

# Primary breast tuberculosis masquerading as carcinoma

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## ABSTRACT

**Although tuberculosis is a very common disease in endemic areas, isolated involvement of the breast is very rare. Any form of tuberculous mastitis may present with features of malignancy. Diagnosis is mainly based on identification of tubercle bacilli. We report a 50-year-old woman with primary tuberculous abscess of the breast which simulated carcinoma on mammography, and describe the importance of ultrasonography in differentiating abscess from malignancy.**

**Keywords: breast abscess, breast cancer, breast tuberculosis, tuberculous mastitis, tuberculosis**

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## INTRODUCTION

Tuberculosis is a chronic granulomatous disease caused by *Mycobacterium tuberculosis*. Involvement of the breast by the bacilli is extremely rare. Its overall incidence is approximately 0.1% of all breast lesions, while in developing countries, it comprises about 3.0% of surgically-treated breast diseases.<sup>(1)</sup> The primary form of the disease is rare.<sup>(2)</sup> It may be classified into three types, namely: nodular, disseminated and sclerosing varieties.<sup>(3)</sup> Mammography has limited value in the diagnosis because of its nonspecific features. When it occurs in elderly women, differentiation from malignancy is not possible. In some cases, ultrasonography (US) may play an important role. Fine-needle aspiration cytology for identification of the acid-fast bacilli (AFB) is required for proper diagnosis.

## CASE REPORT

A 50-year-old woman presented to the surgery department with a history of a lump in the left breast for three months. It was associated with mild pain. After a month, she noticed the retraction of the nipple, and there was an associated whitish discharge. There was no family history of any breast cancer. On examination, she had a lump in the retroareolar region of the left breast. There was nipple retraction with puckering of the adjacent skin. No lymph nodes could be palpated in the axilla. Based on these

findings, a provisional diagnosis of carcinoma was made and a mammogram was done. Routine blood investigation, including blood urea, serum creatinine and liver function tests were unremarkable. The erythrocyte sedimentation rate was 16 mm/hr.

The mammogram showed a spiculated mass lesion in the retroareolar region of the left breast, with nipple retraction and thickening of overlying skin (Fig. 1). There was no microcalcification. Though the features were suggestive of malignancy, subsequent US showed the lesion having irregular margins, central necrotic areas with debris and posterior enhancement (Fig. 2). US-guided aspiration revealed pus. Microbiological examination of the pus showed AFB. The chest radiograph of the patient was normal. A diagnosis of tuberculous mastitis of the breast was made, and the patient significantly improved after institution of anti-tubercular therapy and drainage of the pus.

## DISCUSSION

Tuberculosis is a disease affecting people all over the world. It is uncommon in western countries but has higher incidence in developing countries. However with increasing spread of AIDS, it may no longer be infrequent in developed countries.<sup>(4)</sup> It is caused by the acid-fast bacillus, *Mycobacterium tuberculosis*, and though it primarily involves the lungs, any organ in the body can be involved. However, some organs or tissues like the breast, skeletal muscle and spleen are usually resistant to tuberculosis,<sup>(1)</sup> and hence, tuberculous mastitis is an uncommon disease. It is mainly seen in women in the reproductive age group, especially affecting lactating females.<sup>(4)</sup> Males are rarely affected.<sup>(5)</sup>

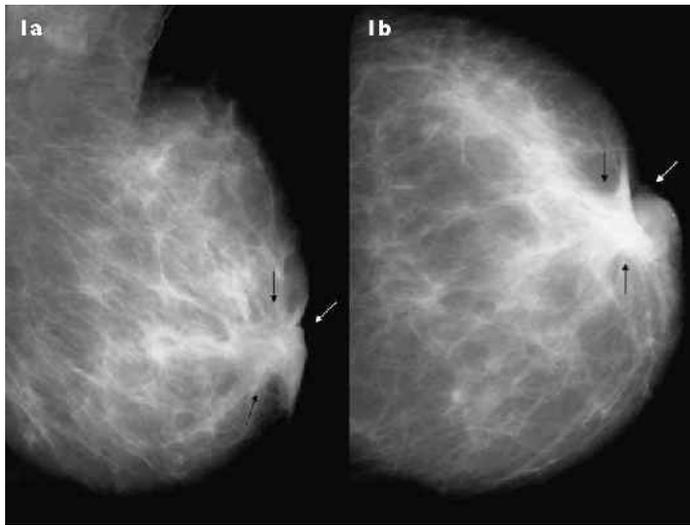
Breast involvement can be either primary without any extra-mammary focus, or secondary to pulmonary tuberculosis.<sup>(6)</sup> The primary form of the disease is rare and probably occurs via infection through skin abrasions or through openings of the lacrimal ducts at the nipple.<sup>(7)</sup> The secondary variety is more common and develops by either direct extension, retrograde lymphatic dissemination from the affected axillary, cervical lymph nodes or rarely, from pulmonary disease.<sup>(7,8)</sup> Women in the reproductive age are at risk as the breast shows periodic changes with

