

**Mammary Tuberculosis: A case series of six patients and review of literature**Shweta Rana<sup>1</sup>, Puja Sharma<sup>2</sup>, Pawan Singh<sup>3</sup>, Rajesh Chaurasia<sup>4</sup>**ABSTRACT**

**Introduction:** Mammary Tuberculosis is a rare entity and may be mistaken as carcinoma breast or pyogenic breast abscess because of its non specific clinical and radiological findings. Microscopy and culture are frequently negative because of its paucibacillary nature and the diagnosis is often one of exclusion. We present a case series of six consecutive patients with mammary tuberculosis, seen over a six month period (June 2013 to December 2013) from SHKM, GMC Mewat, Haryana. **Case presentation:** Cases with either histopathological diagnosis of necrotizing granulomatous mastitis with or without acid fast bacilli positivity, cytopathological diagnosis of necrotizing granulomatous mastitis with or without acid fast bacilli positivity or both were included in the study. Their clinical, radiological and pathological data was reviewed. All the patients were women. The average age at presentation was 29.16 years (24 to 40 years). All the six cases were initially subjected to Fine Needle Aspiration Cytology (FNAC). Excision biopsy was done in only four cases. Final diagnosis was obtained via FNAC (2 cases), excision biopsy (4 cases). Acid fast bacilli were seen on Ziehl-Neelsen (ZN) staining on histopathology in one out of four cases and in two out of six cases on FNAC. **Conclusion:** Mammary tuberculosis typically presents with lump in breast and being an uncommon disease, can be mistaken as carcinoma breast or breast abscess. The diagnosis can be established or suggested by FNAC in majority of cases.

**Key Words:** Endemic, Granulomatous mastitis, Mammary Tuberculosis, Paucibacillary

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**INTRODUCTION**

Breast tuberculosis (TB) is a rare disease, with an overall incidence of less than 0.1 % of all breast lesions in western countries and 4% of surgically treated breast lesions in developing countries where tuberculosis is endemic<sup>1,2</sup>. Mammary tuberculosis accounts for 3% of breast pathologies in India and is five times less common than carcinoma of breast<sup>3</sup>. Breast tuberculosis is rare in western countries but these cases are encountered frequently in our set up due to high prevalence of tuberculosis. With global spread of AIDS, mammary tuberculosis may no longer be uncommon in the developed countries<sup>4</sup>.

Tuberculosis of breast is often overlooked and misdiagnosed as carcinoma breast or pyogenic abscess<sup>5</sup>. Women in reproductive age are at risk as the breast shows periodic changes with menstruation and are more liable to trauma and infection. Pregnant and lactating breasts have increased blood flow and dilated ducts, making them more susceptible to tubercular infection<sup>6</sup>.

Tuberculosis usually presents as lump in the breast in the central or upper

outer quadrant of breast. Ulcer over the breast or abscesses can be other frequent presentations of the TB breast. Persistent discharging sinuses or purulent nipple discharge may be rare presentation<sup>5,7</sup>.

The mammogram has limited utility in the diagnosis of breast TB<sup>2</sup>. Fine Needle Aspiration Cytology (FNAC) from breast lesion remains important diagnostic tool in tuberculosis of breast. 73% of cases of TB breast can be diagnosed on FNAC when both epithelioid cell granulomas and necrosis are present<sup>4</sup>. Differentiation of TB breast from granulomatous mastitis is paramount because of the implications of corticosteroid therapy in an immunosuppressed patient with tuberculosis<sup>8</sup>.

We present a case series of six consecutive patients with mammary tuberculosis seen over a period of 6 months period. All our patients were women.

**CASE PRESENTATION**

This study included a series of six consecutive patients, four cases (subjected to both FNAC and excision biopsy) histopathologically confirmed mammary tuberculosis on the basis of caseous necrosis, epithelioid cell

granulomas, Langhan's giant cells with/ without acid fast bacilli (AFB) positivity and two cases of tuberculous mastitis confirmed on FNAC on the basis of presence of AFB, at the Deptt. Of Pathology, Shaheed Hasan Khan Mewati, GMC, Mewat, Haryana from June 2013 to December 2013, over a period of 6 months. All patients were studied in terms of site, age group, lactating or non lactating status, history of contraceptive pills use, presentation, clinical diagnosis, Ultrasound, FNAC, biopsy, treatment and follow up. Record of all the patients was collected in a performa designed for the study.

