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Original Research Article

Breast tuberculosis: clinical spectrum, diagnostic dilemmas and management

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ABSTRACT

Background: Tuberculosis breast is a less known form of extrapulmonary tuberculosis. It poses diagnostic difficulties and confused with breast carcinoma and pyogenic abscess. Objective of the study was to determine the varied presentations of breast tuberculosis, diagnostic difficulties and surgical treatments.
Methods: Study was conducted in Department of Surgery at Shri Guru Ram Rai Institute of Health and Medical Sciences, Dehradun, Uttarakhand, India. 651 patients with breast diseases over two years from September 2015-August 2017 were seen at the institution out of which 31 clinically diagnosed patients of breast tuberculosis, confirmed by laboratory work-up, were included in this study. Information regarding demographic details, clinical presentation, cytology, histopathology and management was noted.
Results: All patients were females with mean age of 32.5years and out of them 15(48.38%) patients were having breast abscess, 10(32.25%) presented with lump breast and 6(19.35%) with lump with multiple draining sinuses and scars. 27(87.1%) patients had primary breast tuberculosis. Histopathology and TB-PCR reliably helped in diagnosing the disease.
Conclusions: The presentation of breast TB is variable, and diagnosis is usually delayed. It should always be kept in mind as differential diagnosis of breast lump and pyogenic abscess. The disease can be diagnosed through pathological tests and a high suspicion. The definite treatment is adequate anti-tuberculosis chemotherapy and surgical excision or drainage especially in recurrent abscesses.

Keywords: Breast tuberculosis, Granulomatous inflammation, Tubercular mastitis

INTRODUCTION

Tuberculosis traditionally known as pulmonary disorder has few extrapulmonary manifestations and Tuberculosis breast is a less common among them. Despite its rarity, tuberculosis of the breast should not be forgotten as poses diagnostic difficulties and confused with breast carcinoma and pyogenic abscess.

In 1829, Sir Astley Cooper first defined breast tuberculosis as the 'scrofulous swelling of the bosom'.[1] Breast tuberculosis is rare in Western countries, incidence being <0.1% of breast lesions examined histologically.[2] It's incidence in India has been variously described as between 0.1 and 3% and 4% of all breast lesions in TB endemic countries.[3,4] The disease is very rare in males; in a review by Gupta et al. comprising 160 patients, only 6 were males.[5] The risk factors associated with Tubercular mastitis include multiparity, lactation, trauma, past history of suppurative mastitis, and AIDS.[5,6] The objective of this study was to determine the presentation of breast tuberculosis, diagnosis and surgical treatments.

METHODS

Study was conducted in Department of Surgery at Shri Guru Ram Rai Institute of Health and Medical Sciences, Dehradun, Uttarakhand, India. 651 patients with breast diseases over two years from September 2015- August 2017 were seen at the institution out of which 31 cases were diagnosed as breast tuberculosis. Their case sheets, investigations and histopathology were analyzed. Information regarding demographic details, clinical presentation, cytology, histopathology and management was noted. Clinically diagnosed patients of breast tuberculosis, confirmed by laboratory work-up, were included in this study.

RESULTS

In present study all 31 patients of breast tuberculosis were females, with mean age of 32.5years, youngest one was 16 and oldest one was 51 years old. In 11 patients (35.5%) right side was involved and in 20(64.5%) left was involved. 12 were lactating mothers and except for two unmarried girls all were parous females. 15(48.38%) patients were having breast abscess with 6 of them having history of surgical drainage of recurrent abscesses, 10(32.25%) presented with lump breast and 6(19.35%) with lump with multiple draining sinuses and scars.

Table 1: Associated clinical features.

Sign	No. of patients
Skin erythema and edema	17
Sinuses and scars	6
Axillary lymph nodes enlargement	15
radiological pulmonary TB	4

Table 2: Treatment summary.

Presentation	No. of patients	Treatment
breast abscess	15	Incision and drainage+ ATT
Breast lump	5	Excision biopsy+ ATT
Breast lump	5	ATT (confirmed with FNAC)
Breast lump with sinuses and scars	6	Excision biopsy +ATT

