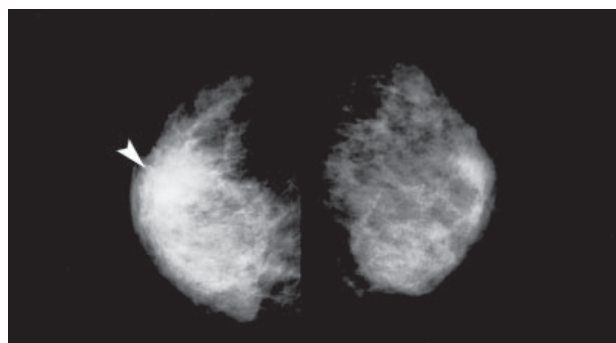


Figure 1. Mammography of the right breast shows dense glandular tissue at the retroareolar region (arrowhead), the classical site of involvement in lymphocytic mastitis.

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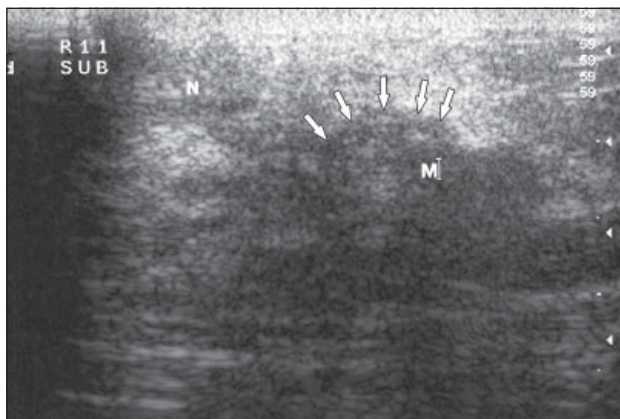


Figure 2. Ultrasound of the subareolar region of the right breast shows an irregular mass with acoustic shadowing (arrows), simulating malignancy.

Abbreviations: M = irregular mass; N = the direction of the nipple.

non-diabetic patients or patients with type II DM.^{3,4} Two of these reported patients also had an autoimmune disorder.³ Little is known about the pathogenesis of this benign condition. It is postulated that the fibro-inflammatory change in the mammary tissue is secondary to the immune reaction to abnormal matrix accumulation in the breast.^{5,6} In type I DM, ongoing destruction of the pancreatic β -cells is mediated by autoreactive T-lymphocytes,⁷ ultimately leading to failure of insulin secretion. This is a classical example of T-cell mediated autoimmune disease. Given the strong association of type I DM with lymphocytic mastitis, this led to the hypothesis that lymphocytic mastitis could be autoimmune in origin. This hypothesis remains widely accepted. Furthermore, lymphocytic mastitis has been shown to be associated with autoimmune thyroid disease,² further evidence suggesting an autoimmune origin.

Interestingly, this patient has both type II DM and RA, and developed lymphocytic mastitis with the classical mammographic and sonographic appearances seen in type I DM — subareolar dense glandular tissue at mammography, and a mass lesion with acoustic shadowing at ultrasound examination, simulating carcinoma of the breast. The aetiology of lymphocytic mastitis in this patient remains unresolved. It could be secondary to type II DM, long-term RA, or other causes. However, if the hypothesis that autoimmune disease is associated with lymphocytic mastitis were true, then RA would be the more likely aetiology than type II DM, which is unrelated to autoimmune disease. Rheumatoid arthritis is a well-known autoimmune disease, genetically associated with the MHC class I molecule HLA-DR β 1*0401 (DR4).⁸ Recent reports in the literature suggest that it is more likely to be a T-cell mediated

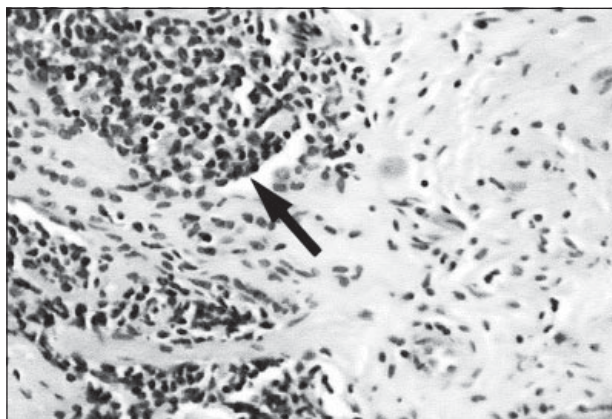


Figure 3. Histological assessment of the breast biopsy is consistent with lymphocytic mastitis. Aggregates of lymphocytes around ducts and lobules (arrow) can be seen. (Hematoxylin and eosin, x 400).

inflammatory disease, with CD4⁺, CD57⁺ T-cells involved in the immunopathogenesis.^{9,10} Since rheumatoid arthritis is autoimmune in origin and has similar T-lymphocyte-mediated reactions to those seen in type I DM, it is postulated that long-term RA could be a possible cause of lymphocytic mastitis in this patient. Further studies investigating this potential association between autoimmune disease and lymphocytic mastitis are required to investigate this possibility.

REFERENCES

1. Soler NG, Khardori R. Fibrous disease of the breast, thyroiditis, and cheiroarthropathy in type 1 diabetes mellitus. *Lancet* 1984; 1:193-195.
2. Kudva YC, Reynolds C, O'Brien T, et al. Diabetic mastopathy or sclerosing lymphocytic lobulitis is strongly associated with type I diabetes. *Diabetes Care* 2002;25:121-126.
3. Schwartz IS, Strauchen JA. Lymphocytic mastopathy: an autoimmune disease of the breast? *Am J Clin Pathol* 1990;93: 725-730.
4. Ely KA, Tse G, Simpson JF, Clarfeld R, Page DL. Diabetic mastopathy. A clinicopathologic review. *Am J Clin Pathol* 2000; 113:541-545.
5. Tomaszewski JE, Brooks JS, Hicks D, Livolsi VA. Diabetic mastopathy: a distinctive clinicopathologic entity. *Hum Pathol* 1992;23:780-786.
6. Camuto PM, Zetrenne E, Ponn T. Diabetic mastopathy: a report of 5 cases and a review of the literature. *Arch Surg* 2000; 135:1190-1193.
7. Rosmalen JG, Van Ewijk W, Leenen PJ. T-cell education in autoimmune diabetes: teachers and students. *Trends Immunol* 2002;23:40-46.
8. Wang D, Hill JA, Cairns E, Bell DA. The influence of HLA-DR4 (0401) on the immune response to type II collagen and the development of collagen induced arthritis in mice. *J Autoimmun* 2002;18:95-103.
9. Benoist C, Mathis D. A revival of the B cell paradigm for rheumatoid arthritis pathogenesis? *Arthritis Res* 2000;2:90-94.
10. Maeda T, Yamada H, Nagamine R, et al. Involvement of CD4⁺, CD57⁺ T cells in the disease activity of rheumatoid arthritis. *Arthritis Rheum* 2002;46:379-384.