A total of six cases were diagnosed with mammary tuberculosis from June 2013 to December 2013. The average age at presentation was 29.16 years (24 to 40 years). All the patients were married, out of which one patient was nulliparous while others were multiparous. No patient was on oral contraceptives. Two out of six patients were lactating. No patient gave history of contact with TB patient or any history of pulmonary TB in past. Duration of symptoms at presentation varied from 10 days to four months. Five out of six patients had palpable

lumps. One had lump in subareolar region, four had lump in upper outer quadrant and one had diffuse involvement of breast. Associated palpable axillary lymphadenopathy was present in three of the six patients. One patient had discharging sinuses with abscess formation. Four patients had disease on the right side, two had disease on left side. Chest radiographs were available in all six cases and were within normal limits. USG examination of the breast was done in all the six cases. Findings included ill defined hypoechoic areas of architectural distortion with infiltration into the adjacent glandular parenchyma with evidence of multiple axillary nodes suspicious of infiltrating carcinoma breast in three cases and suggestive of breast abscess in two cases and Fibroadenoma breast in the remaining case. FNAC was done in all patients as initial procedure. Necrotizing granulomatous mastitis was seen in four cases on the basis of presence of epithelioid cell granulomas and necrosis on microscopic examination (Figure 1a, 1b) and two cases were reported as Necrotizing inflammatory lesion.

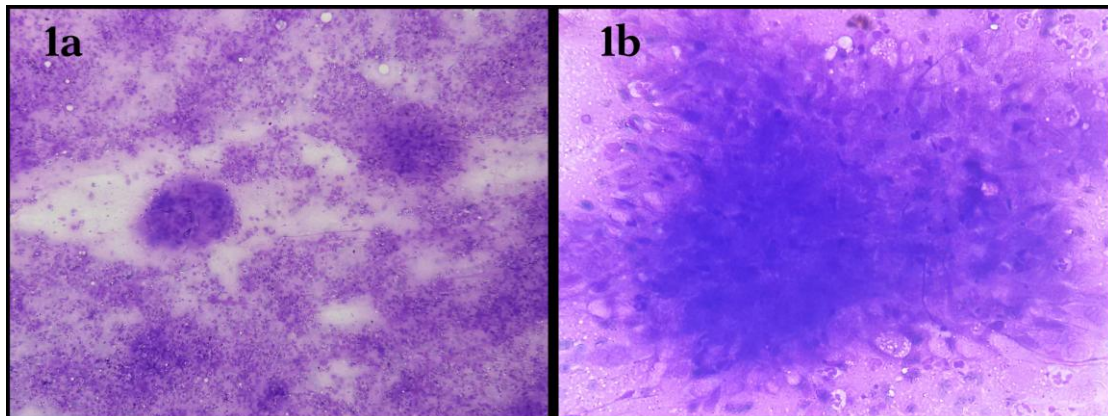


Fig. 1a- Photomicrograph showing epithelioid cell granulomas against a background of mixed inflammatory cells and necrosis. (MGG x100)

Fig. 1b- Photomicrograph showing epithelioid cell granuloma. (MGG x400)

Ziehl Neelsen staining (ZN) staining was positive in two cases on cytopathological examination. Thus two cases were diagnosed as mammary tuberculosis on cytopathological examination. Excision biopsy was done in four cases. All the four cases were reported on histopathological examination as necrotizing granulomatous mastitis on the basis presence of epithelioid cell granulomas, Langhan's giant cells and caseous necrosis (Figure 2a, 2b).

