

Contents lists available at ScienceDirect

## Asian Pacific Journal of Tropical Disease

journal homepage: www.elsevier.com/locate/apjtd



Document heading doi: 10.1016/S2222-1808(12)60076-0 © 2012 by the Asian Pacific Journal of Tropical Disease. All rights reserved.

## Tuberculous mastitis—A great mimicker

Meenu Gill, Sonia Chhabra, Monika Sangwan\*, Sneh Singh, Praveen, Parul Tanwar

Department of pathology, PGIMS, Rohtak, India

## ARTICLE INFO

## Article history:

Received 1 July 2012

Received in revised form 5 July 2012

Accepted 28 October 2012

Available online 28 October 2012

## Keywords:

Tuberculosis breast

Incidence

FNAC

ZN staining

## ABSTRACT

**Objective:** To focus on the increasing incidence of breast tuberculosis, its mistaken identity with carcinoma or pyogenic abscess and its effective diagnosis on cytology. **Methods:** This retrospective study was carried over short period of two months. Six patients were included. air dried and wet fixed smears prepared and stained with May–Grunwald–Giemsa and Papanicolaou respectively. Zeihl Neelson staining was also applied. **Results:** Age groups varied from 16 to 70 years. Six cases presented within 2 months. Most common presentation was painless lump breast. One patient presented with discharging sinus. Lumps mostly favored right breast with predominance of upper outer quadrant. All except one were found to be positive for AFB. **Conclusions:** Incidences of tuberculous mastitis are increasing, can mimic carcinoma or abscess and should always be kept in differential diagnosis of lump breast. FNAC is helpful and ZN staining is gold standard in diagnosing acid fast bacilli.

## 1. Introduction

Tuberculosis (TB) is the most widespread persistent human infection worldwide affecting over one billion people. Amongst the extrapulmonary sites, breast is an infrequent site of TB. Breast TB is a very rare disease and constitutes only 0.025%–1.040% of breast diseases[1]. It is more frequently encountered in developing countries in Africa and Asia where TB is common. However disease is assuming significance even in developed countries because of global spread of AIDS[2].

Sir Astley Cooper in 1829 first described breast TB as scrofulous swelling at the bosom of young women suffering from enlargement of cervical glands. It comprises of two types primary being confined only to the breast and secondary with coexisting tuberculous lesion elsewhere in the body[3]. Recently it has been reclassified into three categories namely nodular, disseminated and abscess varieties. The major routes of spread are lymphatic,

contiguous and hematogenous. It occurs more frequently in women predominantly in the reproductive age group (17–42 years). Risk factors include multiparity, trauma, lactation and past history of suppurative mastitis[4]. Rare reports along with coexisting carcinoma breast also have been reported. Various ways of manifestation includes painless unilateral breast mass, generalized breast edema and localized abscess with or without axillary involvement. Tenderness and erythema may also be present. Although any area of breast can be involved but due to proximity of axillary nodes, upper outer quadrant is the most frequently site involved[5].

The diagnosis of mammary TB can be confirmed with a combination of strong clinical suspicion and cytological findings. The diagnostic criterias are the presence of granulomatous infiltrate with a central caseation on FNAC or histology or bacteriological culture of the aspirate. The demonstration of AFB on ZN staining or culture remains the gold standard for diagnosis.

The various investigative modalities include USG, mammography and Gadolinium–DTPA enhanced dynamic MRI. USG reveals smooth well defined mass with thin border of heterogenous internal echoes. Mammography shows mass calcification, asymmetric density with speculated margin and axillary node involvement. Gadolinium–DTPA MRI show significant enhancement at first minute after injection.

\*Corresponding author: Dr Monika Sangwan, Junior Resident, Department of pathology, PGIMS, Rohtak, India.