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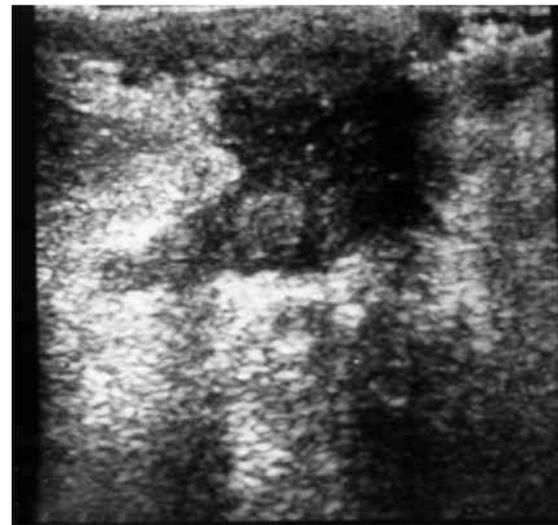
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**Fig. 1** Mammograms of the left breast taken in (a) mediolateral oblique and (b) craniocaudal views show a spiculated mass lesion in the retroareolar region (black arrows) associated with the retraction of the nipple (white arrow).



**Fig. 2** US image of the breast shows a hypoechoic lesion with irregular margins with internal echoes; posterior acoustic enhancement is also seen.

menstruation and are more liable to trauma and infection. Pregnant and lactating breasts have increased blood flow and dilated ducts, making it more susceptible to tubercular infection.<sup>(6)</sup> Our patient did not have any focus of tuberculosis outside the breast, both on physical and radiological examination, and it was thus considered to be the primary form.

Tuberculosis of the breast mostly presents as a lump, with or without discharging sinus.<sup>(9)</sup> It may be associated with pain, skin or nipple retraction, nipple discharge, sinus formation, or rarely, peau d'orange.<sup>(10)</sup> The mammographical appearances are of three varieties, namely the nodular form which is well circumscribed and slow growing, the disseminated form where multiple lesions are seen associated with sinus formation, and the sclerosing form seen in older women with dense fibrous tissue.<sup>(11)</sup> Tuberculous abscess is less common, usually seen in young women. These radiological patterns can be mistaken for carcinoma, although the occurrence of appreciable change in density, shape and margins of the lesion on two standard views suggests a fluid collection rather than a solid mass, but this feature is infrequently seen.<sup>(12)</sup>

Although tuberculous mastitis has no specific US findings, it may play an important role in differentiating it from a carcinoma in some cases. It usually appears as a heterogeneous hypoechoic lesion, with irregular margins and posterior acoustic enhancement. Mobile internal echoes suggest an abscess. Axillary lymph node involvement can also be evaluated. Although Doppler US findings are not reported in literature, presence of peripheral vascularity with central avascularity suggests an infective process.<sup>(11)</sup>

US is especially useful in the abscess form of the disease for making a proper diagnosis and in differentiating it from carcinoma, while mammography is less accurate. Surgical excision can thus be avoided.

Diagnosis of the disease requires cytological evidence of epithelioid granulomas, Langhans giant cells, and lymphohistiocytic aggregates. For a confirmed histological diagnosis, either a combination of epithelioid cell granulomas and caseous necrosis, or AFB positivity, is required.<sup>(4,8)</sup> The accuracy of fine-needle aspiration in diagnosing breast tuberculosis varies from 73% to 100%.<sup>(4,10)</sup> A biopsy is required in difficult cases. Anti-tubercular therapy with four drugs is the primary line of treatment of breast tuberculosis. The six-month treatment regimen comprises two months of intensive phase (with four drugs: ethambutol, pyrazinamide, rifampicin, isoniazid), followed by four months of continuation phase (with two drugs: isoniazid and rifampicin).<sup>(10)</sup> Treatment response is good. Surgical intervention is required for aspiration of abscesses and excision of sinuses and masses. In resistant cases, simple mastectomy can be performed.<sup>(10)</sup>

Our patient had mammographical features typical of malignancy, but US showed an abscess. Thus, US helped us change our differential diagnosis. US-guided aspiration was done for establishing the diagnosis and thereby, an excision biopsy of the breast was avoided. Aspiration showed AFB in the pus. As the patient did not have any other focus, the diagnosis was primary tuberculous mastitis. She responded well to anti-tuberculous therapy and aspiration of the abscess. In conclusion, primary breast tuberculosis is a very rare disease, even in endemic countries.

The diagnosis must be considered in young patients presenting with a palpable lump, especially if they are lactating. Clinical and mammographical features may mimic malignancy, but US is very useful in some cases as it helps exclude carcinoma and thus avoids unnecessary excisional biopsy. A histological examination is required for confirmation. Treatment with anti-tuberculous drugs is effective.

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