

# Mammary tuberculosis: report on 52 cases

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Fifty two cases of tuberculosis of the breast encountered over a 15 year period and accounting for 3% of all breast lesions are reported. The classic presentation was a breast lump with associated sinus in 39%, isolated breast lump in 23%, sinus without lump in 12%, and tender nodularity in 23% of the patients. Associated axillary lymphadenopathy was found in 41%. Diagnosis was confirmed by fine needle aspiration cytology or histology in all the cases and antitubercular therapy formed the mainstay of treatment.

**T**uberculosis of the breast is a rare entity, in spite of over one billion people suffering from tuberculosis worldwide. Only 28 cases of mammary tuberculosis were reported in Japan over a 15 year period.<sup>1</sup> The overall incidence of tuberculous mastitis is reported to be 0.1% of all breast lesions, while in developing countries it constituted approximately 3.0% of surgically treated breast disease.<sup>2</sup> In this paper we review our experience of mammary tuberculosis in 52 patients.

## PATIENTS, METHODS, AND RESULTS

Over a 15 year period from 1986 to 2000 a total of 52 patients were diagnosed as suffering from mammary tuberculosis in the general surgical unit of University Hospital. During the same period 268 patients with carcinoma of the breast and 1600 patients with benign breast disease were treated in the same unit.

Of the 52 patients, 50 were female and two were male. The mean age of the patients was 34 years (range 15–58 years) and the mean duration of symptoms was 8.5 months. Among the female patients, 15 were lactating and two pregnant at the time of diagnosis. The right and left sides of the breast were equally involved and the disease was bilateral in two patients.

Constitutional symptoms of tuberculosis in the form of fever, weight loss, night sweats, or failing general health were present in only 11 patients (21%). Five patients (10%) had associated pulmonary tuberculosis symptoms. The clinical presentation of the breast lesion is depicted in table 1. Thirty two (62%) patients had a lump in the breast, most commonly in the central subareolar region (19 patients), and 20 of these patients had a discharging sinus in association with the lump (fig 1). Another six patients had multiple sinuses without an underlying lump; two patients also had an axillary sinus. Twelve patients had symptoms of mastalgia and tender nodularity without a cyclical pattern, and 21 (41%) had associated axillary lymphadenopathy. Four patients had a drainage

scar from a breast abscess. The two male patients had subareolar hard mobile lumps, which were clinically diagnosed as carcinoma of the breast.

All patients with a breast lump or nodularity were subjected to fine needle aspiration cytology (FNAC). Patients who had a sinus but no lump had a wedge biopsy from the mouth of the sinus. The cytological findings of epithelioid cell granulomas, Langhans' giant cells, and lymphohistiocytic aggregates confirmed the diagnosis. The discharge from the sinus was subjected to Ziehl-Neelson staining and culture for acid fast bacilli. All specimens proved negative for acid fast bacilli on staining as well as culture. Mantoux test was positive in 46 patients (91%) and erythrocyte sedimentation rate raised in 39 (77%). Chest radiography revealed pulmonary tuberculosis in seven patients (14%) of whom four had old calcific lesions.

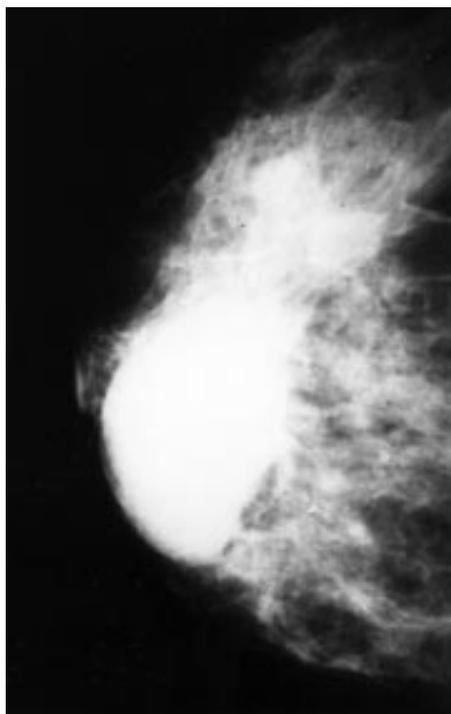
Mammography was performed in only seven patients as this is an expensive investigation and was not deemed necessary for patient management. One of these patients showed evidence of a tuberculous breast abscess in the form of an ill defined breast density with a sinus tract connecting to the overlying skin (fig 2). In the remaining six patients the findings were of non-specific stromal coarsening.



