Primary breast tuberculosis mimicking carcinoma: a case report

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ABSTRACT

Background: Breast tuberculosis is considered a rare clinical entity throughout the world. It has no defined clinical manifestation. Radiological imaging is not diagnostic also. Diagnosis is based on identification of typical histological features or cultures.

Patient: A 48-year old woman was admitted because of a painful lump in her right breast. Her mammogram showed a lobulated mass, accompanied by swelling and retraction of the skin and nipple, suspected to be carcinoma. The diagnosis was made by histopathologic study and revealed to be tuberculosis. The tumor was excised and anti-tuberculosis drugs were commenced. Satisfactory outcomes revealed during follow up.

Conclusion: Breast tuberculosis is a rare form of extra-pulmonary tuberculosis which may presents with features of breast carcinoma. The basis of treatment is anti-tuberculosis antibiotic therapy, and conservative surgery for any residual masses or deformities.

Keywords: Breast tuberculosis; Breast mass; Treatment.

INTRODUCTION

In the past decade, there has been a significant raise in the prevalence of tuberculosis all over the world with a subsequent increase in its extra-pulmonary involvement. Breast tuberculosis is considered a rare clinical entity throughout the world (1,2). It usually involves young women of childbearing age. Breast tuberculosis has no defined clinical manifestation. Radiological imaging is not diagnostic also (3). Different manifestation of breast tuberculosis such as nodular mastitis, disseminated forms, clinically mimicked a fibroadenoma, breast carcinoma, and fibrocystic mastitis depending on the mode of presentation (3,4).

Diagnosis is based on identification of typical histological features or cultures (2,3).

Anti-tuberculosis therapy is the main treatment, and surgery is used only in patients that fail to respond to medical treatment and or involve extensive tissue damage (1,2). Early diagnosis and treatment is necessary to prevent disfigurement of breast. In this article we reported a 48-year old woman with primary breast tuberculosis, which simulated carcinoma on mammography. A review of literature is also done. The main purpose of this case report is to remind clinicians and radiologists of the unusual presentation of extra-pulmonary tuberculosis.
CASE PRESENTATION

A 38-year old woman, referred to the surgical clinic with a painful lump in the upper outer quadrant of right breast for one year. She complained of no other symptoms and her physical examination was within normal limit.

There was a firm, semi-fixed nodule in the upper outer quadrant of the right breast. There was also localized swelling of the skin over the lesion and nipple retraction. Examination of the other breast was normal. Axillary lymph nodes were not palpable. Neither peripheral lymphadenopathy nor hepatosplenomegaly or other abnormalities were found, and general physical examination was unremarkable. Chest X-ray and routine laboratory examination were normal.

Her past medical family history was unremarkable. Initially the case was being interpreted as a neoplastic lesion. The patient referred for radiological examination. Mammography showed 2×2×2.5cm mass with a lobulated contour in the upper outer quadrant of the right breast, accompanied by swelling of the skin over the lesion and nipple retraction. There was no evidence of micro calcification or axillary lymphadenopathy. The provisional diagnosis of breast carcinoma was suggested and the patient admitted to the hospital for excisional biopsy. Histopathological study of the specimen revealed granulomatous lesion with caseating and non-caseating granulomas. Special (Ziehl-Nelson's) stain revealed acid-fast bacilli, and helped in the correct diagnosis of tuberculosis.

Started on anti-tuberculosis therapy for six months with four main drugs (ethambutol, rifampine, pyrazinamid, and isoniazid), she demonstrated satisfactory outcome.

DISCUSSION

The incidence of tuberculosis is raising worldwide and rare manifestations of the past are seen more often now a day. Many factors have contributed to this rise, including an increased number of immunocompromised patients particularly after the human immunodeficiency virus episode, emergence of drug-resistant strains, demographics and improvements of diagnostic capabilities of that disease. Nearly 18% of tuberculosis cases have only extra-pulmonary presentations (5). The breast and skin are considered to be rare sites of extra-pulmonary mycobacterial infection, comparing 0.1-0.5% of all tuberculosis cases. The overall incidence is less than 0.1% of all breast lesions detected in developed countries and about 3-4% in non-developed nations (3,5). Sir Ashley Cooper in 1929 was first to report a case of breast tuberculosis. Primary as well as secondary tuberculosis of the breast is a rare infection, as mammary tissue appears to be an inhospitable site for the survival and multiplication of tubercle bacilli (1,2).