Tel: +919466336734

E-mail: dr.monika1311@yahoo.in

Enhancing pattern is usually smooth or irregular appearing. Now a day Anti Tubercular Therapy along with aspiration of abscess or limited surgery is considered as adequate mode of treatment. It is treated like any form of extrapulmonary TB for six months (2HRZE/4HR) or nine month (2HRE/7HR, 2HRZ/7HR) unless patient develops drug resistant<sup>[6]</sup>. The present study emphasizes on the increasing incidence of breast TB in out set up and its effective diagnosis on cytology.

## 2. Material and methods

The study has been undertaken in Department of Pathology, PGIMS, Rohtak. It includes six patients taken over a short period of two months. All the patients were married females except one in an age group of 16–70 years. All were subjected to investigations regarding history, examination finding, laboratory and radiological report. Patients with lump or nodularity were subjected to FNAC. The cytological findings of epithelioid cell granulomas, langhans' giant cells and lympho histiocytic aggregates confirmed the diagnosis. Further ZN staining for acid fast bacilli was performed and proved to be helpful in majority of cases. Chest radiography was also done to rule out primary TB or old calcified lesion.

## 3. Results

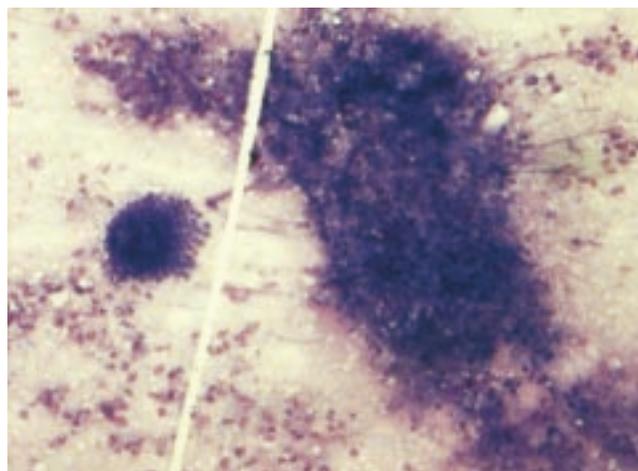
The study was carried out on 6 patients. All were female and 5 were married out of six. Age group varied from 16 to 70 years with an average of 40 years. There was no history of lactation in any subject. Most of the patients presented with painless lump breast, loss of appetite, fever and weakness but some presented with tenderness (Figure 1). One patient presented with discharging sinus after being operated for fibrocystic disease (Figure 2). One patient had a previous history of ATT 10 years back for cervical lymphadenopathy.



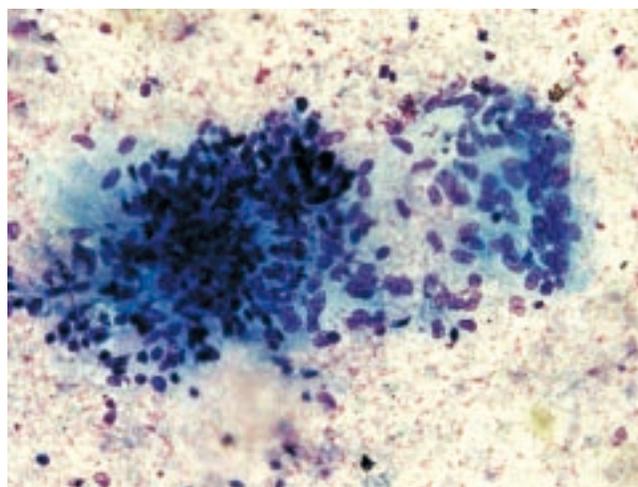
**Figure 1.** Presentation of TB breast as an acute inflammatory lesion.



