

# Tubercular Mastitis is Common in Garhwal Region of Uttarakhand: Clinico Pathological Features of 14 Cases

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## ABSTRACT

The incidence of breast tuberculosis is not uncommon but there is gross under reporting of such an important disease. It presents with mimics of breast abscess, fibrocystic disease and breast cancer. Breast tuberculosis has been rarely reported from Garhwal region of Uttarakhand. Breast tuberculosis has no well defined clinical features and apart from breast lump, vague complain of generalized weakness, malaise and low grade fever is non-specific presentation. Radiological imaging is not diagnostic. Diagnosis is based on the identification of cytological

and histopathological findings of tubercular granuloma and identification of tubercle bacilli either under microscope or by culture. Anti-tubercular therapy for 6 months with minimal surgical intervention is the mainstay of treatment today. The risk factors include multiparity, malnutrition, lactation, trauma, past history of suppurative mastitis, immunocompromised state, drug abuse and emergence of AIDS. In this study we detected 14 cases of breast tuberculosis in 1 year duration that shows tuberculosis of breast is common in Garhwal region of Uttarakhand.

**Key Words:** Breast, tuberculosis, mastitis, granuloma, MGIT, Bactech, PCR

## INTRODUCTION

Breast tuberculosis is a relatively rare form of tuberculosis [1,2] with an incidence of less than 0.1% of all breast lesion in western countries and 4% of all breast lesion in TB endemic countries [3,4]. The first reported case was by Sir Astley Cooper (1829). Reports have appeared in western literature. Secunder (1889) has reported 83 cases of breast tuberculosis. 205 cases were reported by Shipley and Spender in 1926. Morgan (1931) collected 439 cases from literature.

Report from India has described the incidence from 3.0 to 5.38% (Choudhary 1957; Dharkar et al 1968; Dube and Agarwal 1968; Pratap et al 1971; and Mittal et al 1977). Despite high prevalence of tuberculosis in India, only few hundred cases of tubercular mastitis are reported [5]. Garhwal is an endemic area for tuberculosis but tubercular mastitis is rarely reported which is probably because of non-specific presentation and clinically difficult to diagnose [6]. The incidence of tuberculosis is generally quite high in our country and so as the tuberculosis of breast may be frequent enough but possibly overlooked or misdiagnosed as carcinoma or pyogenic abscess or mistaken for other common lesion. Thus the onus of diagnosis is mainly upon pathologist. Sagar C Mhetre et al in their study found that breast tuberculosis is not an infrequent malady as presumed.

Tuberculosis of breast is most often seen in reproductive age group between 20–40 years females, rarely bilateral [3%], rarely seen in males [4%] and may coexist with carcinoma [7–10]. The risk factors include multiparity, malnutrition, lactation, trauma, past history of suppurative mastitis, immunocompromised state, drug abuse and emergence of AIDS [10]. Breast lesion caused by atypical mycobacteria has been recently reported by Vertillie G et al [11]. It presents a diagnostic dilemma not only clinically, but also radiographically. Diagnosis is based on identification of characteristic cytological and histological features along with the

presence of tubercle bacilli under microscope or in culture or by PCR for Mycobacterium tuberculosis. Importance of cytology and histopathology in the diagnosis of tubercular mastitis is emphasized in this article. Demonstration of AFB in aspiration smear and histopathological smear stained with ZN for AFB is though a simple but effective way of diagnosis. This procedure along with PCR will be able to diagnose majority of tubercular mastitis. MGIT, Bactech culture for AFB as additional tools. The most common mode of presentation is breast abscess with or without the involvement of axillary lymph nodes. The other presentation is hard lump mimicking carcinoma and sometimes an ill defined lump simulating fibrocystic disease. So here the responsibilities of pathologist is paramount in final diagnosis of tubercular mastitis. This study is presented with clinicopathological feature of 14 cases of tubercular mastitis, diagnosed in the Dept. of Pathology, V.C.S.G. Govt. Medical college, Srinagar Garhwal Uttarakhand, during one year period.

## MATERIALS AND METHODS

All the patients with breast lesion referred to pathology department were subjected to fine needle aspiration cytology. Further confirmation was done either by demonstration of acid fast bacilli or by histopathologically. PCR was done in cytologically highly suspicious cases with AFB negative on culture and where biopsy was not possible.