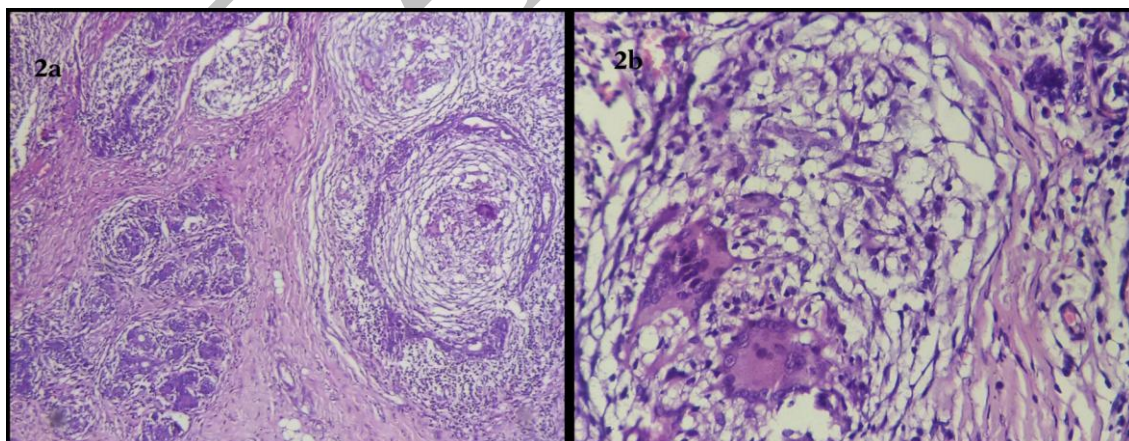


Fig. 2a- Photomicrograph showing breast lobules, epithelioid cell granulomas, Langhan's giant cells and caseous necrosis. (H&E X100)

Fig 2b- Photomicrograph showing Langhan's giant cells and epithelioid cell granuloma (H&E x400)



ZN staining was positive in only one case on histopathological examination (Table 1)

S. No.	Clinical Diagnosis	Lactating	FNAC diagnosis	Excision Biopsy diagnosis	ZN Staining for AFB	Final Diagnosis
1	Carcinoma Breast Right Side	No	Necrotizing granulomatous mastitis	Necrotizing granulomatous mastitis	+ (On excision)	Mammary tuberculosis
2	Carcinoma Breast Left Side	No	Necrotizing granulomatous mastitis	Necrotizing granulomatous mastitis	-	Mammary tuberculosis
3	Carcinoma Breast Right Side	No	Necrotizing granulomatous mastitis	Necrotizing granulomatous mastitis	-	Mammary tuberculosis
4	Breast Abscess Right Side	No	Necrotizing inflammation	Necrotizing granulomatous mastitis	-	Mammary tuberculosis
5	Breast Abscess Left Side	Yes	Necrotizing inflammation	Not done	+ (FNAC)	Mammary tuberculosis
6	Fibroadenoma Right Breast	Yes	Necrotizing granulomatous mastitis	Not done	+ (FNAC)	Mammary tuberculosis

Mammary Tuberculosis was seen at a frequency of 3.55% of all the surgically treated patients with breast diseases during this time period at our institute.

All the patients are undergoing anti-tubercular treatment at our institute with four drug regime.

### **DISCUSSION**

Mammary tuberculosis is a rare clinical entity because mammary gland tissue is markedly resistant to tuberculosis. It provides infertile environment for survival and multiplication of tubercle bacilli. However, Breast may become infected in variety of ways, hematogenous,

lymphatic spread, direct inoculation or ductal infection<sup>51</sup>.

Breast TB is classified as nodular, sclerosing and disseminated. Breast TB can either be primary when the breast lesion is the only manifestation of TB or secondary when there is a demonstrable focus of TB elsewhere<sup>1,21</sup>. It is most likely due to

frequent extension of tuberculosis from axillary lymph nodes to breast<sup>71</sup>. Primary breast TB is considered rare and it is assumed that most cases are secondary even if no primary focus can be found<sup>21</sup>. Primary infection of the breast may occur through skin abrasions or through the duct openings on the nipple. Direct extension from contiguous structures like underlying rib is possible. Infection of breast is generally secondary to a tuberculosis focus elsewhere, which may not be clinically or radiologically apparent. Such a focus could be pulmonary or a lymph node in the paratracheal, internal mammary or axillary group with hematogenous spread<sup>41</sup>. In our study, a primary focus of infection was not found in three of the six patients but in the rest of the three patients tuberculosis focus was present in axillary group of lymph nodes. Breast TB is classified as nodular, sclerosing and disseminated<sup>1,2</sup>. The nodular variant is often mistaken for a fibroadenoma or carcinoma and is commonest of all cases<sup>5</sup>. The disseminated variety commonly leads to caseation and sinus formation. Sclerosing TB affects older women

and is slow growing with absence of suppuration<sup>81</sup>.

Breast tuberculosis commonly affects women in productive age groups<sup>6</sup>. The mean age in our study was 29.16 years. Studies have shown that a high proportion of breast TB patients do not present with pulmonary or systemic symptoms<sup>1,2</sup>.

Tuberculosis of the breast can mimic carcinoma, whereas in young patients it can be mistaken for a pyogenic breast abscess, thus labelled a “great masquerader” in recognition of its multifaceted presentation<sup>51</sup>.

