

Isolated eosinophilic infiltration of the breast

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Abstract

We report the eighth case of eosinophilic mastitis and the first one without an association with peripheral eosinophilia or systemic involvement. A 51-year-old diabetic presented with a painful right breast lump. The mammogram, ultrasound, and magnetic resonance imaging suggested a diagnosis of periductal mastitis, however, a sinister etiology of breast carcinoma could not be ruled out. Diagnosis was made by vacuum assisted biopsy which revealed features of eosinophilic mastitis.

Key words: Eosinophilic; isolated; magnetic resonance imaging; mammogram; mastitis; ultrasound

Introduction

Eosinophilic mastitis is a rare benign pathological disorder with very few case reports in literature. After a thorough review of literature and to the best of our knowledge, this is the eighth case of this entity. In the previous case reports, eosinophilic mastitis was associated with peripheral eosinophilia, Churg–Strauss disease, asthma, and hypereosinophilic syndromes.^[1-7] However, our case is unique with respect to a normal absolute eosinophilic count and no associated organ involvement especially the respiratory system. The most important differential diagnosis to be considered is breast carcinoma as the imaging findings are indistinguishable. Appropriate, timely diagnosis via histopathology is essential owing to the stark difference in the prognosis and management.

Case Report

A 51-year-old postmenopausal diabetic female with no history of allergies or asthma presented to the outpatient

department with of right breast pain associated with fever since 10 days. There was no history of nipple discharge, trauma, or significant weight loss. Clinical examination revealed erythema and tenderness in the periareolar region with an ill-defined lump in the upper half of the right breast. With these findings, a suspicion of periductal mastitis was raised, and further evaluation by mammogram and ultrasound (US) was suggested. Her laboratory investigations were unremarkable with a total leukocyte count of 9300/mm³, differential leukocyte count were neutrophils – 71.8% (40–80), lymphocytes – 18.7% (20–40), eosinophils – 3.1% (1–6), monocytes – 6.2% (2–10), and basophils – 0.2% (0–2).

Mammogram [Figure 1] revealed marked increased trabecular density in the area of palpable abnormality in the upper outer quadrant of the right breast with prominent lymph nodes having an attenuated hilum Breast Imaging Reporting and Data System (BIRADS 4a). Left breast was unremarkable (BIRADS 1).

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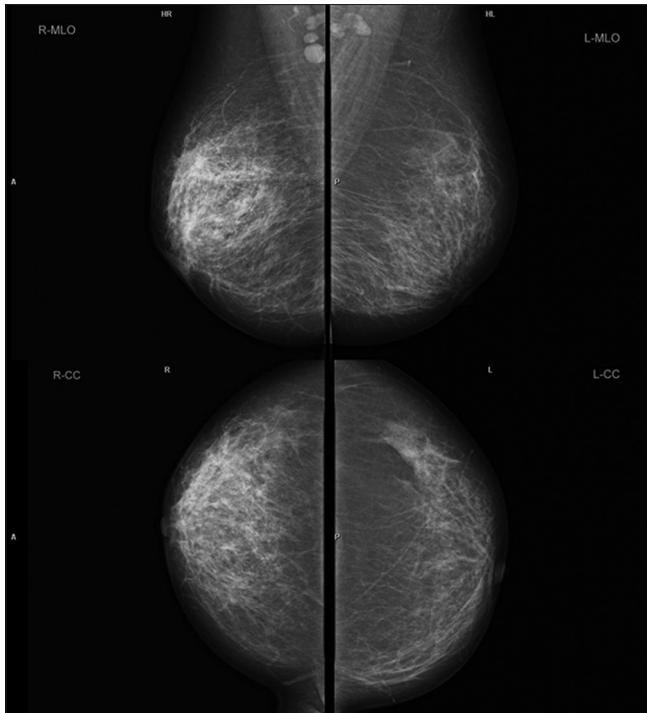


Figure 1: Mediolateral oblique and craniocaudal mammographic views of the right breast reveals marked increased trabecular markings in the upper outer quadrant of the right breast and prominent lymph-node with attenuated hilum in the right axilla. Left breast is unremarkable (Breast Imaging Reporting and Data System 1)

US [Figure 2] showed hyper-reflective parenchyma with skin thickening in the upper half of right breast. Prominence of multiple ducts and its branches was seen in this region with wall thickening and internal echoes within the dilated ducts (BIRADS 4a). The right axilla showed a lymph node with irregular thickened cortex. These findings were suggestive of ductal etiology likely periductal mastitis, but neoplastic etiology could not be ruled out; therefore, histopathological correlation and contrast enhanced breast magnetic resonance imaging (MRI) to see the extent of the disease were advised.

MRI [Figure 3] revealed non-mass enhancement in the right breast extending from the nipple to the periphery from 8 o'clock to 2 o'clock position. There was mild prominence of caliber of few ducts, few of them revealing focal areas of dilatation. Edematous changes were noted in the right breast along with an enlarged rounded node in the right axilla with attenuated fatty hilum.

The US guided vacuum assisted biopsy of the right breast was performed using an 11-gauge needle under local anesthesia. Histopathology [Figure 4] revealed eosinophilic mastitis.

With the histopathological diagnosis of eosinophilic mastitis, further investigation with absolute eosinophil



Figure 2: Ultrasound of right breast shows hyper-reflective breast parenchyma with skin thickening and multiple prominent ducts and its branches with wall thickening and internal echoes

count, anti-nuclear antibody (ANA), anti-neutrophil cytoplasmic antibody (ANCA), and high-resolution computed tomography (HRCT) of the chest were performed. Her absolute eosinophil count was 140 cells/mm³ (0–450), ANA and ANCA were negative, and HRCT chest was unremarkable.