## CLINICAL FEATURE

Out of 14 cases in 9 cases (64.3%) clinical diagnosis was breast abscess including sinuses in 2 and ulcer in 1. In 2 (14.3%) cases diagnosis was carcinoma breast and 3 cases (21.4%) was fibrocystic breast disease [Table/Fig-1]. All cases were of married women with maximum number of cases occurring in between 26–35 yrs [Table/Fig-2]. Five patients were lactating (35.7%) at the time of diagnosis. Only one breast was found to be involved and was usually the right one. The diagnosis of tubercular mastitis

Malignancy	2	14.3%
Fibrocystic breast	3	21.4%
Chronic breast abscess	4	28.5%
Inflammatory breast abscess	2	14.3%
Breast abscess with sinus	2	14.3%
Breast abscess with ulcer	1	7.1%

[Table /Fig-1]: Showing clinical diagnosis

Age in year	Number of patient	Percentage
20 -25	5	35.7 %
26-30	4	28.6%
31-35	2	14.3%
36-40	1	7.1%
41-45	0	00%
46-50	1	7.1%
51-55	1	7.1%

[Table /Fig-2]: Showing distribution of age in breast tuberculosis patient.

was suspected clinically in two cases. These cases presented with abscess and discharging sinus. Associated lymphadenopathy was found in four cases (28.6%) on same side of which two were presenting along with carcinoma and two with breast abscess.

### CYTOPATHOLOGIC FEATURE

Out of 9 cases of breast abscess ,acid fast bacilli on ZN staining were detected in 5 cases (55.5%). Remaining four cases of breast abscess in which cytologically degenerated granuloma was present, were subjected to culture by MGIT and Bactech and was found to be positive in 2 cases. AFB culture negative 2 cases were further subjected to PCR and were found positive.

In five other cases with clinical diagnosis of fibrocystic disease and carcinoma breast, microscopically there were evidence of epithelioid cells, langhans giant cells, mononuclear infiltration. But acid fast bacilli were not detected by microscopy in any of these patients. In these cases excisional biopsy was done for further confirmation.

### HISTOPATHOLOGIC FEATURES

Lumpectomy were performed only in 5 patients of granulomatous mastitis, In which gross morphology showed firm to hard masses of varying sizes with nodulocaseous lesion in 3 cases and disseminated/ confluent tubercles in 2 case [Table/Fig-3]. Microscopy showed caseating granulomas with epithelioid cells, both foreign body and Langhans giant cells and lymphomononuclear cells [Table/Fig-4 to 8]. Only in two cases acid fast bacilli could be demonstrated in biopsy which was negative in FNAC earlier [Table/Fig-9].

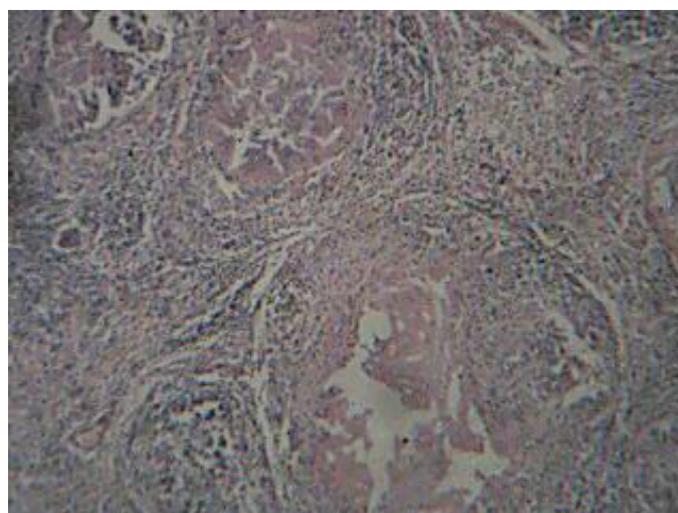
All these 14 cases was put on suitable anti-tubercular therapy and followed up for a mean period of six month, with isoniazid, rifampicin, pyrazinamide, and ethambutol for first two months, and were continued on isoniazid and rifampicin for next four months. Eight patients showed gradual recovery with decrease in erythrocyte sedimentation rate (ESR) and increase in body weight. In four patient clinical response was very slow so in these patient anti-tubercular therapy was extended for 12 month. One patient needed the addition of streptomycin and ofloxacin. One patient though was responding initially but later on could not come for follow up.

