Breast tuberculosis, a rare presentation of breast lesions

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ABSTRACT

Tuberculosis is an infectious disease not only accounts for a significant proportion of the global burden of disease; it is also a significant contributor to maternal morbidity and mortality. Tuberculosis can involve any organ system in the body. Usually, pulmonary tuberculosis is the most common presentation, but extrapulmonary tuberculosis is also an important clinical manifestation.

Tuberculosis of breast is a rare disease with nonspecific findings, it is difficult to differentiate from carcinoma of breast. We report a case of tuberculosis of right breast in a 33-year-old female from Baghdad. The patient was presented with a discharging lesion in the right breast. No other evidence of tuberculosis was present in the body. The patient received antitubercular therapy for 6 months with complete healing of the lesion.

Key words: Tuberculosis, Breast, AFB, extrapulmonary.

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INTRODUCTION

Tuberculosis has existed for millennia and remains a major global health problem. It causes ill-health for approximately 10 million people each year and is one of the top ten causes of death worldwide. For the past 5 years, it has been the leading cause of death from a single infectious agent, ranking above HIV/AIDS.[1]

Tuberculosis can involve any organ system in the body. While pulmonary tuberculosis is the most common presentation, extrapulmonary tuberculosis is also an important clinical problem.[2]

Breast tuberculosis is a rare disease, with an incidence of less than 0.1% of all breast lesions in Western countries, 3–4% in tuberculosis endemic regions.[3] In the Arabian Gulf, the frequency of the disease is reported to be between 0.4% to 0.5%.[4] First case of breast tuberculosis was recorded by Sir A. Cooper in 1829.[5]

Young lactating multiparous women affected mostly and can present either as an abscess or as a painless breast mass. Prepubescent males, or elderly women can also be affected,[6] usually it presents as a lump in the central or upper-outer quadrant of the breast, sometime can be presented as multiple lumps.[7] It is rare in the infra-mammary area.[8] The lesion may progress to a tuberculous ulcer over the breast skin and tuberculous breast abscess with or without discharging sinuses.[9] Breast tuberculosis usually misdiagnosed with either breast carcinoma or abscess.[10]

Breast tuberculosis classified into 5 pathological varieties,[11] the most common variety is the nodular form and usually presents as a localized growing mass that progresses to involve skin, and it can be ulcerated and form sinuses, this form is characterized by extensive caseation and little fibrosis.[12] The diffuse form is the second common variety and involves the entire breast with multiple foci of tubercles within the breast, which caseate leading to ulceration and discharging sinuses. The overlying skin is

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thickened. Ipsilateral axillary lymph nodes are usually enlarged and matted.[13] The third type is the sclerosing form. With extensive fibrosis, in which the entire breast is hard and the nipple is retracted. The last two forms are tuberculous mastitis obliterans and acute miliary tuberculous mastitis.[14]

Tuberculous involvement of breast occurs via lymphatic, haematogenous,[15] or contiguous seeding from the ribs, pleural space, or rectus sheath from an intra-abdominal source.[16] Haematogenous spread is rare and occurs in cases of disseminated tuberculosis, direct inoculation of the bacilli through abrasions in the nipple is also rare.[17]

The gold standard diagnosis of Breast tuberculosis is by bacteriological culture of breast tissue or by Ziehl Neelsen stain,[18] demonstration of caseating granulomas from the breast tissue and involved lymph nodes can be sufficient for the diagnosis.[19] Fine needle aspiration is a widely used method for diagnosis of breast tuberculosis. About 73% of the cases of breast tuberculosis can be diagnosed by finding epithelioid cell granulomas and necrosis.[20] In tuberculosis-endemic countries, finding of granuloma in fine needle aspiration warrants empirical treatment for tuberculosis even without culture results.[21] An excision biopsy is strongly advocated, to rule out other diagnoses like sarcoidosis, fungal infections, ductular ectasia, and a coexisting malignancy.[22-24]

Distinguishing idiopathic granulomatous mastitis from tuberculous mastitis is extremely important as treatment options of the former may include steroids. Steroids may flare up tuberculosis; and in tuberculosis-endemic regions, empiric antituberculous therapy may be warranted before considering steroids therapy.[25]

Given the high rate of AFB-negative stains in breast tissue, the overlap of clinical presentation, and the detection of AFB in a smear requires more than 10,000 organisms/ml, nucleic acid amplification test could be helpful in establishing the diagnosis of TB,[26] MTB-PCR should be part of the investigation requested in clinical samples from breast tissues.[27]

Radiological tools like mammography, computed tomography (CT) scan, and magnetic resonance imaging (MRI) of the breast have all been used in diagnostic work-up of breast lumps. Mammography or ultrasound of the breast may demonstrate a dense sinus tract connecting an ill-defined breast mass to a localized skin thickening. This 'sinus tract sign, may be strongly suggestive of tuberculous breast abscess but is found in only a small percentage of patients.[28]

Antituberculous therapy is the mainstay of therapy, and it generally follows guidelines used for pulmonary tuberculosis. Success rate of medical therapy approaches 95% in most series with 6 months of antituberculous therapy (2 months of Isoniazid, Rifampicin, Pyrazinamide, and Ethambutol /4 months of Isoniazid and Rifampicin).[29]

Surgical intervention such as drainage of cold abscess in the axilla and breast to prevent sinus formation is mandatory. Axillary dissection may be required in patients with large ulcerated nodes. Simple mastectomy is rarely needed nowadays and is reserved for patients with extensive disease comprising large painful ulcerated mass involving the entire breast and draining axillary lymph nodes. Over all surgery is needed in up to 14% of the patients, either due to lack of response to chemotherapy or large painful ulcerative lesions involving the entire breast.[19]

CASE PRESENTATION

A 33-year-old married female from urban area, east of Baghdad, came to the surgical unit of Baghdad Teaching Hospital complaining of pus discharging breast lesion 3 weeks duration. Her condition started as a low-grade fever with generalized weakness associated with a localized and tender right breast lesion. Which was then started oozing pus for which the patients presented to the hospital.