The patient was initially started on antibiotics, and her breast redness had slightly reduced. After the histopathological diagnosis of eosinophilic mastitis, she was started on an oral steroid and is presently on follow-up.

Discussion

Breasts are a rare site for tissue eosinophilic infiltration, and eosinophilic mastitis is a benign uncommon pathology with very few previously reported cases.^[5] It is a condition characterized by infiltration of the mammary glands by eosinophils. Usually, this entity is accompanied with raised eosinophils in absolute and differential counts. Peripheral eosinophilia can be seen in allergic conditions such as asthma, parasitic infestation, collagen vascular disorders such as Churg–Strauss and hypereosinophilic syndrome.^[5]

Review of literature reveals that the seven patients with this condition had the following associations: Three were asthmatic patients, two had Churg–Strauss syndrome and two had hypereosinophilic syndrome.^[1–7]

The absence of peripheral eosinophilia and lack of systemic involvement makes our case exceptional and to our knowledge, the very first reported case of isolated infiltration of breast tissue with eosinophils.

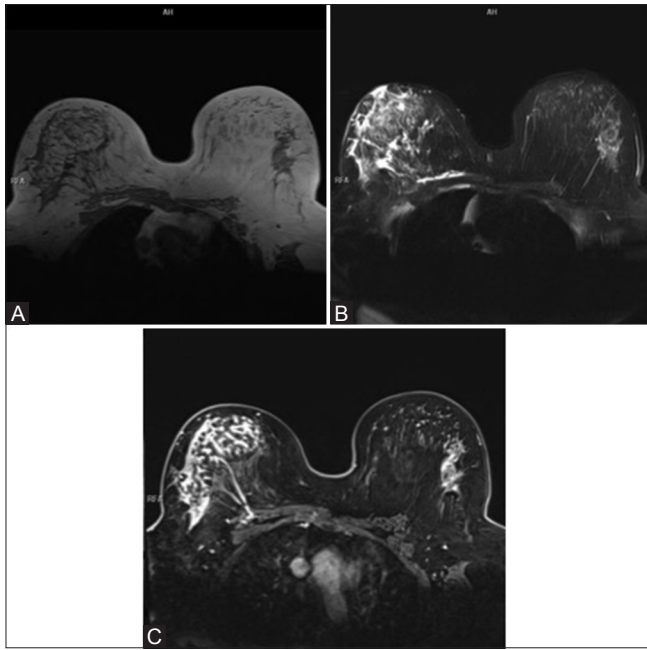


Figure 3 (A-C): Magnetic resonance imaging shows heterogeneously dense fibroglandular tissue on T1-weighted image (A), edematous changes in the right breast on T2-weighted fat saturated image (B) and nonmass enhancement from 8 o'clock to 2 o'clock position in the right breast extending from the nipple to the periphery on postcontrast fat saturated T1-weighted (C). The area of enhancement in the outer half of the left breast represents background parenchymal enhancement

The age group of the reported cases so far have been between 40 and 60 years except one patient being 30 years old who suffered from bilateral eosinophilic mastitis.^[7]

The symptoms are nonspecific and vary from breast lump with or without pain, nipple discharge to hot, stony hard breast with induration and a peau d'orange appearance, thus mimicking malignancy.^[5]

Imaging findings are nonspecific; it can be seen as an asymmetric density, ill-defined mass, or increased reticulations on mammogram. The US may reveal heterogeneous mass, increased echogenicity of breast parenchyma, skin thickening, dilated ducts with wall thickening and/or internal echoes.

The differential diagnosis for this disease includes periductal mastitis (granulomatous or idiopathic) and ductal or inflammatory carcinoma.^[2] Since all these conditions have a different management and prognosis definitive tissue diagnosis by histopathology is a must.

While the diagnosis of malignancy would need an aggressive approach in the form of a surgical intervention with or without chemotherapy/radiation, eosinophilic mastitis being a benign pathology requires only medical management with corticosteroids. Almost all of the previous reports reported an uncomplicated course of illness

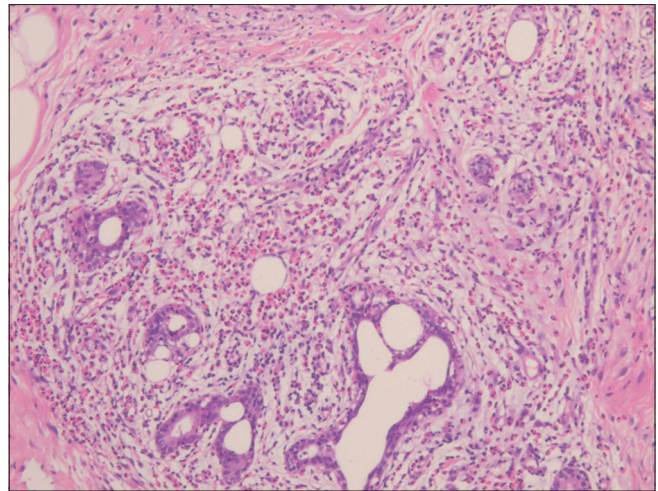


Figure 4: Histopathology (×10) reveals dense periductal mixed inflammatory cell infiltrate comprising predominantly of eosinophils. No evidence of invasive malignancy seen

with good response to corticosteroids. Komenaka *et al.* reported a case with recurrence of the entity within 2 years despite negative margins.^[3] However, they considered the possibility of an untreated underlying condition to be the cause of recurrence.^[3]

Isolated eosinophilic mastitis is a rare benign breast disorder which can occur without peripheral eosinophilia or be associated systemic involvement. It can mimic breast cancer; therefore, histopathological diagnosis is a must prior to treatment.

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Conflicts of interest

There are no conflicts of interest.

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