

Granulomatous Mastitis: A review of 18 cases

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ABSTRACT

Background: The significance of breast tuberculosis is due to rare occurrence and mistaken identity with breast cancer and pyogenic breast abscess. We present a case series of 18 patients with caseating granulomatous mastitis, seen over a 4 year period (Feb, 2003 to Nov, 2006) from Social Security Hospital / Gulab Devi Chest Hospital / private set up Lahore

Methods: The cases were retrieved using medical records. Their clinical, radiological and pathological data was reviewed. Cases with a histological diagnosis of granulomatous mastitis were included. The average age at presentation was 31.6 years [range 16-55 years]. The most common presentation was a lump in the upper outer quadrant of the breast. Diagnosis was obtained via fine needle aspiration (12 cases), core biopsy (2 cases), incision biopsy (1 case) and excision biopsy (3 cases). Acid-fast bacilli were seen on AFB culture in 4 out of the 18 patients. All 18 patients completed treatment at our centers and were followed.

Conclusions: Granulomatous mastitis is an uncommon disease and typically presents with a lump in the breast. The diagnosis can be established by fine needle cytology in the majority of cases. Acid-fast bacilli are seen in a minority of the cases.

Key words: Granulomatous inflammation, mastitis, breast, tuberculosis

INTRODUCTION

Breast tuberculosis is a rare form of tuberculosis. The first case of tuberculosis was reported by Sir Astley Cooper in 1829 who called it scrofulous swelling of the bosom¹. 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 countries².

The incidence of pulmonary tuberculosis is still quite high in Pakistan and India, so is tuberculosis of breast³.

Tuberculosis of breast is often overlooked and misdiagnosed as carcinoma breast or pyogenic abscess. Breast tissue is markedly resistant to tuberculosis because breast tissue provides infertile environment for survival and multiplication of tubercle bacilli. Breast may become infected in variety of ways, haematogenous, lymphatic spread from contiguous structures, direct inoculation or ductal infection⁴.

Tuberculosis usually presents as lump in the breast^{5,6}, in the central or upper outer quadrant of breast⁷. It is most likely due to frequent extension of tuberculosis from axillary lymph nodes to breast. The lump is indistinguishable from carcinoma due to its irregular surface, hardness or sometime fixed to skin

or underlying muscle or even chest wall. Lump is frequently painful. Breast remains mobile until involvement of underlying muscles. Ulcer over breast or abscess can be other frequent presentations of TB breast⁷. Purulent nipple discharge or persistent discharging sinuses may be rare presentation.

Breast tuberculosis is frequently misdiagnosed and subjected to numerous investigations before definite diagnosis is made. It warrants high index of suspicion on clinical examination and pathological or microbiological confirmation of all suspected lesions. Radiological investigations are frequently advised but provide little help in diagnosis of breast tuberculosis. X-ray chest may show simultaneous tuberculosis in the lungs⁸. Mammogram is of little value because findings are often indistinguishable from carcinoma^{9,10}. Ultrasonography of breast is less expensive, easily available and helps in characterization of the lesion better with out exposure to radiation¹⁰. 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 caseating granulomatous inflammation is considered as diagnostic of tuberculosis². Though bacterial culture remains gold standard for diagnosis of tuberculosis but 6 to 8 weeks time is required for AFB culture which is an important limitations^{6,11}. Histological findings include epithelioid granulomas with caseous necrosis in the specimen. Core needle biopsy often yielding positive diagnosis. However, open biopsy

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(incision or excision) of breast lump is diagnostic in majority of patients^{2,9}.

A literature review by Morgan¹¹ in 1931 revealed 439 cases of tuberculosis mastitis with the incidence between 0.5 and 1.04 %. We present a case series of 18 patients with granulomatous mastitis, seen over a 4 year period. All our patients were women. Khanna¹² has reported two cases amongst men in a series of 54 patients. Granulomatous mastitis may represent between 0.025%² and 3%¹ of the entire breast diseases treated surgically. A case series from Saudi Arabia¹³ has reported a frequency of 0.52%.