Tuberculosis of Breast is an uncommon disease that is often difficult to differentiate from cancer of the breast when it presents as a lump. The lump is indistinguishable from carcinoma due to its irregular surface, hardness or sometime fixed to skin or underlying muscle or even the chest wall. Lump is frequently painful. Breast remains mobile until involvement of underlying muscles<sup>71</sup>. Sriram et al<sup>91</sup> reported a case of tuberculous breast abscess that was initially diagnosed and treated as granulomatous mastitis abscess.

Breast TB should be considered in the differential diagnosis of patients in

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reproductive age group with clinically suspicious breast lumps who are from high risk population and / or endemic areas<sup>10]</sup>.

The less common differential diagnoses of mammary tuberculosis includes other granulomatous lesions of breast such as infections (Blastomycosis, Cryptococcosis, Histoplasmosis, Actinomycosis, Filarial infection, Corynebacterium), Autoimmune process (Wegener granulomatosis, Giant cell arteritis, foreign body reaction), Duct ectasias (Plasma cell mastitis, Subareolar granuloma, Periductal mastitis), Sarcoidosis, Fat necrosis, Diabetes mellitus, Idiopathic lobular granulomatous mastitis<sup>11]</sup>.

Among the large series describing the FNAC features of Granulomatous mastitis in the literature, the usefulness of FNAC has been debated, with some authors conforming the useful role of FNAC<sup>12]</sup> and others concluding that the various causes of granulomatous inflammation cannot be confidently differentiated by FNAC<sup>13]</sup>.

The mammogram has limited utility in the diagnosis of breast TB as the findings are indistinguishable from carcinoma. Additionally breast TB

typically affects young women, whose dense breasts are difficult to analyse mammographically<sup>2]</sup>. Fine Needle Aspiration Cytology can diagnose approximately 73% of breast TB cases<sup>4]</sup>. Khanna et al<sup>3]</sup> reported a success rate of 100% in his series. Fine needle aspiration cytology may not be able to detect the responsible pathogen itself, but is detecting the presence of epithelioid cell granulomas and necrosis, leading to definitive diagnosis in up to 73% of cases. Finally, histopathology of the lesion identifies a chronic granulomatous inflammation with caseous necrosis and Langhans type giant cells, contributing to diagnosis in the majority of the cases<sup>7]</sup>.

In our series five out of six cases (83.3%) were diagnosed as mammary tuberculosis on the basis of presence of epithelioid cell granulomas and necrosis with/ without positive ZN staining. Histopathology was done in four cases in our study for confirmation of cytopathological diagnosis and to rule out carcinoma because of strong clinical and radiological suspicion of malignancy in three cases and poor response to non TB antibiotics in one case. The patient with cytopathological

diagnosis of necrotizing inflammatory lesion was given a course of non TB antibiotics but a poor response was observed. Excision biopsy was done and a final diagnosis of Necrotizing granulomatous mastitis was obtained.

Histopathology may be required for patients with abscess, sinuses or a need to exclude malignancy in a patient with high index of suspicion. Tuberculosis and carcinoma may coexist. Pandey et al<sup>14]</sup> has reported a case of infiltrating ductal carcinoma of breast, metastatic to axillary lymph nodes with evidence of tubercular granuloma in the same lymph node.

Mycobacterial culture, the gold standard for the diagnosis of TB, is often negative in cases of mammary tuberculosis due to the paucibacillary nature of breast TB<sup>21</sup>.

Nucleic acid amplification tests (NAAT) such as Polymerase chain reaction (PCR) are rapid and specific but suffer from low sensitivity especially in AFB smear negative cases. Sensitivity as low as 50% have been reported in some series<sup>15</sup>. Further complicating the issue is the presence of polymerase enzyme inhibitors in approximately 20% of extrapulmonary specimens<sup>15</sup>. If formalin fixed tissue is

the only available material sensitivity of NAAT is compromised further. Thus a negative NAAT result does not exclude TB disease with certainty. The Tuberculin skin test, interferon gamma release assays and serology are of limited diagnostic value given that adults from TB endemic areas are expected to have high rates of positivity of these tests<sup>16,17</sup>.

#### **CONCLUSION:**

It must be kept in mind that a woman in reproductive age group coming from high risk population or endemic areas presenting with a palpable lump in breast may have tuberculosis. Most of the mammary tuberculosis cases can be rapidly diagnosed on FNAC. Also Breast TB should be suspected when there is poor response to non TB antibiotics used for treatment of breast abscess in the patients coming from TB endemic areas.

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