**Figure 1** Breast mass with sinus typical of mammary tuberculosis.

**Table 1** Symptomatology of 52 patients with mammary tuberculosis

Symptom	No (%)
Breast lump	12 (23)
Breast lump with sinus	20 (39)
Sinus without lump	6 (12)
Tender nodularity	12 (23)
Axillary sinus	2 (4)
Associated axillary lymphadenopathy	21 (41)
Previously drained abscess	4 (8)



**Figure 2** Mammogram showing breast abscess with sinus tract.

**Table 2** Therapeutic modalities used in 52 patients with mammary tuberculosis

Treatment	No
Antitubercular treatment	52
Excision of mass	12
Repeated aspirations	5
Excision of sinus	5
Simple mastectomy	2

The diagnosis of mammary tuberculosis was confirmed by a combination of clinical suspicion and cytological findings. All patients received antituberculous therapy comprising rifampicin 450 mg, isoniazid 300 mg, pyrazinamide 1500 mg, and ethambutol 800 mg per day for two months followed by rifampicin and isoniazid for another four months. Twenty four patients required surgical intervention. This included excision of mass in 12 patients, repeated aspirations from cold abscesses in five patients, excision of sinus in five patients, and simple mastectomy in two patients (table 2).

All patients were followed up for a mean period of nine months. Twenty eight patients responded to antituberculous therapy alone while 24 patients required additional surgical treatment as detailed above. Extension of antitubercular therapy from 12 to 18 months was required in 18 patients on the basis of their slow clinical response. Eleven patients needed the addition of streptomycin and/or ofloxacin to their treatment protocol. Complete resolution was obtained in 42 patients and two had a simple mastectomy. The residual mass in eight patients was confirmed by repeated FNAC to be fibrotic.

## DISCUSSION

Tuberculosis of the breast is extremely uncommon in the western population but accounts for 3% of surgically treatable breast conditions in India.<sup>2</sup> We also found that mammary tuberculosis comprised 3% of breast diseases and was five

times less common than carcinoma of the breast. It has been suggested that mammary gland tissue, like spleen and skeletal muscle, offers resistance to the survival and multiplication of the tubercle bacillus.<sup>3</sup> Though much more common in females, it is known to occur in males as well with 4% of our patients being males.<sup>4</sup>

Mammary tuberculosis may be primary, when no demonstrable tuberculous focus exists, or secondary to a lesion elsewhere in the body.<sup>3</sup> Primary infection of the breast may occur through skin abrasions or through the duct openings on the nipple. Direct extension from contiguous structures like the underlying ribs is another possible mode of infection. However, it is generally believed that infection of the breast is usually secondary to a tuberculous focus elsewhere, which may not be clinically or radiologically apparent. Such a focus could be pulmonary or a lymph node in the paratracheal, internal mammary, or axillary group. Involvement of the breast in such cases is by haematogenous spread.<sup>6</sup> In our series five patients had evidence of active pulmonary tuberculosis while 21 had associated axillary lymphadenopathy. Whether the axillary lymph node was the site of primary infection or secondary to the mammary tuberculosis is a debatable point.