27(87.1%) patients had primary breast tuberculosis, only four patients (12.9%) were having pulmonary disease out of which 2 patients had previous history of ATT intake and 2 were taking ATT for pulmonary tuberculosis when presented with breast abscess. Associated clinical features summarized (Table 1). Out of 31 patients 21(67.74%) were from rural areas. Mean duration of symptoms was 2.13 months. Only 6 patients gave history of constitutional symptoms. FNAC was done in 20 patients out of which 11 showed chronic granulomatous disease, 3 were inconclusive and 6 showed acute inflammatory disease (abscess), mammography was done in 6 with one showing BIRADS grade 4 mass. USG done in 17 showing collection in 10, irregular breast mass in 6 and features of mastitis in one (in this patient CT Chest was done and showed collection in retromammary space with no involvement of rib and no intrapulmonary connection). Surgical and medical management summarized (Table 2). In 7 cases, 6 patients with recurrent abscess and 1 with retromammary collection drain in ring form was kept helping in long term free drainage of collections. Drain size reduced slowly and removed after healing of abscess cavity is almost complete (Figure 1). TB Culture and AFB staining was negative in all patients with abscess. PCR for TB was positive in 14 patients. Histopathology was positive for tuberculosis in 19 patients and in one patient histopathology suggested chronic inflammation, but PCR was positive (patient with retromammary collection). Anti-tuberculosis chemotherapy was started in all the cases with rifampicin, INH, pyrazinamide and Ethambutol. The last two drugs were withdrawn after two months and first 2 drugs were continued for 4 months.

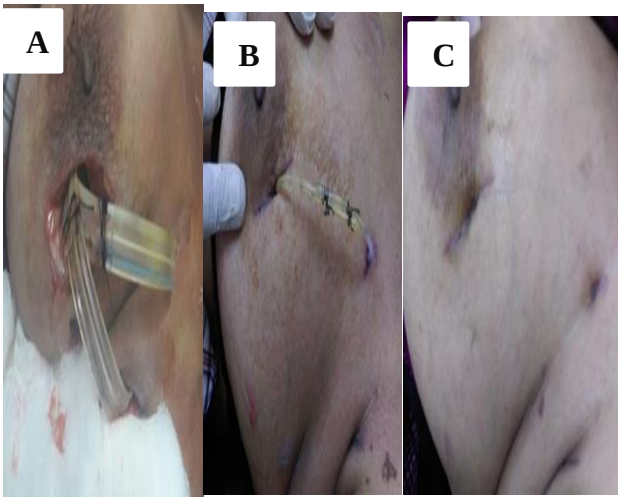

Figure 1: (A) Ring drain; (B) size reduction; (C) removal.

DISCUSSION

Tuberculosis of breast is rare because breast is not a suitable site for multiplication and survival of tubercle bacilli.[7] McKeown and Wilkinson classified breast tuberculosis as Primary when the breast lesion was the only manifestation of tuberculosis (as was seen in majority of the cases), and Secondary when there was a demonstrable focus of tuberculosis elsewhere in the body.

Primary breast tuberculosis is quite rare and may rarely arise from infection of the breast through abrasions or through openings of the ducts in the nipple. Breast may become infected in a variety of ways e.g., 1) Hematogenous route, 2) lymphatic route, 3) spread from contiguous structures, and 4) ductal infection.[8] Of these, the most accepted view for spread of infection is centripetal lymphatic spread.[9] The path of spread of the disease from lungs to breast tissue was traced via

tracheobronchial, paratracheal, mediastinal lymph trunk and internal mammary nodes.[8] According to Cooper's theory, communication between the axillary glands and the breast results in the secondary involvement of the breast by retrograde lymphatic extension.[1,10] Axillary node involvement was shown to occur in 50-75% of breast TB patients.[11] Histopathological confirmation of breast TB requires cytological evidence of caseous necrosis epitheloid granulomas and Langhans giant cells with lymphohistiocytosis aggregates. The differential diagnosis of breast TB includes other granulomatous inflammatory diseases, such as idiopathic granulomatous mastitis (GM), sarcoidosis, Wegener's granulomatosis and giant cell arteritis, as well as other infections like actinomycosis and fat necrosis. In idiopathic GM, the granulomatous inflammatory reaction, consisting of epitheloid and giant cells, is confined to the breast lobules in which there is also leukocyte infiltration and abscesses but no caseation.[12] In breast TB, the distribution of granulomas is diffuse and is not limited to the lobules, and they are accompanied by caseation necrosis. This necrosis results in the characteristic fistulation of skin lesions. In plasma cell mastitis, there is inflammation in the breast tissue in response to the irritating quality of fatty material accumulated in dilated ducts. The granulomatous reaction in traumatic fat necrosis is confined to the broken-down fat globules.

Classification of breast tuberculosis Mckeown et al, classified TM into 5 pathological varieties.