Infection of breast is usually secondary by lymphatic, contagious spread from the chest wall and pleura, or more rarely hematogenous spreading. Tuberculosis bacilli usually penetrates into the breast through the lactiferous ducts, by direct extension from the lung and the chest wall, through the lymphatics from the axillary lymph nodes (1-3). Predisposing factors for mammary tuberculosis are considered as young age, multiparity, lactation, poor general health, stress of childbearing and trauma. A young multiparous lactating woman with a breast lesion especially in the presence of poor general health should arouse the suspicion of tuberculous mastitis in endemic area. Clinical abnormalities include a lump in the breast with or without ulceration, diffuse nodularity, pain, erythema, warmth, swelling, skin thickening, or fixation. Breast deformity and multiple sinuses may be seen (2,5). Solitary lump and enlarged axillary lymph nodes are the commonest presentation of breast tuberculosis (2). From the clinical point of view, mastalgia with masses, and discharge should draw the attention to an infective process. Breast tuberculosis can be
suspected if the symptoms are long standing. Tuberculosis of the breast is classified into nodular, sclerosing and disseminated types. Nodular group may be mistaken for fibroadenoma or breast carcinoma. Disseminated tuberculosis can be mistaken for inflammatory carcinoma and sclerosing types may cause diffuse fibrosis, nipple retraction and breast deformity, being mistaken for scirrhus carcinoma (2,6). The most frequent clinical form is nodular type observed in the patients described in this report. The diffuse form is the least common type and the sclerosed form occurs usually in the elderly (6). Radiological imaging studies are not diagnostic for breast tuberculosis. Mammography may show a breast mass usually with an ill-defined borders, focal or diffuse skin thickening, nipple retraction, coarse stromal texture, and focal or diffuse asymmetric density (2,6). Mammographic demonstration of a dense tract connecting an ill-defined breast mass to a localized skin thickening (sinus tract sign) is strongly suggestive of tuberculosis abscess (2). Mammography may show an ill-defined mass, or a mass with irregular speculated margin, which could be mistaken for breast carcinoma (7-9). In nodular form of breast tuberculosis, there is usually a slow – growing lesion and the outline of the breast mass may be regular, representing non-caseating granuloma, or it may be irregular due to abscess formation, peripheral edema or scarring mimicking malignancy. In diffuse form of breast tuberculosis, there are multiple intercommunicating foci of tuberculosis evolving into abscess associated with inflammatory reaction and edema. Here in malignancy is usually suspected, but the radiographic density of the center of the lesion is relatively less due to its fluid nature.

In scalloping form, fibrosis is a dominant feature, which accounts for two important mammographic features. The first is the asymmetry between the two breasts, as once fibrosis ensues the breast becomes denser. The second effect is the reduction and retraction of the breast volume. This is due to involvement of Cooper’s ligament by the fibrotic process with their subsequent retraction and atrophy of the breast gland in a non-uniform pattern. In malignancy, breast atrophy is not a remarkable feature, and the multifocality or multicentricity of the lesion favors tuberculous mastitis rather than malignancy. In breast tuberculosis calcification is a sign of healed granuloma. The calcifications are usually large (macro calcification), round and non-clustered. Involvement of the skin may be due to edema or direct lupus infection. It can be quite evident on mammography. Focal thickening may represent the so called skin bulge and tract sign.

Ductal involvement takes place from direct inoculation of the organism into the stin. On mammography this represents as typical retroareolar serpigenous opacities. Lymphadenopathy is a common finding in chronic tuberculous mastitis. Ultrasound (US) usually shows a heterogeneous fluid containing lesion with or without internal septation as complicated cyst, breast abscess or necrotic tumors (10). In many patients with breast tuberculosis, the reticular scarring and interlobular edema may mask the mass. Here US is helpful to verify its presence and evaluate its morphology whether solid or cystic (abscess). On US the nodular form mimics fibroadenoma in its regular contour, hypo echoic pattern, and posterior enhancement. US is a more sensitive technique to detect the axial lymph node, and may help suggest the benign nature of their enlargement by the presence of echogenic hilar fat and preservation of oval shape. US remains as an essential complementary modality to mammography and should be done in every case. The added value of us includes the followings: (1) it can better differentiate caseating from non-caseating granuloma; (2) it can identify nodules masked by the coarse stroma; (3) it is better in assessment of lymph nodes status; (4) it can be an easy mean to attempt FNA and percutaneous drainage; (5) it may add confidence in ruling out
malignancy. Radiological findings of breast tuberculosis can confuse radiologist by its close resemblance to carcinoma or non-specific abscess. Computed tomography and magnetic resonance imaging may show the extent of the breast lesion and the efficiency of treatment. The principal differential diagnosis to be considered is breast carcinoma, although other disease such as fat necrosis, plasma cell mastitis, periareolar abscess, actinomycosis should also be considered.

Manteux test has no diagnostic value for breast tuberculosis. While routine laboratory investigations are not helpful in the diagnosis, fine needle aspiration (FNA) to allow histological examination and tissue culture is essential both to differentiate tuberculous mastitis from phylogenic abscess and breast carcinoma, and to guide antimicrobial therapy (11). The gold standard for the diagnosis of breast tuberculosis is detection of mycobacterium tuberculosis by Ziehl Neelsen staining or by culture. The presence of acid-fast bacilli in smears would enable a tuberculous etiology to be diagnosed. An excisional biopsy is the most reliable method for the definite diagnosis of breast tuberculosis by identifying a chronic granulomatous inflammation with caseous necrosis and langhans type giant cell (1,3).

The diagnosis may be difficult, especially in a number of pathologic process such as granulomatosis (12).

The management of tuberculous mastitis includes anti-tuberculosis therapy for 6 months with or without surgical intervention (1,2,5,7,10). The drug regimen is the same as used for the treatment of pulmonary tuberculosis. The drug regimen consists of the combination of a rifampicin, isoniazid and pyrazinamide for 2 months, followed by rifampicin in combination with isoniazid for another 4 months. Anti-tuberculosis treatment in combination with aspiration or surgical drainage is usually associated with an excellent outcome. Any residual masses following clinical treatment may need to be removed. Wedge resection is usually sufficient when the residual lesion is small (9). But in large painful, ulcerative lesions, involving the entire breast simple mastectomy may be indicated (1,2,6,10).

REFERENCES