

## Breast Tuberculosis: Report of nine cases of extra pulmonary tuberculosis with breast mass

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### ABSTRACT

**Objectives:** To explain the difficulties in diagnosing Breast tuberculosis (BT), especially in the absence of other specific clinical signs, and to emphasize the efficacy of anti-tuberculosis (TB) therapy.

**Methodology:** We report nine cases of BT retrieved from the files of the TB patients in Khuzestan a province located in the south west of Iran during 5 years period of time (2005-2009). Data of fine needle aspiration (FNA) cytology, Ziel-Nelson stains, microbiological analysis, routine fungal and culture for tuberculosis were reviewed.

**Results:** Age range was 25 to 51 years with a mean of 34.1 years. Two patients were lactating, and one patient was pregnant. Seven patients had a lump in the breast and four of these patients had a discharging sinus in association with the lump. Another two patients had multiple sinuses. Two patients had breast abscess. Cytology of the patients presented with breast lump or abscess showed granulomatous reaction with or without caseous. Culture was negative for *M. tuberculosis* in all cases.

**Conclusion:** Cases with breast mass despite clinical suspicion of cancer, histologically presented with granulomatous mastitis even with culture negative results for TB are appropriate candidates for anti TB therapy.

**KEY WORDS:** Tuberculosis, Mastitis, Breast lump.

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### INTRODUCTION

TB remains a major problem in most parts of the world. Because most cases occur in poor countries with few resources, it will continue as a major public health problem in the future.<sup>1</sup> The World Health Organization (WHO) classifies tuberculosis as global emergency threatening peoples throughout the world.<sup>2</sup> Tuberculosis is a common and endemic in Iran<sup>3</sup> with an incidence of 25 per 100,000 per year.<sup>4</sup> Its prevalence has been variable in different regions of the country.<sup>3</sup> According to Khuzestan Health Center Report more than 900 cases are reported per year to public health authorities.<sup>5</sup>

BT is a rare form of tuberculosis even in tuberculosis endemic countries like Iran and its identity is often mistaken with breast cancer and pyogenic breast abscess.<sup>6</sup> In developed nations BT prevalence

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is 0.1%. In undeveloped nations it is between 3 and 4%.<sup>7</sup> As the incidence of tuberculosis increases, we will also see an increase in previously considered rare BT.<sup>8</sup> BT usually affects young, multiparous, lactating women. The breast can be the primary site but more commonly, tuberculosis spreads to the breast through the lymphatic system from axillary, mediastinal or cervical lymph nodes, or directly from underlying structures such as the ribs. The clinical signs of BT can be insidious and nonspecific and often simulate signs of breast carcinoma.<sup>1</sup>

Since breast conservation is possible in BT and it may be a presenting feature of HIV, it is important to recognize this condition.<sup>9</sup> The aim of this study was to explain the difficulties in diagnosing BT, especially in the absence of other specific clinical signs, and to emphasize the efficacy of anti-tuberculosis therapy versus to the surgery.

### METHODOLOGY

Over a five year period from 2005 to 2009 medical files of tuberculosis patients in Khuzestan Health Center (KHC) were reviewed. Of a total 2235 TB cases only nine patients were registered as BT. Primary evaluation and diagnosis of BT have been made by general surgeon with cooperation of infectious disease specialist and were referred to KHC for treatment and follow up.

Diagnostic criteria were a combination of granulomatous mastitis, necrosis, and clinical response to antitubercular therapy. Data of BT patients in epidemiological sheets including detailed history, examination, clinical diagnosis, ultrasound, mammogram, fine needle aspiration cytology, demographic profile, clinical finding, laboratory results and outcome of treatment were reviewed and study related data were extracted.

### RESULTS

Of the 9 patients, all were female. The mean age of the patients was 34.1 years (range 25–51 years) and the mean duration of symptoms was 6 months. Among the patients, two were lactating and one pregnant at the time of diagnosis. Symptoms of tuberculosis such as fever, weight loss and night sweats were found in two patients. Two patients had associated pulmonary tuberculosis symptoms. Seven patients had a lump in the breast and four of these patients had a discharging sinus in association with the lump. Another two patients had multiple sinuses. Seven patients also had axillary lymphadenopathy. Two patients had breast abscess. All patients with a breast

lump or nodularity had positive results of BT in fine needle aspiration cytology examination. Two patients who had sinuses but no lump had a tissue biopsy during diagnostic surgical intervention for histopathology examination. All of the patients had diagnostic criteria of BT.

The results for acid fast bacilli on staining as well as culture were negative. TB skin test (TST) with PPD 5 UT was positive in 8 patients (88.8%). Chest radiography revealed pulmonary tuberculosis in only one patient (11.1%). Mammography report showing mass lesion defect in all 9 patients was positive. All patients received antituberculous therapy comprising rifampicin 450–600 mg, isoniazid 300 mg, pyrazinamide 1500–2000 mg, and ethambutol 800 mg per day for two months followed by rifampicin and isoniazid for another four months. Two patients required surgical intervention.

All patients were followed up for a mean period of nine months. Eight patients had appropriate responses to antituberculous therapy alone while one patient had additional surgical treatment. Extension of antitubercular therapy from 6 to 9 months was observed in one patient on the basis of their slow clinical response. Addition of ofloxacin to treatment protocol was observed in three patients. Complete resolution was obtained in 8 patients and one had a simple mastectomy. The results are summarized in Table-I.