**Figure 2.** A persistent discharging sinus present at site of previous excision for fibrocystic disease.



**Figure 3.** Cluster of Duct epithelial cells and granuloma (100×).



**Figure 4.** Granuloma is seen in an inflammatory background with necrosis (200×).

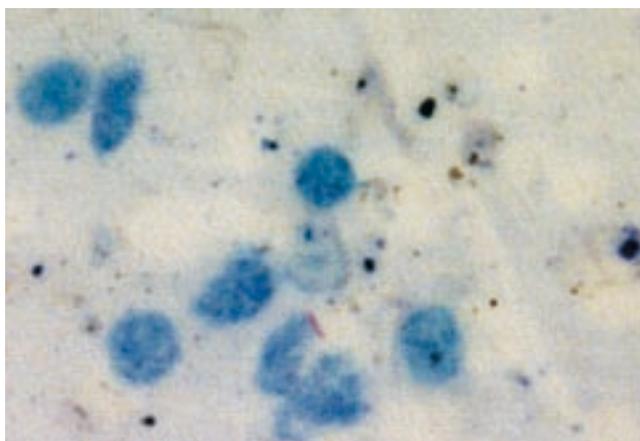
Most of the lumps favored right breast (4 cases) than the left (2 cases), with a predominance in upper outer quadrant

**Table 1**

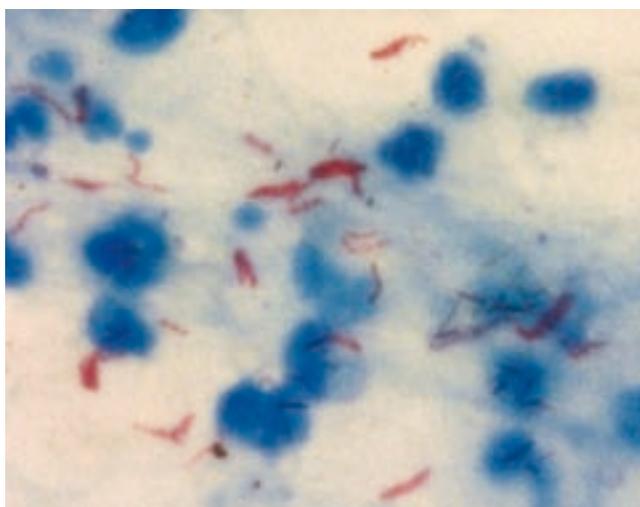
Observation and results.

Age/ sex	Married status	Uni/bilateral	Site lesion	Symptoms	H/O ATT	AFB status
16/F	Un	Right	Upper outer	Decrease weight and appetite	YES	Positive
30/F	M	Right	Lower outer	Pain, weakness	No	Negative
35/F	M	Right	Sub areolar	Decrease weight, fever, weakness	No	Highly positive
42/F	M	Left	Lower outer	Pain, decrease weight	No	Positive
49/F	M	Left	Upper outer	Sinuses from two scar site	No	Positive
70/F	M	Right	Upper outer	Decrease weight, on and off fever	No	Positive

of breast. All swellings were mobile except in two cases out of which one was fixed to nipple. The cytological findings of granulomas with necrosis (Figure 3, Figure 4) were confirmed as TB of breast by AFB staining. All except one were found positive for acid fast bacilli (Figure 5), with one of them showing high positivity (Figure 6), thus proving ZN staining to be gold standard.



**Figure 5.** Acid fast bacilli positive with Zeihl Neelson staining (1000×).



**Figure 6.** Highly diffuse positivity for acid fast bacilli in HIV positive patient.

Patient were prescribed ATT comprising of Rifampicin 450 mg, Isoniazid 300 mg, Pyrazinamide 1500 mg and E0thambutol 800 mg per day for two months followed by rifampicin and isoniazid for another 4 months. One of the six patients required surgical intervention. All patients were kept under follow up.

#### 4. Discussion

Mammary gland is infrequent site of TB. Granulomatous mastitis is uncommon condition recognized recently and is characterized by presence of epithelioid cell granulomas, Langhans' giant cells and lympho histiocytic aggregates. It has been hypothesized that mammary gland tissue, like spleen and skeletal muscle is resistant to and unsuitable for survival and multiplication of *Mycobacterium TB*[4]. Mammary TB is either primary or secondary. It is called primary when no demonstrable tuberculous focus exists and secondary if there is lesion elsewhere in body. Primary TB may occur through duct opening or nipple or skin abrasions if present. However cases have been reported on direct extension from contiguous structure like underlying rib. Breast may be secondarily infected by hematogenous or lymphatic spread[5].

