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ORIGINAL ARTICLE

# Tuberculosis of Breast: A Tertiary Care Centre Experience

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## Abstract

Background: Tuberculosis of the breast is a rare and its diagnosis is difficult to establish clinically as the signs and symptoms may mimic that of carcinoma of the breast and sometimes a chromic breast abscess.

**Aim:** In this series of 102 patients we review our experience and high-light that breast TB should be considered as a differential diagnosis of breast lesions like breast carcinoma.

**Methods:** One hundred two patients with mammary tuberculosis of the breast were evaluated over a 30-year period presenting to the surgical department of our institution. The study was approved by the Institute Medical Ethical Committee.

**Result:** The mean age of presentation was 35 years (range 15–60 years) and the mean duration of symptoms was 9 months. The classic presentation was a breast lump with associated sinus in 42.16%, isolated breast lump in 24.51%, sinus without lump in 10.78%, and tender nodularity in 21.57% of the patients. Associated axillary lymphadenopathy was found in 38.24%. Only thirteen patients had associated pulmonary tuberculosis, the rest having an isolated involvement of the breast.

**Conclusion:** Fine-needle aspiration cytology was the most reliable diagnostic modality. Medical therapy with antitubercular drugs ranging from 6 to 9 months was the mainstay of treatment. Surgical intervention was reserved for selected refractory cases.

Tuberculosis (TB) of the breast is a rare entity[1] which is uncommon even in countries where TB is considered to be endemic. In 1829, Sir Astley Cooper cited the first case of breast TB and called it "Scrofulous swelling of bosom" [2]. Tuberculosis rarely involves skeletal muscle, spleen and breast tissue as these tissues show a noticeable resistance to the survival and multiplication of tuberculosis bacilli. Tuberculosis of the breast may be primary or secondary. Its diagnosis is difficult to establish clinically as the signs and symptoms may mimic that of carcinoma of the breast and sometimes a chronic breast abscess. The prevalence of pulmonary TB is high in India, it has been reported that the incidence of breast TB among the total number of mammary conditions varies between 0.64% and 3.59%[3]. In this series

of 102 patients we review our experience and high-light that breast TB should be considered as a differential diagnosis of breast lesions like breast carcinoma.

## METHODS

One hundred two patients were diagnosed with breast tuberculosis over a 30 year period from 1986 to 2015 in the general surgical department of University Hospital, BHU. A written informed consent was taken from each patient prior to evaluation. These patients were diagnosed and treated after admission or as outpatients on follow up. The study was approved by the Institute Medical Ethical Committee.

## RESULTS

Out of the 102 patients, 97 were female and five were male. The mean age of presentation was 35 years (range 15–60 years) and the mean duration of symptoms was 9 months. The right breast was involved in 51 patients and the left in 47 patients. The disease was bilateral in four patients, out of which 3 were female and 1 male patient. Among the female patients, 33 were lactating and 5 pregnant at the time of diagnosis. The clinical presentation of the breast lesion is depicted in Table 1.

**Table 1:** Symptoms of patients with patients with mammary tuberculosis

| Symptom | Number of cases | Percentage |
|---|---|---|
| Isolated Breast lump | 25 | 24.51 |
| Breast lump with sinus | 43 | 42.16 |
| Isolated Sinus without lump | 11 | 10.78 |
| Tender nodularity | 22 | 21.57 |
| Isolated Axillary sinus | 7 | 6.86 |
| Associated axillary lymphadenopaty | 39 | 38.24 |
| Previously drained abscess | 9 | 8.82 |

Sixty eight (66.67%) patients had a breast lump, most commonly in the central subareolar region (33 patients), and 43 of these patients had a associated discharging sinus (Fig. 1). Another 11 patients had multiple sinuses without an underlying lump; 7 patients had an axillary sinus. Twenty one patients had symptoms of mastalgia and tender nodularity without a cyclical pattern, and 39 (38.24%) had associated axillary lymphadenopathy. Nine patients had a scar from a previously drained breast abscess. Out of 5 male patients, three male patients had subareolar hard mobile lumps, which were clinically diagnosed as carcinoma of the breast.

Twenty two (21.57%) patients had constitutional symptoms of tuberculosis such as fever, anorexia, weight loss and night sweats. Eighty nine patients (87.25%) had isolated disease of the breast at presentation and thirteen patients (11.76%) had associated pulmonary tuberculosis symptoms.