### DISCUSSION

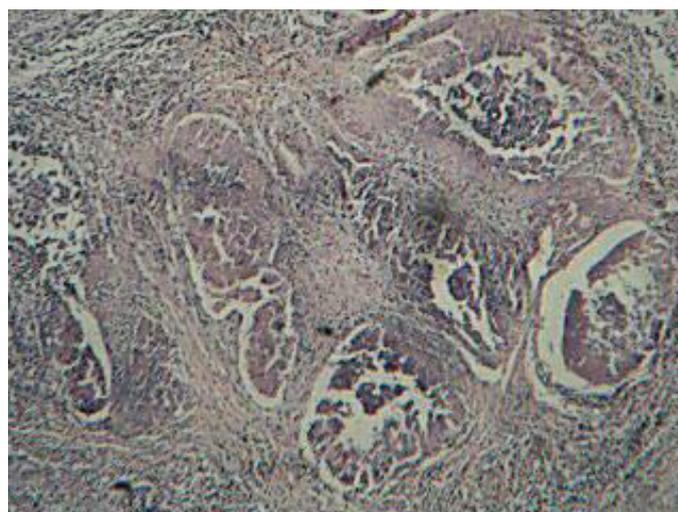
Tuberculosis rarely involves the breast as breast tissue is remarkably resistant like skeletal muscle and spleen because it provides infertile



[Table/Fig-3]: Photomicrograph showing multiple-disseminated tubercular nodule. [Gross]

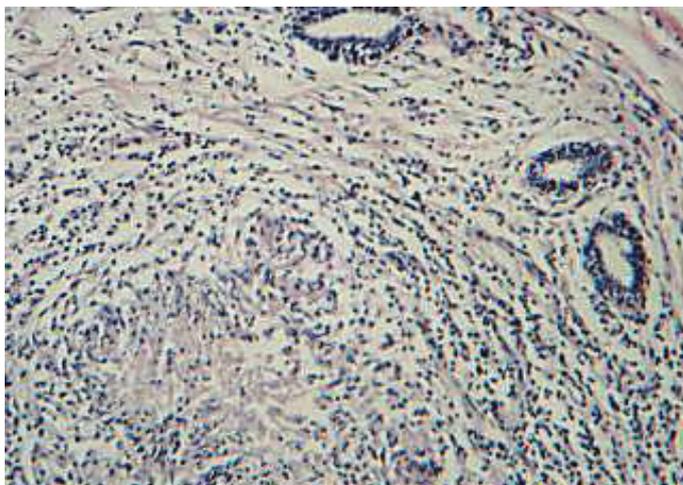


[Table/Fig-4]: Photomicrograph showing multiple caseating granuloma and giant cells. [H & E 10x]

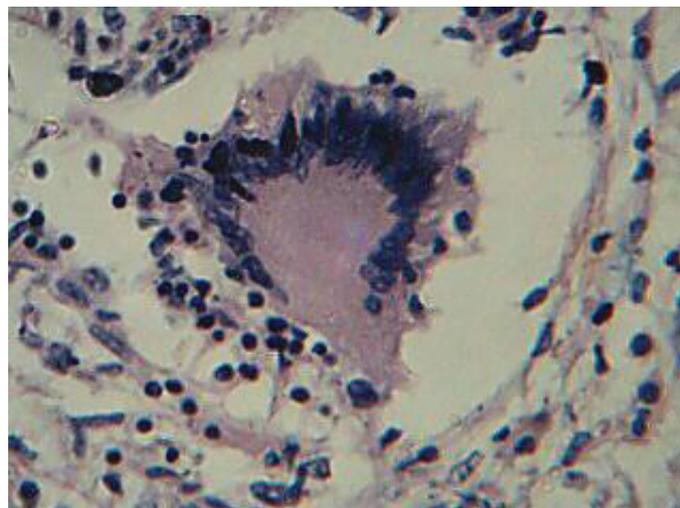


[Table/Fig-5]: Photomicrograph showing numerous caseating granuloma along with stromal chronic inflammation. [H&E 10 x]

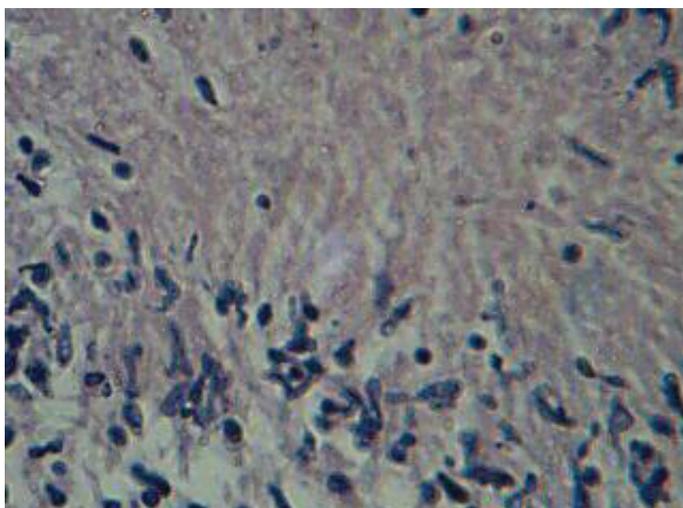
environment for the survival and multiplication of bacilli [12, 13]. The incidence is rising, which may be partly due to immunosuppression as well as emergence of resistant strains of Mycobacterium tuberculosis. We encountered here 14 cases of tubercular mastitis in one year seems too high as compared to other study which may