Lactation is known to increase the susceptibility of the breast to tuberculosis. Shinde *et al* found 7% of their patients to be lactating at the time of presentation,<sup>2</sup> while Banerjee *et al* reported 33% of their patients to be lactating.<sup>3</sup> In our series also 30% of the women were lactating at presentation. In these women, perhaps the stress of childbearing and increased vascularity of the breast facilitates infection and dissemination of the bacilli. One interesting hypothesis from a series in India correlates a prevalence of tuberculosis in the faucial tonsils of suckling infants with a higher incidence of tuberculosis of the breast in lactating women.<sup>7</sup> There are no reports in the literature on the presence of acid fast bacilli in the milk of such women even though it is possible to isolate acid fast bacilli in 12% of breast biopsies.<sup>5</sup>

Tuberculosis of the male breast is an extremely rare condition. Lilleng *et al*, in a study of 809 cases of male breast mass, did not find a single case of tuberculosis.<sup>8</sup> A few isolated case reports on male breast tuberculosis reveal that the common mode of presentation is a unilateral breast mass with or without ulceration along with axillary lymphadenopathy.<sup>4</sup> In our series the two male patients were clinically diagnosed with a carcinoma, but FNAC findings were confirmatory for tuberculosis.

There are three clinical varieties of mammary tuberculosis—namely, nodular, disseminated, and sclerosing.<sup>9</sup> The nodular variant is often mistaken for a fibroadenoma or carcinoma. The disseminated variety commonly leads to caseation and sinus formation. Sclerosing tuberculosis afflicts older women and is slow growing with the absence of suppuration.

Patients presenting with a breast lump associated with discharging sinuses are easily diagnosed but need to be differentiated from actinomycosis by the absence of sulphur granules in the discharge and by fungal culture. The isolated breast lump without sinuses mimics carcinoma as the lump is usually ill defined, irregular, and occasionally hard. Pain in the tuberculous lump is present more frequently than in carcinoma, often being a dull, constant, and nondescript ache. Involvement of the nipple and areola is rare in tuberculosis. Fixation to the skin may be present as part of the inflammatory process, which again resembles a neoplastic lesion. A high index of suspicion needs to be maintained if a breast lump is associated with a sinus or indolent lump in an immigrant woman if this is encountered in the west. Constitutional symptoms and pulmonary tuberculosis were found associated in only 11(21%) and five (10%) patients, respectively, in our series.

Tuberculous mastitis can be diagnosed reliably by cytological evidence of epithelioid granulomas, Langhans' giant cells, and lymphohistocytic aggregates. Kakker *et al* could confidently diagnose breast tuberculosis in 73% of patients on the

basis of FNAC findings of epithelioid cell granulomas with caseous necrosis.<sup>6</sup> In our experience of 52 patients, FNAC or histology was 100% reliable in diagnosing tuberculosis, including patients who had tender nodularity. Cytological findings of granulomatous mastitis can also be found in plasma cell mastitis, fat necrosis, and actinomycosis.<sup>9</sup> Histologically fat necrosis is confined to the adipose tissue of the breast in which there is a granulomatous reaction around broken down fat globules. In plasma cell mastitis, plasma cells and giant cells accumulate in the breast tissue in response to the irritation of fatty material within dilated ducts. Actinomycosis is characterised by sulphur granules that drain from the sinuses of the suppurating lesions.

Radiological imaging modalities like mammography or ultrasonography are unreliable in distinguishing tuberculous mastitis from carcinoma. This is because of the variable pattern of presentation of such an inflammatory lesion.<sup>10</sup> 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 connecting an ill defined breast mass to a localised skin thickening is strongly suggestive of tuberculous breast abscess but found in a small percentage of patients.<sup>11</sup> In our series, out of seven patients who underwent mammography, such diagnostic evidence of tuberculous abscess was found in only one (fig 2). 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.<sup>12</sup>

Medical treatment consisting of a four drug regimen forms the basis of treatment. Surgical intervention is reserved for aspiration of cold abscesses, and excision of residual sinuses and masses.<sup>13</sup> In refractory cases with destruction of the breast, simple mastectomy may be performed.

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