**Figure Legends:**

**Fig.1:** Right breast showing nipple retraction and 4x3 cm size lump in inferior quadrant with discharging sinus


**Fig. 2:** USG of breast showing multiloculated lump in breast with anechoic collection

In all patients with breast lumps or increased nodularity fine needle aspiration cytology (FNAC) was carried out. Wedge biopsy from the distal most part of the sinuses was taken in patients having sinuses without breast lumps. The cytological findings of epithelioid cell granulomas, Langhans' giant cells,

and lymphohistiocytic aggregates confirmed the diagnosis of tuberculosis. The discharge from the sinus was subjected to Ziehl-Neelson staining and culture for acid fast bacilli. All specimens proved negative for acid fast bacilli on staining as well as culture. Mantoux test was positive in 95 patients (93.13%) and erythrocyte sedimentation rate was raised in 81 (79.41%). Chest radiography revealed pulmonary tuberculosis in seventeen patients (16.66%) of whom nine had old calcific lesions.

Sonographic evaluation of the breast was done in 60 patients (Fig. 2). In five patients ultrasound guided FNAC was done as they had breast pain for more than 2 months without a palpable lump. All these patients had non-specific hypoechoic areas in the breast from where aspirations were carried out. Seven patients with impalpable breast lumps underwent ultrasound-guided core biopsy evaluation after two fine-needle aspirations were found to be inadequate for diagnosis. Computed tomography (CT) scan was carried out in only one of our patients, who had a cystic lesion in the breast with peripheral enhancement with hypoechoic mediastinal lymph nodes diagnostic of tuberculosis, which was confirmed on cytology. The diagnosis of mammary tuberculosis was confirmed by a combination of clinical suspicion, radiological and cytological examination and wedge biopsies. Occasionally core biopsies were carried out when FNAC was non-conclusive.

After exclusion of carcinoma, all patients were subjected to a 6-month course of antitubercular treatment with four drugs (Rifampicin, Isoniazid, Ethambutol and Pyrazinamide) for 2 months followed by Rifampicin and Isoniazid for another 4 months. Thirty eight patients required surgical intervention because of a persistent lump or sinus after cessation of the antitubercular treatment.

All patients were followed up for a mean period of nine months (range 8–12 months). Extension of antitubercular therapy from 12 to 18 months was required in 39 patients because of their slow clinical response. Twenty five patients needed the addition of streptomycin and/or ofloxacin to their treatment protocol.

Three patients had recurrence with pus discharge from the healed sinus tract. Ultrasound-guided aspiration confirmed recurrence. Second-line antitubercular drugs were started for these patients. The patients are on regular follow up with good clinical response. No patient in the present study had a missed diagnosis of breast carcinoma. Complete resolution was obtained in 87 patients and five had a simple mastectomy. The residual mass in eight patients was confirmed by repeated FNAC to be fibrotic.

## DISCUSSION

Tuberculosis of the breast has been reported mainly from areas of the world where incidence of tuberculosis in general in higher. It has been reported mostly in women between 20 and 50 years of age and is more common among multiparous and lactating woman. The clinical signs of mammary TB can be nonspecific, and often imitate signs of breast carcinoma. Tubercular lumps are mostly irregular, ill-defined and more painful than that seen in carcinoma[4].

Pathologically mammary TB can be of five types, i.e. (i) nodular, (ii) disseminated, (iii) sclerosing, (iv) Tubercular mastitis obliterans, (v) Acute milliary tubercular mastitis[2,5]. The presenting variety in a particular patient depends on the virulence of the causative bacteria and the immune status of the patient.

Breast tuberculosis can be primary or secondary and can spreadly haematogenous on lymphatic route and sometimes by direct infection. It is considered primary breast tuberculosis when there is no other focus of disease elsewhere in the body. Lymphatic spread is in a retrograde fashion from mediastinal, cervical or axillary nodes to the breast. Due to the proximity of axillary lymph nodes, the upper outer quadrant of the breast is the most frequently involved site[6]. Contiguous spread can occur from the chest and also intra-abdominal foci[7]. The primary route, though rare, is by direct inoculation of the bacilli through the breast skin or the nipple. Involvement of the breast from the underlying rib, pleural space or rectus sheath from an intra-abdominal source can be a cause of direct involvement of the mammary gland[8]. The most common infection to the breast is usually through a secondary route and lymphatic spread by retrograde extension from axillary lymph node accounts for 50–75% of cases, supporting Cooper's theory of secondary involvement of the breast by lymphatic extension[8,9].