MATERIAL AND METHODS

Medical records were reviewed for a diagnosis of granulomatous mastitis. Patient charts were reviewed and data recorded for age, gender, clinical presentation, radiological appearances, and diagnostic methods to reach diagnosis, histological findings and treatment. Our inclusion criteria were all patients with diagnosis of granulomatous inflammation of breast. Statistical analysis was carried out using SPSS 7.5 (Statistical Package for Social Sciences). Results were presented as mean ±SD or as a percentage.

RESULTS

A total of 18 cases were diagnosed with granulomatous mastitis between 2003 - 2006. The average age at presentation was 31.6 years [range 16- 55 years]. It is clear from table 1 that most of the patients presented were in age of 21-40 years

Table 1: Age distribution

Age range (Yr.)	=n	%age
16-20	2	11
21-30	6	33
31-40	5	27
41-50	3	16
51-60	2	11

Two patients were unmarried (ages 16 and 21). Six patients gave a history of contact with TB patient. 4 patients had abnormal x-rays consistent with tuberculosis. One patient had received antituberculous therapy for Pulmonary TB in past. Duration of symptoms at presentation varied from one week to two years with most patients presenting within six to eight months of the onset of symptoms. Among patients with palpable lumps, eight patients had lump in the upper outer quadrant and one had sub-areolar disease. Three patients had diffuse disease. Other features of presentation are as in tables 2.

Table 2: Different presentations and their distribution (n=18)

Presentation	=n	%age
Lump in the breast	12	66
Axillary lymph nodes	2	11
Discharging sinuses	3	16
Pain breast	1	6

Upper outer quadrant was the most common site of involvement in our patients. The most common findings on clinical assessment was a nontender, mobile, firm to hard lump which was associated with inflammatory changes in the skin. Associated axillary lymphadenopathy was present in two out of eighteen patients. Three patients had discharging sinuses with abscess formation. Eight patients had disease on the right side; ten had disease on the left side. Ultrasonographic examination of the breast was done in fourteen out of eighteen patients because age of these patients was less than 40 years. Findings included complex echogenic masses and associated axillary lymphadenopathy and breast abscesses. In three patients mammography was done because there was suspicion of carcinoma of breast and age of these patients was more than 40 years.

FNAC was done in all patients as initial procedure. Granulomatous inflammation was seen on FNAC in twelve patients. FNAC was inconclusive in remaining six patients. Repeat procedure like core biopsy, incisional biopsy and excision biopsy was performed in patients in whom FNAC was inconclusive and specimen was sent for histopathology in formalin and for AFB culture in normal saline. Core biopsy was performed in two patients while in one patient incision biopsy was performed. Excision biopsy was done in three patients. Hispathology was reported as chronic granulomatous inflammation with caseation in all these cases. One patient in which core biopsy was performed and two patients in which excision biopsy was performed were also AFB positive on culture on Lowenstein Johnson media. One patient in which incision biopsy was performed also grew mycobacterium tuberculosis on culture.

Chest radiographs were available in all cases. Two patients had a left pleural effusion, and two had non-homogenous shadowing in the upper zones suggestive of pulmonary tuberculosis. All patients were treated at our institution with four drug regimens (Rifampicin Isoniazid, Ethambutol, and Pyrazinamide) for 9 months. One patient developed ATT induced jaundice. She was put on Streptomycin, Ofloxacin and Ethambutol for 6 weeks. As her liver functions returned to normal she was continued with Rifampicin INH and Ethambutol. Her liver functions remained within normal range and she completed her course

successfully. An other patient developed vomiting and was found to have normal liver function tests. She was assumed to have PZA induced gastritis and was settled on adding oral Omeprazole at bedtime.

