Case Report

Granulomatous Lesion of Breast: A Case Report

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Abstract

A 25-year-old female presented with a complaint of a lump in the right breast, which was associated with mild pain. The patient also reported a past history of pulmonary tuberculosis, for which she had undergone treatment for six months. After obtaining consent from the patient, fine needle aspiration cytology, a minimally invasive procedure, was performed, leading to a diagnosis of granulomatous mastitis, which was confirmed by ancillary studies as breast tuberculosis. This is an uncommon clinical presentation of extrapulmonary tuberculosis. Histopathology, along with clinical history, remains the gold standard for the diagnosis of breast tuberculosis.

Keywords:

Breast, Tuberculosis, Granulomatous mastitis, Fine needle aspiration cytology, Histopathology

Introduction

Mammary tuberculosis, or granulomatous disease of the breast, is an uncommon lesion first reported by Kessler and Woolloch in 1972 [1]. Tuberculosis is a bacterial infection caused by the Mycobacterium genus, particularly Mycobacterium tuberculosis [2]. Globally, tuberculosis is the leading cause of death from infectious diseases, with more than 95% of deaths occurring in low- or middle-income countries [3]. While tuberculosis can affect any part of the body, the breast is an uncommon site for extrapulmonary tuberculosis, making it a rare presentation of a common disease.

It is suggested that tuberculous infection of the breast is generally secondary to a primary focus of infection elsewhere in the body [4]. The most common method of disease dissemination is believed to be lymphatic spread via retrograde extensions from the axillary lymph node [2]. There have also been occasional reports of spread from cervical and mediastinal lymph nodes. Mammary

tuberculosis is considered uncommon because the mammary tissue offers resistance to the growth of tubercle bacilli.

The disease's variable clinical manifestations make diagnosis challenging, as the presentation can be mistaken for a pyogenic abscess or breast cancer [5][6]. The typical age of presentation is between 20 and 50 years, though cases have been reported in patients aged 11 to 83 [7]. Before a conclusive diagnosis is made, patients often undergo numerous tests and ineffective therapies [7]. The most common clinical presentation is a lump, which may or may not be painful and could involve a duct. The lump may resemble a cancerous growth, as it is hard, has irregular edges, and may be attached to the skin, muscle, or even the chest wall [7]. Patients typically present with a breast mass, pain, nipple discharge, nipple retraction, and occasionally lymphangitis, which may be followed by blistering, sinus formation, and abscesses. A palpable breast lump is among the most typical presentations [1].

Our current study aims to report on this uncommon manifestation of a common disease and to emphasize the importance of pathology in its diagnosis, ensuring appropriate patient management.

Case Report

A 25-year-old female complained of a lump in the right breast, which was associated with pain. Past history revealed that the patient had pulmonary tuberculosis five years ago and had taken treatment (ATT) for six months. There was no family history of tuberculosis or any other disease.

On clinical examination, the patient revealed weight loss. Examination of the right breast showed a lump measuring 5x3 cm in the upper outer and upper inner quadrants. The lump was irregular, mobile, slightly painful, and redness was present on the overlying skin. The nipple-areola complex was normal, and there was no discharge. The contralateral breast was normal. There was no axillary or cervical lymphadenopathy.

The patient was advised to undergo ultrasonography of the bilateral breasts and fine needle aspiration cytology (FNAC) of the right breast, along with other ancillary investigations such as CBC with ESR, Mantoux test, and AFB. CBC with ESR revealed raised total leucocyte counts, and ESR was also elevated. The Mantoux test was positive. AFB for tuberculosis also came back positive. Ultrasonography of the right breast revealed a thick-walled hypoechoic lesion with raised peripheral vascularity, whereas the left breast was normal, and the nipple-areola complex was also normal.

On the FNAC of the lump, a scant blood-mixed aspirate was obtained. The findings showed benign-looking ductal epithelial cells in tight cohesive clusters, as shown in Figure 1. In some areas, there were ill-defined clusters of epithelioid histiocytes with vesicular chromatin and scant cytoplasm, along with lymphocytic infiltration and multinucleate giant cells, as shown in Figure 2. Focal areas of necrosis were also seen. No atypical cells were found in the smear examined.

Hence, the case was diagnosed as granulomatous mastitis of the right breast, supported by other ancillary investigations. The patient was further advised to undergo histopathological examination of the lump, but she was lost to follow-up.

Discussion

Prevalence of tuberculosis is very high in developing and underdeveloped nations, and breast tuberculosis is a very rare disease representing 0.2% of extrapulmonary tuberculosis [8]. It is much lower in Western countries.

Granulomatous mastitis commonly affects women of childbearing age (average age 29 years). Our patient was a 25-year-old female, which is in accordance with the study conducted by Quaglio et al. [9]. Although elderly women can also be affected, it is

very rare under 18 years of age [10]. It presents as a heterogeneous lesion with varying clinical presentations.