During lactation, susceptibility of the breast to the tubercle bacilli is increased manifold[10]. During the lactation period, there is increased blood supply to be breast as well as stress on the mother. Due to these two factors, there are increased chances of breast infection. If there is coincidental TB of the faucial tonsils of suckling infants, then direct spread of TB can also occur through nipple skin abrasions or through milk duct openings[2,11].

In our series 32.35% of the patients were lactating at presentation. There are no reports on the presence of acid fast bacilli in the milk of such women even though it is possible to isolate acid fast bacilli in 12% of breast biopsies [12].

Tuberculosis of the male breast is extremely rare. In a study by Lilleng *et al*, on 809 cases of male breast mass, did not find a single case of tuberculosis[13]. A few isolated case reports on male breast tuberculosis reveal that the common mode of presentation is a unilateral breast mass with or without ulceration along with axillary lymphadenopathy[14]. In our series the five male patients were clinically diagnosed with a carcinoma, but FNAC findings were confirmatory for tuberculosis.

The diagnosis of tuberculosis of the breast continues to be a challenge both on clinical examination and imaging. Patients presenting with breast lumps and sinuses can be readily diagnosed but differentiation from actinomycosis is important, and this can be ascertained by the absence of sulfur granules in the discharge and by fungal cultures.

Breast lumps without sinuses mimic carcinoma, because these are usually hard, ill defined and irregular, and present in the upper and outer quadrants of the breast. Dull pain is a feature of breast tuberculosis, which is not encountered in a carcinomatous lump. Another feature of tuberculosis is sparing of the nipple and areola by the disease process. Fixity to the muscles is usually a feature of a malignancy, but can occur in tuberculosis mastitis also. Differentiation is also needed from pyogenic abscess or a partially treated pyogenic abscess (antibioma) in young patients. These are associated with constitutional symptoms. Other conditions from which tuberculosis may have to be differentiated are fibro-adenoma and acute and chronic mastitis[12,15,16].

A high index of suspicion needs to be maintained if a breast lump is associated with a sinus or indolent lump in an immigrant women if this is encountered in the west. Constitutional symptoms and pulmonary tuberculosis were found associated in only 22 (21.57%) and thirteen (11.76%) patients, respectively, in our series.

Fine-needle aspiration cytology is a cheap, effective and readily available modality for the diagnosis, as has been seen in this study and that of others, where more than 70% of the patient could be diagnosed by FNAC alone[17,18]. Core biopsy is more invasive than FNAC, requires more training and experience and frequently requires imaging and guidance. Cytological evidence of caseating granulomas, epithelioid cells and aggregates of lymphohistiocytes readily establishes a diagnosis of tubercular mastitis[11,17]. Khanna et al. could diagnose 100% of their 52 patients with FNAC or histology[10]. In our experience of 102 patients, FNAC or histology was 100% reliable in diagnosing tuberculosis, including patients who had tender nodularity.

Cytological findings of granulomatous mastitis can also be found in plasma cell mastitis, fat necrosis, actinomycosis[19], and idiopathic granulomatous mastitis[20,21] and needs to be differentiated from tuberculosis on histology. Plasma cell mastitis constitutes accumulation of plasma cells and giant cells within dilated ducts. Fat necrosis is limited to the adipose tissue of the breast, which encounters granulomatous reaction around fat globules. Actinomycosis is characterized by drainage of sulfur granules from sinuses in the breast. Idiopathic granulomatous mastitis is a rare inflammatory disease of the breast[20]. The diagnosis is made as exclusion due to presence of noncaseating granulomas on histopathology[22].

The percentage of bacilli isolates by Ziehl-Neelson stain or culture is not very high, as is seen in our study. Shinde et al. and Morsad et al. had a positive Ziehl-Neelson result in 12 and 7% of their patients, respectively[11,12]. Polymerase chain reaction (PCR) due to its high cost was not used in the present study. In a series by Tse of 19 cases with PCR for tuberculosis, only one showed mycobacterium DNA in the sample[23].

Mammography is less accurate than ultrasonography in the diagnosis of breast TB. Ultrasound is especially useful in the abscess form of the tubercular disease of the breast [6]. Histopathologically, presence of caseous necrosis, epithelioid cell granuloma with presence of Langhan's giant cells and lymphocytic aggregation is diagnostic. In countries like India, where TB is endemic, the finding of granuloma on FNAC can justify empirical antitubercular therapy even in the absence of positive AFB and culture results[7].

Medical treatment of mammary TB is similar to pulmonary TB and consists of four-drug regimen. Surgical intervention is required for aspiration of cold abscesses and excision of residual sinuses and masses.