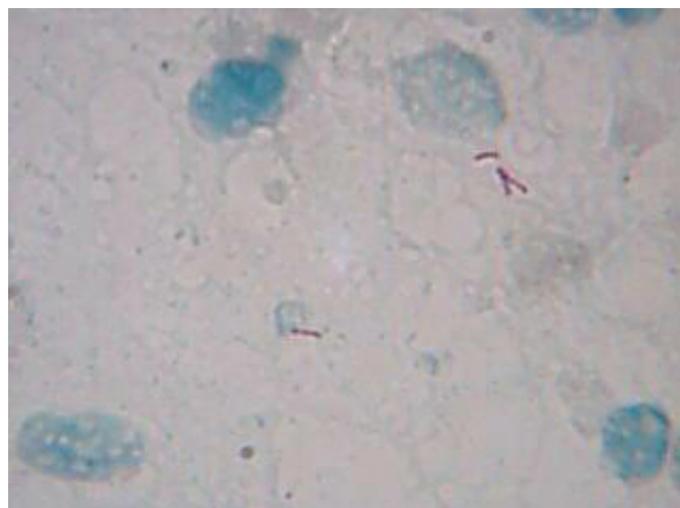
**[Table/Fig-6]:** Photomicrograph showing caseating granuloma along with dilated breast duct. [H & E 10 x]



**[Table/Fig-8]:** Photomicrograph showing Langhans giant cells. [H & E 40 x].



**[Table/Fig-7]:** Photomicrograph of granuloma showing caseous necrosis, epithelioid histiocytes, mononuclear inflammatory cells. [H & E 40 x]



**[Table/Fig-9]:** Photomicrograph showing demonstration of Acid fast bacilli in breast lesion [Ziehl-Neelsen stain]

be because of the overall increase in the incidence of tuberculosis in India. In latest series Puneet et al (2005) reported 42 patients of breast tuberculosis out of 1016 in three year [14], Sagar C Mhetre et al (2011) reported 11 cases out 267 breast biopsy in 5 year study [15], Sunita singh et al (2011) in their case report found 3 cases of tubercular mastitis over a very short period of two months [16]. The contributory factors are of poor socio-economic status, poor nutrition in women, lack of awareness, environmental and geographical conditions of hill areas. Pratima Gupta et al (2005) also in their study found that there is rapidly rising trend of HIV infection from 1.19 % (1999) to 4.19 % (2005) in tubercular patients in hilly region in Uttarakhand [17].

Breast tuberculosis is either of primary aetiology or secondary to pulmonary tuberculosis [18]. Mckeown and Wilkinson [18] suggested that breast may become infected by various ways as haematogenous and lymphatic spread, involvement from contiguous structure, direct inoculation and ductal infection are other mode of infection. The most accepted view for infection of breast tissue is centripetal lymphatic spread [13]. Cooper's theory stated that communication between axillary gland and breast results in breast involvement secondarily due to retrograde lymphatic spread [12]. Spread from lung to breast was traced through tracheobronchial, paratracheal, mediastinal and intermammary nodes.

It usually affects the younger women between (20-40) years which are similar to the highest incidence of pulmonary tuberculosis

reported in the same age group of female. It is extremely rare before the 10 year [6,7,9]. In Indian literature most of the cases reported were in this age group; Chaudhari 85% [19], Dharkar et al 100 % [20], Dubey and Agarwal 70 % [21]. All our cases were young except 2 (85.7%). This may be because the female breast undergoes frequent changes during period of lactation and pregnancy and is more vascular and liable to trauma and infection [13]. 5 of our cases (35.7%) presented during lactation.

Both breasts are reported to be involved with equal frequency. Bilateral involvement is relatively rare and present only in 3% cases [9]. None of our cases had bilateral involvement.

Abscess is one of the common mode of presentation of breast tuberculosis especially in young women [8]. In our study nine cases (64.3%) presented as abscess. In some studies lump was the common presentation in breast tuberculosis [22]. In our series 5 cases (35.7%) out of 14 presented as lump. The common location of lump in breast tuberculosis is upper outer quadrant as in carcinoma breast [7]. Multiple lumps are less frequent [22]. Tubercular lumps are irregular, ill-defined, hard similar to that seen in carcinoma [6, 23]. Nipple retraction and peau d'orange with extensive axillary nodal tuberculosis can also be seen in breast tuberculosis. All our cases were clinically diagnosed as either inflammatory breast abscess or benign or malignant breast lesion. In our reports 4 cases (28.6%) of axillary lymph nodes were enlarged.