- Nodular tubercular mastitis
- Disseminated or confluent tubercular mastitis
- Sclerosing tubercular mastitis
- Tuberculous mastitis obliterans
- Acute military tubercular mastitis

Tewari has recently suggested reclassifying breast tuberculosis into 3 categories, namely, nodular, disseminated, and abscess varieties.[4] The new classification takes into consideration the changes seen in clinical presentation of tuberculosis over the last two decades. Sclerosing tubercular mastitis, tuberculous mastitis obliterans, and acute miliary tubercular mastitis are all very rare today, while tuberculous breast abscess is more frequent as found in present study also. The latter is common among young females and represents up to 30% of cases in recent publication.[4,13]

To avoid delayed or missed diagnosis of the disease, it is essential to have a more comprehensive understanding of the presentation of the disease. Breast tuberculosis commonly affects women in their reproductive age group, between 21 and 30 years. This may be because the female breast undergoes frequent changes during the period of activity and is more liable to trauma and infection.[9] Similarly, during pregnancy and lactation, the breast is vascular with dilated ducts predisposing it to trauma making it more susceptible to tubercular infection.[14] Gupta et al found a correlation between prevalence of tuberculosis in the facial tonsils of suckling infants and higher incidence of tuberculosis in lactating women.[15] Radiological imaging modalities like mammography or ultrasonography are unreliable in distinguishing tuberculosis mastitis from carcinoma because of its nonspecific features.[16] Ultrasonography reveals heterogeneous, hypoechoic, fluid containing masses with internally floating, and echogenic material in the breast parenchyma or retromammary region in tuberculosis breast. The sonographic features of tubercular mastitis include a mass lesion mimicking malignant tumours (30%), smooth bordered masses (40%), axillary or intramammary adenopathy (40%), asymmetric density and duct ectasia (30%), skin thickening and nipple retraction, macrocalcifi cation (20% each) and skin sinus (10%).[17] Obviously, all these findings are non-specific and non-diagnostic for breast TB.

The common mammographic findings are coarse stromal texture with or without an ill-defined breast mass and skin thickening, all of which are non-specific for diagnosis. A mammographic demonstration of a dense sinus tract (sinus tract sign) connecting an ill-defined breast mass to a localized skin thickening is strongly suggestive of tuberculous breast abscess but found in a small percentage of patients.[18] Similarly computed tomography and magnetic resonance imaging are not diagnostic without histological confirmation, but may be valuable guides to surgery in defining the extent of disease, including chest wall involvement.[19]

Given the high rate of AFB-negative stains in breast tissue and the overlap of clinical presentation between granulomatous mastitis and tuberculosis breast, direct amplification tests may serve as a valuable tool for diagnosis of breast tuberculosis. Ziehl-Neelsen (ZN) staining for AFB is positive in only 25% of cases and hence is not mandatory for diagnosis.[20] In present study ZN staining was positive in none of the pus cultures sent. As treatment of other conditions that may be confused with tuberculous mastitis can potentially lead to dissemination of disease (steroids and methotrexate for idiopathic granulomatous mastitis), relying on procedures like FNAC and histopathology alone is not adequate in the view. This is particularly true in countries endemic with TB or for patients belonging to any high-risk group, like immigrants from endemic areas.[21] Tuberculous mastitis should seriously be considered in such clinical settings, and MTB-PCR should be part of the investigation requested in clinical samples from breast tissues. In a study by Nalini G et al. PCR helped in identifying 53.3% cases reported as granulomatous inflammation on cytology as tuberculosis.[22] Revised national tuberculosis control programme (RNTCP) of India recommends category III regimen (2HRZ/4HR) for less serious forms of extrapulmonary tuberculosis viz., lymph node tuberculosis, cutaneous tuberculosis, unilateral pleural effusion, and category I regimen (2EHRZ/4HR) for more severe forms of extrapulmonary

tuberculosis. Surgical intervention in the form of an excisional biopsy is necessary mainly for diagnostic purposes and is required for drainage of breast abscesses, excision of residual sinus tracts or lumps after poor response to anti-tuberculosis therapy. Simple mastectomy, most often without axillary lymph node dissection, is reserved for cases with extensive disease, causing a large painful ulcerated mass involving the entire breast.[4,21]

CONCLUSION

The presentation of breast TB is variable, and diagnosis is usually delayed. It should always be kept in mind as differential diagnosis of breast lump and pyogenic abscess. The disease can be diagnosed through pathological tests and a high suspicion. The definite treatment is adequate anti-tuberculosis chemotherapy and surgical excision or drainage especially in recurrent abscesses.

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