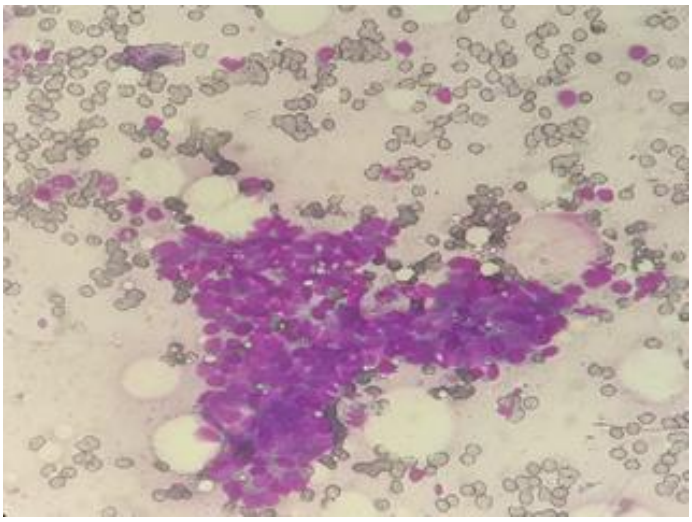

Figure 1: shows a tight cohesive cluster of benign looking ductal epithelial cells.

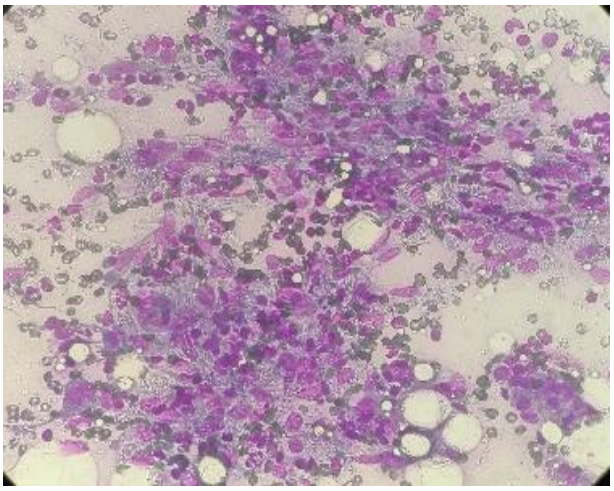

Figure 2: shows ill-defined clusters epithelioid histiocytes, lymphocytes and areas of necrosis.

Breast tissue is not an ideal site for the survival and multiplication of Mycobacterium tuberculosis. It reaches the breast through various routes, such as hematogenous, lymphatic, or by direct inoculation from structures such as the ribs, pleura, and lungs [11]. The theory of the retrograde lymphatic route seems to be the most suitable because most patients with breast tuberculosis have a history of pulmonary or cervical tuberculosis.

Multiparous and lactating females' breasts are more sensitive to trauma and infections, with tubercular mastitis being common among these. The involvement of the right and left breast is equal. Male breast tuberculosis is an extremely rare condition [12].

There is increased vascularity of the breast, with dilated ducts in pregnant and lactating women, which predisposes them to infection. Pregnancy suppresses the Th1 proinflammatory response, which may increase susceptibility to reactivation of tuberculosis or a new infection [13].

Patients present with breast pain, nodule, abscess, or nipple discharge. In this case, the patient presented with mastalgia and a

lump in the breast. Breast tuberculosis is often unilateral and very rarely bilateral [14]. The patient in this case had complaints of a lump in her right breast and mastalgia, which was also reported in a case series by Efared B. et al.

It is very commonly misdiagnosed as fibroadenoma, breast abscess, or malignancy. Investigations such as FNAC, histopathology, AFB, Mantoux test, ultrasound of the breast, HRCT, and CBNAAT help confirm the diagnosis. Histopathological examination is required to diagnose breast tuberculosis and differentiate it from other differential diagnoses, such as fibroadenoma, abscess, and malignancy.

Pain is a common symptom, typically presenting as non-cyclical mastalgia, which is not linked to the menstrual cycle, unlike in fibrocystic disease. Localized pain is rare in breast cancer [15].

The protean presentation of breast tuberculosis often leads to delays in diagnosis [2]. FNAC and imaging are non-specific methods for diagnosing granulomatous lesions, and the definitive diagnosis is made by histopathological examination [1]. It is not always possible to detect acid-fast bacilli in the histological sections of tuberculous mastitis, as the lesions are often paucibacillary, and an accurate diagnosis is made when clinical history is considered [1,11]. A case reported by Aarthi et al. [1] shows a similar presentation of a patient having multiple lumps in her right breast, which on FNAC was diagnosed as breast tuberculosis.

Although FNAC is emerging as an evolving tool in the diagnosis of breast lesions, as it is minimally invasive, the findings of tuberculous mastitis include epithelioid histiocyte granulomas, Langhans giant cells, and caseous necrosis, most of which were found in our case [1].

The role of IL-33 in differentiating granulomatous mastitis and breast cancer was studied by Halim et al., where IL-33 showed high sensitivity and specificity for differentiating granulomatous mastitis from breast carcinoma [16].

Granulomatous lesions with acute inflammation and cystic spaces should be examined for the presence of some rare gram-positive species, such as Corynebacterium, including C. kroppenstedtii. The final diagnosis should be made based on histopathology, microbiology, and clinical correlation [1].

Management of granulomatous mastitis mainly involves standard antitubercular therapy, combining several drugs—two months of rifampicin, isoniazid, and pyrazinamide, with or without ethambutol, followed by four months of rifampicin and isoniazid—as well as surgical excision of the lump or drainage of the wound.

Conclusion

In this case, FNAC findings included the presence of epithelioid histiocyte granulomas, lymphocytes, and a focal necrotic background, along with the patient's past history, leading to the diagnosis of granulomatous mastitis. The diagnosis of granulomatous mastitis is challenging, and the radiological and clinical presentations can be misleading. FNAC and histopathology can help in reaching the correct diagnosis.

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Ethical Clearance" Not applicable, as this is a case report.

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