

Microbiologically proven case of primary breast tuberculosis

Vineeta Mittal¹, Meher Khan², Ashish Verma³

From ¹Professor, ²Ex Senior Resident, ³Post Graduate Resident, Department of Microbiology, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, Uttar Pradesh, India

Correspondence to: Dr. Vineeta Mittal, Department of Microbiology, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, Uttar Pradesh, India. E-mail: vineetamittal@yahoo.co.in

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ABSTRACT

Tuberculosis (TB) of the breast is an uncommon presentation of extrapulmonary TB, it is uncommon even in countries where the incidence of pulmonary and extrapulmonary TB is high and its diagnosis is challenging due to non-specific clinical and imaging findings and often misdiagnosed as abscess or carcinoma. It is mainly diagnosed on the basis of histopathological examination. We have reported a case of primary TB of breast diagnosed by microbiological investigations. A 19-year-old female presented with a painful lump in the breast for the past 3 months. Primary breast TB was diagnosed by sample collect by fine-needle aspiration cytology, wherein Ziehl–Neelsen stain for acid-fast bacilli and cartridge-based nucleic acid amplification test were positive. The patient received antitubercular drugs and at 4 months follow-up, the swelling had resolved and the patient was asymptomatic.

Key words: *Breast tuberculosis, Extrapulmonary tuberculosis, Granulomatous mastitis, Ziehl–Neelsen staining*

Tuberculosis (TB) has traditionally been regarded as a pulmonary disorder. However, in the past 10 years, there is a parallel rise of extrapulmonary TB cases nearly 15–20%. Breast, spleen, skeletal muscle, and skin are considered to be rare sites of extrapulmonary mycobacterial infection. TB of the breast is extremely rare, with an incidence of 3–4% in TB endemic regions as India and Africa and <0.1% of all breast lesions in Western countries [1]. Thus, TB of the breast is quite uncommon with an incidence of 0.1–3% of all breast diseases treated surgically.

The disease affects females in the younger age group, pregnancy and lactation period being the periods of highest risk and can present either as an abscess or as a unilateral, painless breast mass. Although the usual form of the disease is unilateral, it occasionally presents bilaterally. Occasionally, there is the development of a localized abscess, which is more prevalent in endemic areas and usually occurs in young women [1,2]. A tuberculous breast abscess is more frequent and represents up to 30% of cases in recent publications.

Till now, the diagnosis of tubercular mastitis is made by histological tests in India, but there is little awareness for proving it by microbiological tests. Moreover, according to the National TB Elimination Program, microbiological confirmation is needed for pulmonary and extrapulmonary TB [3]. Here, we report the initial presentation and microbiological diagnosis of breast TB in a 19-year-old female who was primarily diagnosed as a breast abscess.

CASE REPORT

A 19-year-old female, resident of Narhigaon, Pratapgarh, presented to our tertiary care superspecialty hospital with complaints of a

painful breast lump in the right breast for 3 months. There was no history of evening rise of temperature, smoking, or having risk factors for HIV, trauma, or recent exposure to TB. The patient had no past history of TB, hypertension, diabetes, and no family history of breast cancer.

The systemic examination was non-contributory. Physical examination confirmed a palpable lump in the upper outer quadrant of the right breast, measuring about 4 × 2 cm, tender, non-adherent to the skin, or underlying muscle. Axillary and cervical, including supraclavicular lymph nodes, were not enlarged. There were no clinical manifestations of the disease in the nipple-areolar area or nipple discharge. Ultrasonography examination revealed multiple pockets of the collection with moving internal echoes noted in the retroareolar region and outer quadrant of the right breast, with the largest pocket measuring 1.75 × 4.82 × 5.09 cm. Few necrotic lymph nodes were also noted in the right axilla. The left breast appeared to be normal.

A chest X-ray showed no pathology. Routine hematologic and biochemical parameters were in the normal range. Pus aspirated from the breast lump did not show any growth in aerobic and anaerobic bacteriological culture. Ziehl–Neelsen (ZN) staining showed acid-fast bacilli (AFB) (Fig. 1) and GeneXpert results showed mycobacterium TB (MTB) detected with no rifampicin resistance.

The patient was started on antitubercular treatment (ATT) (isoniazid, rifampicin, pyrazinamide, and ethambutol for 2 months; isonicotinic acid hydrazide, rifampicin, and ethambutol for 4 months) for 6 months. The patient responded well to ATT without any residual lump. After 4 months of follow-up, the patient was asymptomatic.

