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Case Report

Tuberculosis of the breast in a nulliparous immunocompetent Indian female without pulmonary involvement: A rare report

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Abstract

Tuberculosis is commonly seen in developing nations. However, extrapulmonary presentations of this disease are comparatively fewer, and isolated cases of tuberculosis localized to the breast are even rarer. Herein, a case of an immunocompetent Indian female is presented; she came with complaints of a localized right breast swelling with tenderness, which was diagnosed after a detailed clinical and lab workup as tuberculosis of the breast. She was initiated on the appropriate antituberculous treatment per the national policy.

Keywords: Mycobacterium tuberculosis, Infectious diseases, Developing nations, Tuberculosis.

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1. Introduction

Infectious diseases are common in developing nations. Diseases like tuberculosis continue to haunt the fragile healthcare systems in these countries.[1] Tuberculosis is caused by an infection by *Mycobacterium tuberculosis* and primarily affects the lungs.[2] However, tuberculosis at extrapulmonary sites also constitutes a significant proportion, i.e., about 17.5% of the total caseload.[3] Isolated involvement of sites like breasts with no history of tuberculosis or its contact in immunocompetent females is exceedingly rare.[4] About 0.1% of all tuberculosis cases that present at extrapulmonary locations are in this clinical state, which is primarily observed in multiparous breastfeeding females from Africa and the Indian subcontinent.[3,4] Approximately 3% of all breast problems requiring surgery fall into this category.[5] In India, its incidence ranges from 3% to 4.5%.[4]

In this present case, a 17-year-old Indian woman with no pulmonary foci and no history of tuberculosis was diagnosed with a primary tubercular breast abscess, a relatively uncommon form of extrapulmonary tuberculosis. After a thorough clinical evaluation, the definitive diagnosis was made, and she was prescribed antituberculous medication in accordance with national recommendations.

2. Case Report

A 17-year-old unmarried Indian female from a low-income family who does not have diabetes came in with the main complaint of a lump in her right breast that had been there for two months and pain in the same breast for one month. She was well until two months ago, when she discovered an approximately 5 × 3 cm lump in her right breast. It was non-progressive in size, had a subtle beginning, and brought pain for a month. There were no aggravating or alleviating variables, and the pain was modest and non-radiating.

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Fever, cough, or weight loss was absent, and there was no history of any other lumps in the opposite breast, axilla, or same breast. Additionally, there was no history of breast biopsies, hormone therapy, tuberculosis contact, trauma, or any significant medical or surgical procedures in the past. And, there was no history of incarceration or substance misuse.

There were no noteworthy findings from a general and systemic evaluation. An ill-defined, painful, uneven, firm-to-hard lump measuring approximately 5 × 4 cm with no retroareolar extensions was discovered during a local examination of the right breast. The nipple was not retracted. Additionally, there was no clubbing, jaundice, pretibial edema, pallor, cyanosis, or cervical, supraclavicular, or axillary lymphadenopathy.

Using differentials for pyogenic breast abscess and breast cancer, a probable diagnosis of breast abscess was reached. Additionally, she was recommended to have routine blood tests, a chest radiograph, and a chest ultrasound. An elevated erythrocyte sedimentation rate of 66 mm in the first hour was noteworthy in blood examinations. She had a positive Mantoux test and non-reactive tests for human immunodeficiency viruses I and II. The radiograph of the chest was within normal bounds (**Figure 1**).

An ultrasound of the breast revealed a well-circumscribed, thick-walled hypoechoic lesion at the 9 'o'clock position of size 6.5 × 6.5 × 5.0 mm in the right breast with mild internal necrotic changes (**Figure 2**). Further, an adjacent irregular hypoechoic lesion was also seen, about 6.9 x 3.3 x 1.0 mm in size.

Fifty cc of pus was extracted from the right breast during a fine-needle aspiration cytology. Further, *Mycobacterium tuberculosis* was detected in the pus by smear microscopy for acid-fast bacilli. Furthermore, *Mycobacterium tuberculosis* with rifampicin sensitivity was detected in the pus using a cartridge-based nucleic acid amplification test. *Mycobacterium tuberculosis* grew in a second sample that was sent for culture and drug susceptibility testing; it showed no resistance to first-line antituberculous medications. Furthermore, a trucut biopsy showed granulomas made up of lymphocytes, Langhans giant cells, and epithelioid cells that showed no signs of cancer. Additionally, an excisional biopsy was performed from the cavity's edge, along with an incision and drainage of the abscess.

