

GRANULOMATOUS MASTITIS: A REVIEW OF 14 CASES

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Background: Tuberculosis of breast is a rare entity and may be confused with carcinoma of the breast. We present a case series of 14 patients with granulomatous mastitis, seen over a seven-year period from a cancer centre in Lahore, Pakistan. **Methods:** The cases were retrieved using electronically coded records and clinical, radiological and pathological data reviewed. Cases with a histologic diagnosis of granulomatous mastitis were included. **Results:** Granulomatous mastitis was seen at a frequency of 0.37% of the 3768 patients seen with breast diseases (3722 women; 46 men) during this time period. The average age at presentation was 40.7 years [range 14- 65 years]. The most common presentation was a lump in the upper outer quadrant of the breast. Mammography showed a range of appearances. Diagnosis was obtained via fine needle aspiration (10 cases), core biopsy (2 cases) and excision (2 cases). Acid-fast bacilli were seen in five out of the 14 patients. Ten out of 14 patients completed treatment at our centre with satisfactory response. **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 a minority of the cases.

Key words: granulomatous inflammation, mastitis, breast, tuberculosis, Pakistan.

INTRODUCTION

Granulomatous inflammation of breast is regarded as a rare entity, which may be confused with carcinoma of the breast. We present a case series of 14 patients with granulomatous mastitis, seen over a seven year period from a cancer centre in Lahore, Pakistan. All our patients were women. Khanna¹ has reported two cases amongst men in a series of 54 patients. Granulomatous mastitis may represent between 0.025%² and 3%¹ of all the breast diseases treated surgically. A case series from Saudi Arabia³ has reported a frequency of 0.52%. One case of granulomatous lymphadenitis was picked up in Ireland during the Irish National Breast Screening programme involving 23707 women⁴.

MATERIAL AND METHODS

Electronically coded medical records were reviewed for a diagnosis of granulomatous mastitis. Patient charts were reviewed and data recorded for demographic, clinical presentation, radiologic appearances, histologic findings and treatment.

RESULTS

A total of 14 cases were diagnosed with granulomatous mastitis between 1996-2003 at our institution. These represent 0.37% of the 3768 patients seen with breast diseases (3722 women; 46 men) during this time period.

The average age at presentation was 40.7 years [range 14- 65 years]. Three women were post-menopausal; four gave a history of breast feeding and one was lactating at the time of presentation. Two patients were nulliparous (ages 14 and 45). The 14

year old also had a left pleural effusion which was discovered incidentally.

Five patients gave a history of contact with tuberculosis or had evidence of concurrent disease elsewhere. One patient had three individuals with pulmonary tuberculosis in the family. One patient had history of cervical granulomatous lymphadenitis in the past and evidence of pulmonary tuberculosis. Three patients had abnormal x rays consistent with tuberculosis but without pulmonary symptoms on presentation.

There was inadequate data available on BCG vaccination. None of the patients had received immunosuppressive therapy or belonged to high-risk groups for human immunodeficiency virus infection. One patient had been treated with regional radiotherapy for squamous cell carcinoma of the nose.

Duration of symptoms at presentation varied from 1 week to 2 years with most patients presenting within 6-8 months of the onset of symptoms. Of patients with palpable lumps, six had disease in the upper outer quadrant and one had sub-areolar disease. Three patients had diffuse disease. Other features of presentation are as in tables 1.

Table 1: Different presentations and their distribution (n=14)

Presentation	No of patients	%
Lump in the breast	2	14.2
Axillary lymph nodes	2	14.2
Breast lump + lymph nodes	8	57.1
Abscess/ discharging sinuses	2	14.2
Constitutional symptoms	2	14.2

In our group of patients, the most common site of involvement was the upper outer quadrant.

The most common findings on clinical assessment were a tender, mobile, firm to hard lump, which was associated with inflammatory changes in the skin. Associated axillary lymphadenopathy was present in 10 patients out of 14. No changes in nipple and areola were noted in any cases, nor were there any discharges from the nipple. Two patients had discharging sinuses with abscess formation. Seven patients had disease on the right side; five had disease on the left side; bilateral disease was found in 2 cases, which is considered to be a rare phenomenon⁶.