The main significance of breast TB is due to its mistaken identity with breast carcinoma in relatively older and pyogenic abscess in younger patients. In our study two out of six patients came with clinical diagnosis of malignancy and turned out to be TB of breast.

The mean age group involved was 40.7 years according to Rubab *et al*[7]. In our study mean age group was 40.3 years and all were females. Youngest patient was 16 year old, eldest was 70 year and other lied in age group of 30–50 year old. According to Nadir *et al* 53% patients were younger than 30year, only one patient was 70 year (5.9%) old and 7 patients were in between 30–55 years (41.1%)[8].

Breast lump with sinus was reported to occur in 39%

patients by Khanna *et al*[9]. They also reported isolated breast lump in 23%, only sinus without lump in 12%, nodularity in 23% and associated axillary lymphadenopathy in 41% of 52 patients studied. We reported lump alone in 83.3% cases (5 out of 6) and one case presented with discharging sinuses along with lump (16.6%).

Upper outer quadrant was more commonly involved according to Rubab *et al*[7]. In our study 3 patients presented with lump in upper outer quadrant (50%), 2 with lump in lower outer quadrant (33.3%) and one with subareolar lump (16.7%). Right breast was involved in 4 cases (66.6%) and left in two cases (33.4%).

Puneet *et al* reported breast involvement to be more common during lactation because of its being more vascular and predisposed to trauma[10]. In our study no one was lactating.

On FNAC, a cytological diagnosis of granulomatous lesion of breast can be made when smears show epithelioid histiocytes either isolated or forming aggregates along with multinucleated giant cells. Epithelioid cell granulomas were seen in 2 cases with inflammation and necrosis in the background. Other 4 cases had cytological features suggestive of acute on chronic inflammation. Khanna *et al* reported 100% success rate in diagnosing tubercular mastitis on FNAC[9], while Kakkar *et al* reported a success rate of 73% on FNAC[11]. In our study all the 6 cases were diagnosed on FNAC so giving an efficacy of 100%.

The frequency of positive stain for AFB with 20% H<sub>2</sub>SO<sub>4</sub> in diagnosing breast TB have been reported to be lower. None of the patients reported by Fadari–Agrahi M *et al* and Khanna had a positive stain for AFB[12,9]. Rubab *et al* reported only 5 cases positive out of 14 cases studied. In our study 5 out of 6 (83.3%) patients were found to be positive for AFB giving a high yield and favouring the use of ZN Staining on routine basis for diagnosing breast TB even in cases presenting with acute inflammatory lesion and thus confirming the diagnosis on FNAC alone.

Montoux is usually positive in adults in endemic areas for TB so of no help in making diagnosis.

Mammography or ultrasonography are unreliable in distinguishing breast TB from carcinoma because of variable pattern of presentations of such inflammatory lesion like coarse stromal texture with or without an ill defined breast mass and skin thickening which all are non specific for mastitis[13]. An optimal radiologic modality to differentiate primary TB from secondary TB is CT scan. In our study in one case only diagnosis of inflammatory lesion was made on USG.

Now a day medical treatment using standard regime as in pulmonary TB is indicated for initially six months, in some cases time may be increased. Surgical intervention is indicated for aspiration of cold abscess and excision of residual sinuses or abscess and in need to exclude malignancy in highly suspicious patients[14–19].

Tubercular mastitis is showing increased incidence and should be considered in differential diagnosis of lump breast accompanied by history of generalized weakness, weight loss and low grade fever. FNAC provides a definitive diagnosis and AFB positivity is still a gold standard despite the negative results in the previous study.

## Conflict of interest statement

We declare that we have no conflict of interest.