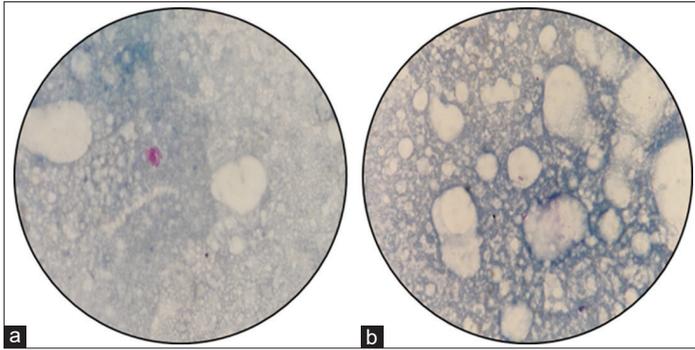


Figure 1: Ziehl-Neelsen staining showing acid-fast bacilli; ×100 field

DISCUSSION

Breast TB is a rare entity due to the high resistance offered by the breast tissue to the survival and multiplication of TB bacilli [4], and often, its presentation mimics the features of breast neoplasms and other benign breast diseases. Tuberculous involvement of the breast occurs more commonly through lymphatic, hematogenous, contiguous seeding, or rarely by direct inoculation of the bacilli through abrasions in the nipple.

The most common clinical presentation is that of a lump, with or without a duct, with or without pain, most often located in the central or upper outer quadrant of the breast. The lump can mimic breast carcinoma, being hard, with an irregular border, fixed to either the skin or the muscle or even to the chest wall. Mckeown and Wilkinson have classified breast TB into five different types as (1) nodular tubercular mastitis, (2) disseminated or confluent tubercular mastitis, (3) sclerosing tubercular mastitis, (4) tuberculous mastitis obliterans, and (5) acute miliary tubercular mastitis [5].

The most reliable and definitive diagnostic studies include aspirate culture, polymerase chain reaction for mycobacterium, and histological examination of the tissue sample. If in doubt, computed tomography scanning may be useful for the differentiation of primary and secondary lesions by detecting continuity with the thoracic wall or pleura and associated lesions of the lungs. TB breast abscess can be diagnosed on mammography as a dense sinus tract connecting an ill-defined breast mass with a localized skin thickening.

Fine-needle aspiration (FNAC) is the most widely used initial invasive method for the diagnosis of the breast TB; however, the utility of FNAC has been variable and diagnoses approximately 73% of the breast TB when both epithelioid cell granulomas and necrosis are present according to the literature [6]. Failure to demonstrate necrosis on FNAC does not exclude TB in view of a small quantity of the sample harvested and examined.

Granulomatous inflammation of the breast is an inflammatory process with multiple etiologies. It can be infectious due to *MTB*, blastomycosis, cryptococcosis, histoplasmosis actinomycosis, filarial infection, autoimmune due to Wegener granulomatosis, foreign body reaction, duct ectasia caused by plasma cell mastitis, subareolar granuloma, periductal mastitis, diabetes mellitus, sarcoidosis, fat necrosis, or idiopathic [7]. In this case, we observed

AFB in the sample and when processed using the molecular method (cartridge-based nucleic acid amplification test [CBNAAT]), the molecular study helped in confirming the detection of *MTB* and also reported no resistance to rifampicin drug.

In India, various studies have reported the importance of histopathological examination in breast TB diagnosis; however, there is a scarcity of data related to the microbiological diagnosis of the breast TB. Usually, patients with the breast TB present late to clinics when already there is granuloma formation and due to lack of awareness among the health-care professionals of its manifestations, it is often overlooked in many patients and clinicians because of the diagnostic dilemma send the samples for histopathological examination rather than microbiological investigations. Microbiological diagnosis in the form of ZN staining, liquid culture (MGIT), and CBNAAT too plays an important role in identifying the causative organisms and its drug susceptibility pattern, which helps the clinician in early diagnosis and prompt treatment.

CONCLUSION

Although TB of the breast is less diagnosed as it is uncommon, it should always be considered in the differential diagnosis of granulomatous mastitis in endemic areas. Breast TB should be suspected in a patient who has a recurring breast abscess after adequate drainage on the previous occasions. It seems that empirical and definitive therapy might be effective when primary evaluations can be made early using essential microbiological methods such as microscopy, culture, and molecular techniques. Therapy includes at least 6–12 months of ATT and surgery when indicated.

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