Ultrasonographic examination of the breast was done in 8 out of 14 patients. Findings included complex echogenic masses and associated axillary lymphadenopathy. Breast abscesses, when seen, were thick-walled.

Mammograms were done in 10 out of 14 patients. Findings are summarised in table 2. In only in 1 out of 10 cases was the mammogram was reported to have category 5 findings and a suspicion of malignancy raised. This patient had diffuse increased density with skin thickening and lymphadenopathy. In the remainder, a confident diagnosis of benign breast disease was made prior to biopsy.

Table 2: Mammographic findings and their distribution (n=10)

Mammogram findings	No of cases	%
Inflammatory changes	1	10
Axillary lymphadenopathy	3	30
Axillary lymphadenopathy with microcalcification	2	20
Abscess	1	10
Masses in the breast	3	30

Chest radiographs were available in all and were normal in 8 out of 14 cases. One patient had a small pleural effusion, two had calcified granulomas, one had right apical infiltrate, two had an ill-defined infiltrate in the right lower lobe.

Fine needle aspiration was undertaken in 10 out of 14 cases. Eight out of these 10 cases revealed chronic granulomatous inflammation consistent with tuberculosis. Two out of these 8 cases revealed acid fast bacilli. The rest were negative cultures and stains. The two patients with inconclusive fine needle aspirates had excision biopsy to establish the diagnosis.

Two patients had a core biopsy as the initial procedure, which was conclusive of diagnosis. Acid fast bacilli were seen in one of these. Two patients who had presented with discharging sinuses and abscess proceeded directly to excision of mass and

drainage. Both these cases were found to have acid fast bacilli in the biopsy specimens. Five out of 14 cases had acid fast bacilli.

Ten patients were treated at our institution with four drug regimens (isoniazid, rifampin, pyrazinamide and ethambutol) for 9 months. One patient developed isoniazid toxicity requiring alteration of treatment and later went on to develop ethambutol toxicity and had to be taken off therapy after 8 months. However, she has been seen subsequently and is symptom free to date with no evidence of recurrence. All the patients treated here had good response to treatment with no evidence of drug resistance or resurgence of the disease.

DISCUSSION

Granulomatous mastitis may represent various inflammatory conditions of the breast. Different types include nodular, diffuse or disseminated tuberculosis and sclerosing⁷.

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 involvement and pointed out this is also the most common site of development of malignancy⁵. Khanna reported subareolar disease as the most common site (19 of 54 cases in the series) in his series¹.

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 irregular⁷. A needle aspiration and cytology may make the diagnosis by showing granulomatous inflammation.

In Diffuse type there is generalised increase in density of the parenchyma with thickening of the skin and edema is seen on mammography. An ultrasound scan may reveal ill-defined hypo echoic masses. This type of mastitis may mimic inflammatory carcinoma. Crowe⁹ has reported a series of 21 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 21 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 Mekanjuola³; however Khanna¹ reported this sign in only 1 out of 7 patients who had mammogram done in his series of 52 patients, emphasising the rarity of this sign.

The most common finding on examination 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 and not essential for confirming the diagnosis. None of the patients reported by Khanna¹ or Kalac² had positive stains for AFB. Morsad⁸ reported only one case with a positive Ziehl Neelsen stain in his series of 14 patients. Five out of 14 patients in our series had AFB detected on staining, with one growing mycobacterium in culture. This is the highest yield for AFB in the reported literature.

Fine needle aspiration and cytology (FNAC) establishes the diagnosis in most cases. Khanna¹ reported a success rate of 100% in his series while Kakker et al¹¹ reported a success rate of 73%. Tse¹² has emphasised the presence of Epithelioid histiocytes 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. Pandey¹³ 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 but acid fast bacilli are seen in a minority. Standard anti-tuberculous treatment is likely to be effective.

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