## References

- [1] Tanrikulua AC, Ozlem AA, Kapanc AM. Breast tuberculosis in Southeast Turkey: report of 27 cases. *Breast Care* 2010; **5**: 154–157.
- [2] Yasmeen B, Imamuddin B, Muhammad SS, Ghulam SSS, Rajib AD. Is tuberculosis of breast a common problem? *Med Channel* 2010; **16**: 172–174.
- [3] Mathur R, Vatluya MV, Chitimilla SK. Tuberculosis of breast: a case report. *West London Med J* 2009; **1**: 37–41.
- [4] Tewari M, Shukla HS. Breast tuberculosis: Diagnosis, clinical features and management. *Ind J Med Res* 2005; **122**: 103–110.
- [5] Madhusudhan KS, Gamanagatti S. Primary breast tuberculosis masquerading as carcinoma. *Singapore Med J* 2008; **49**(1): 3–5.
- [6] Lin TL, Chi SY, Liu JW, Chou FF. Tuberculosis of the breast: 10 years' experience in one institution. *Int J Tuberc lung dis* 2010; **14**(6): 758–763.
- [7] Ahmed R, Sultan F. Granulomatous mastitis: A review of 14 cases. *J Ayub Med Coll Abbothabad* 2006; **18**(1): 52–54.
- [8] Mehmood N, Zeeshan HK, Umer AK, Aamir N, Malik IA, Khan MI. Tuberculous mastitis—presentation and outcome in our set up. *Ann Pak Inst Med Sci* 2009; **5**(4): 245–250.
- [9] Khanna R, Prasanna GU, Gupta P, Kumar M, Khanna S, Khanna S, et al. Mammary tuberculosis: report of 52 cases. *Postgrad Med J* 2002; **78**: 422–424.
- [10] Puneet MS, Satyendra K, Ritu R, Singh S, Gupta SK, Shukla VK. Breast tuberculosis still common in India. *Int J Trop Med* 2005 vol, no2, DOI: 10.5580/af8.
- [11] Kakkar S, Kapil K, Sing MK, Verma K. Tuberculosis of breast. A cytomorphologic study. *Acta Cytol* 2000; **44**: 292–296.
- [12] Fadari–Araghi M, Geranpayeh L, Irani S, Matloob R, Kuraki S. Breast tuberculosis: report of eight cases. *Arch Iran Med* 2008; **11**(4): 463–465.
- [13] Singal R, Gupta S, Gupta S. Primary abdominal tuberculosis presenting as peritonitis in a young child—managed surgically. *Asian Pac J Trop Med* 2012; **5**(5): 413–415.
- [14] Jaafar J, Wan Hitam WH, Mohd Noor RA. Bilateral atypical optic neuritis associated with tuberculosis in an immunocompromised patient. *Asian Pac J Trop Biomed* 2012; **2**(5): 586–588.
- [15] Garberi J, Labrador J, Garberi F, Garberi JE, Peneipil J, Garberi M, et al. Diagnosis of *Mycobacterium tuberculosis* using molecular biology technology. *Asian Pac J Trop Biomed* 2011; **1**(2): 89–93.
- [16] Singhal S, Jaiswa P. Presentation of tuberculosis in TB–HIV co-infection patients and the treatment outcome with directly observed short course therapy. *Asian Pac J Trop Biomed* 2011; **1**(2): 266–267.
- [17] Shareef PAA, Abidi SMA. Incidence and histopathology of encysted progenetic metacercaria of *Clinostomum complanatum* (Digenea: Clinostomidae) in *Channa punctatus* and its development in experimental host. *Asian Pac J Trop Biomed* 2012; **2**(6): 421–426.
- [18] Ning TZ, Kin WW, Mustafa S, Ahmed A, Noordin R, Gheong TG, et al. Detection of *Entamoeba histolytica* in experimentally induced amoebic liver abscess: comparison of three staining methods. *Asian Pac J Trop Biomed* 2012; **2**(1): 61–65.
- [19] Akçay MN, Saglam L, Polat P, Erdgan F, Albayrak Y, Povosk SP. Mammary tuberculosis—importance of recognition and differentiation from that of a breast malignancy: report of three cases and review of the literature. *World J Surg Oncol* 2007; **5**: 67.