After being diagnosed with primary tuberculosis of the right breast, she was prescribed antituberculous medications based on her weight for two months with isoniazid, rifampicin, pyrazinamide, and ethambutol, followed by four months of isoniazid, rifampicin, and ethambutol in accordance with national guidelines. She finished the entire course of treatment without developing any residual lumps and responded well to it, experiencing no adverse drug responses. A follow-up ultrasound at the end of her treatment was not possible, though, because she had already moved to her hometown in a different state.

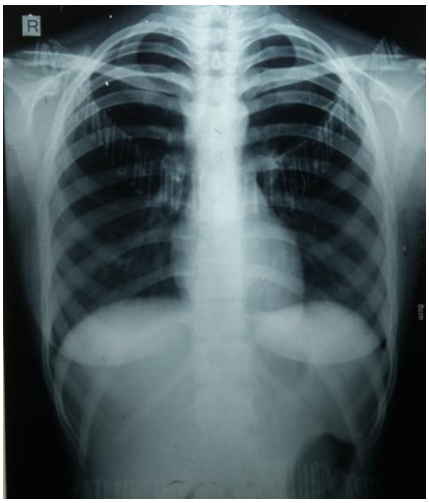

Figure 1: A normal chest radiograph postero-anterior view

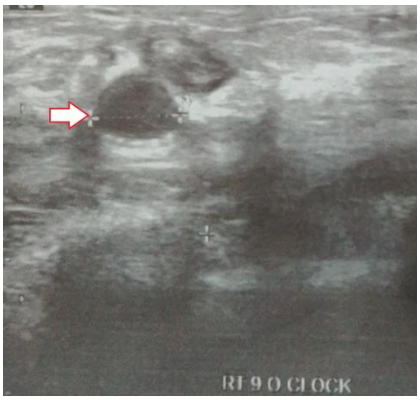

Figure 2: An ultrasound of the breast showing a hypoechoic collection in the right breast

3. Discussion

Tuberculosis is mainly reported in the lungs, and extrapulmonary manifestations are comparatively infrequently reported.[4,6] Tuberculosis mainly localized to the breast is exceedingly rare and is more common in women; cases of breast tuberculosis in men have also been documented. Breast tuberculosis typically affects women between the ages of 20 and 40; however, it can affect people of any age.[7] It is categorized as secondary when foci other than the breast are also present in the body or primary when it is only found in the breast and missing in other body regions.[8] Compared to the primary type, secondary breast abscesses are comparatively more common.[4] A breast lump in the upper-outer or center quadrant is the most typical sign of breast tuberculosis; numerous lumps are uncommon.[8]

Furthermore, it can be difficult to diagnose breast tuberculosis.[4,7,8] Histological, radiological, and clinical data are nonspecific for the disease.[9] The presentation frequently resembles that of other related disorders, such as breast cancer or pyogenic breast abscess.[4] Less than 20% of

individuals have the typical clinical signs of tuberculosis, which include fever, cough, and weight loss.[8] Because the biopsy specimens are paucibacillary and typically yield negative microscopy and culture data, misdiagnosis or delayed diagnosis is common.[4]

HIV/AIDS, lactation, multiparity, and a history of suppurative mastitis are the most often found risk factors for tuberculosis of the breast.[5] Our patient was a nulliparous lady who had never undergone mastitis treatment, had no history of lactation, and had tested negative for HIV/AIDS. Additionally, she was free of recognized chronic conditions like diabetes. This implies that regardless of the existence or lack of common risk factors, tuberculosis can impact any portion of the body.[7,10]

Investigations such as the Ziehl-Neelsen stain, a cartridge-based nucleic acid amplification test, or aspirate culture could be used to make the diagnosis. Only about 25% of cases typically have *Mycobacterium tuberculosis* confirmed by microbiology.[7] The majority of treatment is conservative and involves antituberculous medications, either with or without surgical drainage of the pus or aspiration, which may have positive results.[4]

4. Conclusions

There are very few cases of primary breast tuberculosis reported. These individuals frequently receive empirical therapies prior to a definitive diagnosis. To ensure successful management, a strong diagnostic workup must be supported by a high index of suspicion. In order to initiate therapy promptly, primary care physicians ought to receive training on this clinical condition.

5. Source of Funding

None.

6. Conflict of Interest

None.

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