### DISCUSSION

Tuberculosis is caused by *Mycobacterium tuberculosis*.<sup>2</sup> The prevalence of tuberculosis is related to cultural and socio-economic conditions producing close contact with sputum smear positive pulmonary tuberculosis patients.<sup>9</sup> Tuberculosis of the breast is extremely uncommon ranged between 0.1% in the industrial countries and 3% in endemic countries.<sup>7</sup> In our study we found only nine cases of BT with prevalence rate of 0.4% that is between this reported ranges. Breast involvement in tuberculosis may be primary or secondary.<sup>10</sup> Direct extension from contiguous source like the underlying ribs is another possible mode of infection.<sup>11</sup>

However, it is generally believed that infection of the breast is usually secondary to a tuberculosis focus elsewhere, such as pulmonary or a lymph node in the paratracheal, internal mammary, or maxillary which may not be clinically or radiologically apparent.<sup>12</sup> Secondary BT is caused by haematogenous spread.<sup>2</sup> In our series two patients had evidence of

Table-I: Characteristic, symptoms, clinical finding, laboratory results and treatment outcome in cases of breast tuberculosis.

Case	Age years	Symptoms	Clinical feature	Histopathology	Culture/PCR	Treatment	Outcome
Case 1	35	No	BL	GM,GC,C	Negative	6 MST	Cured
Case 2	25	No	BL,ALA	GM	Negative	6 MST	Cured
Case 3	51	Fever / weight loss / cough	BA,ST,ALA	GM,GC,C	PCR +	9 MT +Of	Mastectomy
Case 4	30	No	BL, ST	GM	Negative	6 MST/Sur	Cured
Case 5	40	No	BL,ST,ALA	GM,GC,NC	Negative	6MST+Of	Cured
Case 6	32	No	BL,ST,ALA	GM	Negative	6 MST	Cured
Case 7	36	No	BL,ST,ALA	GM,GC,C	Negative	6 MST	Cured
Case 8	28	No	BL,ST,ALA	GM,GC,NC	Negative	6 MST	Cured
Case 9	30	Night sweet/ cough	BA,ST,ALA	GM,C	Negative	6MST+Of	Cured

BL: Breast lump, ALA: Axillary lymphadenopathy, ST: Sinus tract, BA: Breast abscess, PCR: Polymerase change reaction, GM: Granulomatous mastitis, GC: Giant cell: C: Caseous, NC: No caseous, 6MST: 6 Months standard therapy, 9MT: 9 Months therapy, Of: Ofloxacin, Sur: Surgery.

active pulmonary TB while 7 had associated axillary lymphadenopathy. Whether the axillary lymph node was the site of primary infection or secondary to the BT is not clear. In the former studies lactation and pregnancy have been considered as risk factors for BT.<sup>12</sup> The disease, which is one almost exclusively of women, occurs in most patients (83% to 95%) between the ages of 20 and 40 years.<sup>8</sup>

In our study all of our patients were female ranged between 25-51 years, 22% of the women were lactating and 11% were pregnant at presentation. We believe that the stress and increased breast vascularity meanwhile childbearing facilitates spread of infection. Nodular, disseminated, and sclerosing are the three clinical varieties of BT.<sup>12</sup> The nodular type are often mistaken for carcinoma. The disseminated BT most often leads to sinus tract formation.<sup>12</sup> BT with a breast lump and with sinus tract discharge are easily diagnosed but should be differentiated from actinomycosis.<sup>2</sup> The isolated breast lump without sinuses mimics carcinoma.<sup>1</sup> Constitutional symptoms and pulmonary tuberculosis were found associated in only 2(22%) patients in our study. TST is usually positive in adults in endemic area for tuberculosis. It simply demonstrates that at some point of time the person was exposed to tubercle bacilli. It is, therefore of no diagnostic value for breast tuberculosis.<sup>13</sup>

In our study 88.8% of our patients had positive TST test. Mammography or sonography is unreliable in diagnosing BT and or distinguishing BT from carcinoma.<sup>14</sup> The common findings in mammography is an ill defined breast mass with skin thickening, which is non-specific for BT diagnosis. A dense sinus tract connecting an ill defined breast mass with skin thickening suggests tuberculous breast abscess.<sup>14</sup>

In our patients, sonography, showed tuberculous abscess in two cases. Although imaging is not diagnostic, without histological confirmation, but may be valuable guides to surgery in defining the extent of disease, including chest wall involvement. Diagnosis of BT can be made by cytological finding of granulomas, Langhans' giant cells, and lymphohistocytic aggregates.<sup>15</sup> Kakker *et al* reported breast tuberculosis in 73% of patients on the basis of FNA findings of granulomas with caseous.<sup>15</sup> In our study in 7 patients (77.7%), FNA cytology was reliable in diagnosing of BT. Cytological findings of granulomatous mastitis can also be found in other breast mass lesions such as plasma cell mastitis, fat necrosis, and actinomycosis.<sup>16</sup> Histological changes in fat necrosis are limited to the fatty tissue of the breast. In plasma cell mastitis, plasma cells and giant cells accumulate within dilated ducts.<sup>16</sup> Actinomycosis is differentiated by sulphur granules in discharged materials.<sup>2</sup>

Anti TB therapy based on national tuberculosis program (NTP) consisting 6 months standard regimen is the basis of treatment.<sup>3</sup> Surgical intervention is reserved for drainage of cold abscesses, and excision of residual sinuses and masses.<sup>17</sup> In refractory BT cases, simple mastectomy may be performed.<sup>16,17</sup> In our study all patients except one responded appropriately to anti TB therapy.

### CONCLUSION

Cases with breast mass despite clinical suspicion of cancer, histologically presented with granulomatous mastitis even with culture negative results for TB are appropriate candidates for anti TB therapy.

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