## CONCLUSION

Mammary Tuberculous is uncommon in countries where incidence of pulmonary and extrapulmonary TB is very high. It continues to pose a diagnostic challenge due to its rarity, atypical clinical features and non-confirmatory radiological modalities. Unnecessary mastectomy can be avoided if we keep this rare but medically treatable condition in the back of our mind.

## REFERENCES

1. Cooper A. Illustration of the diseases of the breast. London: Longman, Res, Orme, Brown and Green, 1892.

2. Tewari M, Shukla HS. Breast tuberculosis: Diagno¬sis, clinical features & management. Indian J Med Res 2005;122:103-10.
3. Prathima S, Kalyani R, Parimala S. Primary tuber¬cular mastitis masquerading as malignancy. J Nat Sci Biol Med 2014;5:184-6.
4. Gulpinar K, Ozis S, Ozdemir S, Korkmaz A. Prima¬ry Breast Tuberculosis: Report of a Case. Surgical Science 2013;4,68-71.
5. Madhusudhan KS, Gamanagatti S. Primary breast tuberculosis masquerading as carcinoma. Singa-pore Med J 2008;49:e3-5.
6. Sen M, Gorpelioglu C, Bozer M. Isolated pri¬mary breast tuberculosis: Report of three cases and review of the literature. Clinics (Sao Paulo) 2009;64:607-10.
7. Baharoon S. Tuberculosis of the breast. Ann Thorac Med 2008;3:110-4.
8. Filippou DC, Rizos S, Nissiotis A. Primary breast tuberculosis. A case report. Radiol. Oncol. 2003; 37: 1–3.
9. Daryanani AR, Sundeep PT, Rodrigues G, Kumar S, Kudva R. Tuberculous mastitis masquerading as carcinoma breast. Internet J Third World Med 2004; 1.
10. Khanna R, Prasanna GV, Gupta P, Kumar M, Khanna S, Khanna AK. Mammary tuberculosis: report on 52 cases. Postgrad. Med. J. 2002; 78: 422–4.
11. Gupta D, Rajwanshi A, Gupta SK, Nijhawan R, Saran RK, Singh R. Fine needle aspiration cytology in the diagnosis of tuberculous mastitis. Acta Cytol. 1999; 43: 191–4.
12. Shinde SR, Chandawarkar RY, Deshmukh SP. Tuberculosis of the breast masquerading as carcinoma: a study of 100 patients. Word J Surg 1995;19:379–81.
13. Lilleng R, Paksay N, Vural C, et al. Assessment of fine needle aspiration cytology and histo-pathology for diagnosing male breast masses. Acta Cytol 1995;39:877–81.
14. Chandra J, Kumar M, Khanna AK. Male breast tuberculosis. Postgrad Med J 1997;73:428–9.
15. Hale JA, Peters GN, Cheek JH. Tuberculosis of the breast. Rare but still existent. Review of literature and report of an additional case. Am. J. Surg. 1985; 150: 620.
16. Mankanjuola D, Murshid K, Sulaiman S et al. Mammographic features of the breast tuberculosis: the skin bulge and sinus tract sign. Clin. Radiol. 1996; 9: 1117–19.
17. Kakker S, Kapila K, Singh MK et al. Tuberculosis of the breast. A cytomorphologic study. Acta Cytol. 2000; 44: 292–6.
18. Kanchanabat B, Kanchanapitak P, Thanapongsathorn W, Manomaiphiboon A. Fine-needle aspiration cytology for diagnosis and management of palpable breast mass. Aust. N. Z. J. Surg. 2000; 70: 791–4.
19. Goksoy E, Duren M, Durgun Vet al. Tuberculosis of the breast. Eur. J. Surg. 1995; 161: 471–3.
20. Asoglu O. Feasibility of surgical management in patients with granulomatous mastitis. Breast J. 2005; 11: 108–14.
21. Diesing D, Axt-Fliedner R, Hornung D, Weiss JM, Diedrich K, Friedrich M. Granulomatous mastitis. Arch. Gynecol. Obstet. 2004; 269: 233–6.
22. Kaur AC, Dal H, Muezzinoglu B, Paksoy N. Idiopathic granulomatous mastitis. Report of a case diagnosed with fine needle aspiration cytology. Acta Cytol. 1999; 43: 481–4.
23. Tse GM. Granulomatous mastitis: a clinicopathological review of 26 cases. Pathology 2004; 36: 254–7.