Patient had no significant past medical history of chronic diseases. On examination she had tender localized discharging abscess in right breast, no associated axillary lymph nodes enlargement was detected. Other parts of clinical examination were unremarkable.

On investigation, ESR and total white blood cells (WBC) count were elevated. Ultra Sound examination of abdomen was normal. Chest X ray showed no abnormality.

Drainage of the abscess was done, and an as-

pirate from the pus was send to tuberculosis referral lab in the national specialized centre for chest and respiratory disease, at the lab the sample examined by genXpert , that detect tubercle bacilli which is sensitive to Rifampicin

At that stage, the patient was registered in the National Specialized Centre for Chest and Respiratory Disease outpatient clinic as a case of extrapulmonary TB (Breast TB). Patient started 6 month anti tuberculosis medication regimen consist from 2 months, intensive phase with 4 tablets of combined fixed dose 4 drugs formula anti-TB medication (INH, Rifampicin, Pyrazinamide, and ethambutol), and 4 months continuation phase with 4 tablets of combined fixed dose 2 drugs formula anti- TB medication (INH and Rifampicin). With improvement in her general condition

DISCUSSION

Although over one billion people suffer from tuberculosis worldwide, breast tuberculosis is an extremely rare disease,[28] and case reviews are also rare,[30] that TB of the breast is an uncommon presentation of tuberculosis, even in countries where the incidence of pulmonary and extrapulmonary tuberculosis is high.[25]

Tuberculosis of the breast is paucibacillary, and routine diagnostic tests such as microscopy, culture, and nucleic acid amplification tests such as polymerase chain reaction techniques do not have the same diagnostic utility as they do in pulmonary tuberculosis.[31] Thus, it is not uncommon for breast TB to be misdiagnosed either as nonspecific abscess or carcinoma.[32]

Although mammary tuberculosis is much more common in females, it has been previously reported to also occur in males,[24] the incidence of male to female breast tuberculosis being around 1:30. The risk factors associated with tuberculosis of the breast include multiparity, lactation, trauma, past history of suppurative mastitis, and AIDS.[33] The increased susceptibility to the tubercle bacilli by lactation has been reported by Shinde et al to be 7 %.[17] While Khanna et al[28] noted a higher susceptibility of 30 %. This high susceptibility is explained by the stress of child-bearing and increased vascularity of the breast which could raise the chance of infection.

The breast may become infected in a variety of ways; (i) haematogenous, (ii) lymphatic, (iii) spread from contiguous structures, (iv) direct inoculation, and (v) ductal infection. Of these, the most accepted view for spread of infection is centripetal lymphatic spread.[34]

The path of spread of the disease from lungs to breast tissue was traced via tracheobronchial, paratracheal, mediastinal lymph trunk, and internal mammary nodes. According to the Cooper's theory, communication between the axillary glands and the breast results in secondary involvement of the breast by retrograde lymphatic extension.[15]

The clinical presentation is often misleading,[35] although our case presented with low grade fever and generalized weakness , still constitutional symptoms of tuberculosis (fever, weight loss, night sweats, or failing of general health) are infrequently encountered in the series by Khanna et al,[28] Shinde et al[17] and Harris et al,[36] 21, 20, and 16 % of patients. Although both breasts are susceptible to infection, only 3 % of patients with tuberculosis of the breast are affected bilaterally.[37]

The chest X-ray may show evidence of active or healed tuberculous lesion in the lungs and may also reveal clustered calcifications in the axilla suggesting the possibility of lymph node tuberculosis in suspected patients. The common mammographic findings are coarse stromal texture with or without an ill-defined breast mass and skin thickening, which all are nonspecific for making a diagnosis. The mammographic picture of nodular tuberculosis is usually of a dense round area with indistinct margins seen without the classic halo sign found in fibroadenoma.[38]

CONCLUSION

Tuberculosis of the breast is a rare breast lesion, this disease can present a diagnostic challenge on radiological and microbiological investigations, a high index of suspicion in clinical examination is needed to reach the correct diagnosis with pathological or microbiological confirmation of the suspected lesions. Incorporating a highly sensitive technique like PCR is helpful in conforming the diagnosis early. The disease is curable with antitubercular drugs, and surgery is also required in some cases.

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Abbreviation list: Acid fast bacillus (**AFB**), Computed tomography (**CT**), Erythrocyte sedimentation rate (**ESR**), Human immunodeficiency virus (**HIV/AIDS**), Isoniazid (**INH**), Magnetic resonance imaging (**MRI**), Mycobacterium Tuberculosis- Polymerase chain reaction (**MTB-PCR**), Tuberculosis (**TB**), White blood cells (**WBC**)

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