DISCUSSION

Breast tuberculosis commonly affects women in their productive age groups⁹ similar to the highest incidence of pulmonary tuberculosis reported in the same age groups.⁷ This may be because of female breast goes through frequent changes during period of activity and more liable to trauma and infection. Breast is vascular with dilated ducts in pregnant and lactating women, predisposing to trauma and making it susceptible to tubercular infection⁸. It is uncommon in elderly women. Breast tuberculosis is rare in males³ and reported in 4% of cases¹¹. There was no male in our study. Like other studies, common age group is 21-30 year, which comprises almost 33% of patients in our study.

Granulomatous mastitis may represent various inflammatory conditions of the breast. In our group of patients, the most common site of involvement is the upper outer quadrant, similar to the report by Popli who reported the upper outer quadrant as the commonest quadrant of involvement¹⁰. He also pointed out upper outer quadrant as the most common site of development of malignancy. Khanna reported subareolar disease as the most common site (19 of 54 cases in the series) in his series¹². The latter is less likely to suppurate. The most common presentation in our series, consistent with published literature is a mass and/ or axillary lymphadenopathy⁸. Nodular mastitis is the most difficult to differentiate from carcinoma. It presents as a dense, well-defined mass, sometimes with a spiculated appearance. This is a slow growing lesion. An ultrasound scan may reveal a cystic component and make a diagnosis of infection more likely than malignancy. Walls of the nodule may be smooth or irregular. A needle aspiration and cytology may make the diagnosis by showing granulomatous inflammation. In Diffuse type there is generalized increase in density of the parenchyma with thickening of the skin and edema. An ultrasound scan may reveal ill-defined hypo echoic masses. This type of mastitis may mimic inflammatory carcinoma. Crowe¹⁴ has reported a series of twenty-one patients who presented with inflammatory breast conditions and underwent urgent imaging in an effort to identify the characteristic features, which differentiate it from inflammatory carcinoma. Twelve out of twenty one mammograms were abnormal, but features like diffuse mammographic skin thickening, oedema and dense lymph nodes were not found.

The Sclerosing type tends to show a homogenous dense mass or increased echogenicity of the parenchyma. Fibrosis is the dominant feature. Ultrasound is useful to exclude underlying masses. In case of abscess formation, there may be bulging of the skin and formation of the 'sinus tract sign' which may be visible on a mammogram as well as ultrasound. This sign was reported by Khanna¹² in only one out of seven patients who had mammogram done in his series of 52 patients, emphasizing the rarity of this sign. The most common histopathological finding is evidence of granulomatous mastitis, sometimes with evidence of caseation. The frequency of a positive stain for acid-fast bacilli (AFB) in the specimen has been reported to be lower. Morsad¹⁵ reported only one case with a positive Ziehl Nelsen stain in his series of 14 patients. Four out of eighteen patients in our series had AFB detected on AFB culture. Fine needle aspiration and cytology (FNAC) establishes the diagnosis in most cases 11(67%). Khanna¹² reported a success rate of 100% in his series while Kakker et al² reported a success rate of 73%. Tse¹⁶ has emphasized the presence of epithelioid histocytes as the single most common indicator of granulomatous inflammation, in the absence of granulomas, which were absent in half the cases reviewed by them. Treatment is by institution of anti-tuberculous therapy using standard regimes. Surgical intervention may be required for patients with abscess, sinuses or a need to exclude malignancy in a patient with high index of suspicion. Tuberculosis and cancer may co-exist. Pandey¹⁷ has reported a case of infiltrating ductal carcinoma of the breast, metastatic to axillary lymph nodes with evidence of tubercular granuloma in the same lymph node.

CONCLUSIONS

Granulomatous inflammation of the breast is an uncommon entity but should be considered in the differential diagnoses of a lump in the breast. Fine needle aspiration and cytologic analysis may provide the diagnosis. AFB culture enhances diagnostic confidence. Standard anti-tuberculosis treatment is likely to be effective.

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