Relevant investigations in our cases showed raised ESR in all (100)% cases and healed lesions in lungs in 3 cases.

The definite diagnosis of breast tuberculosis is made by isolation of the tubercle bacilli in cytological and histological material of breast tissue by Ziehl-Neelsen (ZN) stain or culture or highly sensitive PCR (Polymerase Chain Reaction) tests. In our cases Acid fast bacilli in ZN staining were observed in 5 case on cytology and 2 cases on histology that is (50%) of all cases. A variety of PCR techniques have been developed for detection of specific protein sequences of Mycobacterium tuberculosis and other mycobacteria. However, PCR has got some limitations like it is negative in paucibacillary specimens. Positivity rates of PCR are ranging from 40-90% in diagnosing tubercular lymphadenitis. PCR is not much used in the diagnosis of tubercular mastitis. It is used mostly as a diagnostic tool to distinguish tubercular mastitis from other granulomatous mastitis in selected cases [24-25]. A negative PCR result does not exclude TB with certainty.

Mycobacterium culture is considered as the gold standard for diagnosis of tuberculosis but important limitation are the time required and negative result in paucibacillary specimen [1]. Important time saving and sensitive techniques are Bactech, MGIT (Mycobacterium growth indicator tube), Septicheck, MB/BacT system [23]. Most of these new techniques are very expensive and sophisticated to be of any practical benefit to the vast majority of tuberculosis patients living in remote area so not routinely recommended but it can be discretely used in tertiary hospital like ours . In our cases we performed AFB culture in 4 cases using LJ, Bactech and MGIT media and found positive result in 2 cases and negative in 2 cases. The cases with negative culture were found to be positive by PCR technique.

FNAC is proving very useful in diagnosis of breast lumps with or without nodes. The presence of epithelioid cell granulomas and caseous necrosis is diagnostic of tuberculosis of breast only in 73% cases [2]. Absence of demonstration of necrosis on FNAC does not exclude tuberculosis in view of small quantity of the sample examined. Thus in cases which only demonstrate epithelioid cell granulomas on smears that are negative for AFB, a diagnosis of granulomatous inflammation, possibly tuberculosis should be made. In breast abscess like picture dominated by acute inflammatory exudates, AFB positivity or histological confirmation is mandatory to call the lesion as tubercular [12, 26]. We found that FNAC of enlarged lymph nodes in four cases showed granulomatous lymphadenitis but AFB was negative in 2 cases.

Mallika and Shukla in 2004 classified breast tuberculosis into three pathological varieties i.e. nodulocaseous, Disseminated/confluent and tubercular breast abscess. In our study we detected 14 cases of tubercular mastitis based on cytological features, histopathological features and demonstration of tubercular bacilli. Out of 14 cases, 9 cases were of tubercular breast abscess, 3 cases were of nodulocaseous histological type and 2 cases were having confluent tubercular granuloma on histopathological examination.

Histologically tuberculosis causes both non-caseating and caseating granulomatous granulomas. It has to be differentiated from other granulomatous breast disease. Most important differential diagnosis is granulomatous lobular mastitis described in 1972 by Kessler and Wolloch, where granulomas, leucocytes infiltration and abscesses are confined to the breast lobules, but neither caseation nor organisms are found [27, 28]. The other causes of granulomatous mastitis are sarcoidosis, plasma cell mastitis, mycosis mastitis,

parasitic mastitis, fat necrosis and indigenus granulomas due to rupture of milk cyst where sometimes the microscopical picture is indistinguishable from that of tuberculosis [29,30].

The number of reported cases seems to higher than what is reported in medical literature. But significant factors which are responsible for high incidence rate are (1) host related factors such as presence of anemia, malnutrition, low general condition of women of reproductive age group. (2) High quality techniques such as Bactech, MGIT, and PCR employed in this study. (3) High degree of suspicion of tubercular mastitis in all cases presenting as breast abscess. All these three causes contributed in detection of tubercular mastitis.

## CONCLUSION

This report highlights that breast tuberculosis is not that all rare as being presented. Abscess and lump is common presentation. Meticulous attention to histology of cells and acid fast bacilli should be paid. In addition modern diagnostic tools as modern culture technique and PCR must sought in suspicious cases so that many cases of so called pyogenic breast abscess will turn out to be of tubercular in origin which may or may not have superadded bacterial infection .The disease is essentially curable with modern anti-tubercular chemotherapeutic drugs with surgery playing a role in the background only .

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