



A RARE CASE OF TUBERCULOSIS OF BREAST

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ABSTRACT

Tuberculosis is caused by *Mycobacterium tuberculosis* and mainly affects the lungs. Breast tuberculosis (TB) is a rare localization of extra-pulmonary TB. Breast tuberculosis has a prevalence of 0.6% to 3.6% of all breast infective conditions in India. It appears mostly in women of reproductive, age, multiparous, lactating. It has been scarcely reported to infect male patients, mainly before puberty, as well as women of older age. Most commonly the disease presents as a lump in the central or upper-outer quadrant of the breast while multiple lumps appear less frequently. Often the presentation leads to misdiagnose breast tuberculosis with either breast carcinoma or abscess because lump can mimic breast carcinoma, being hard, with irregular border, fixed to either the skin or the muscle or even to the chest wall. Treatment generally involves anti-TB medications with or without surgery.

KEYWORDS : Abscess, Breast, Breast Diseases, Mammography, *Mycobacterium tuberculosis*, Histology, Anti-TB drugs.

INTRODUCTION

Primary tuberculosis [TB] of the breast is uncommon. As the clinical presentation and radiological manifestations are non-specific. TB mostly affects the lungs as it is an airborne infectious disease, but any organ can be affected as a result of hematogenous spread. It has been suggested that some organs and tissues like the mammary gland tissue and spleen offer resistance to the survival and multiplication of tuberculosis bacillus. Hence, tuberculosis of the breast is an uncommon disease, with an incidence between 0.1%- 3% of all breast diseases treated surgically. Its incidence is likely to be higher in undeveloped countries as a result of the high TB incidence, Breast TB can mimic breast carcinoma or breast abscess, clinically and radiologically. It has been scarcely reported even in countries with a high incidence of tubercular infection. This is explained by a noticeable resistance of the mammary tissue to the *Mycobacterium tuberculosis*. The diagnostic delay can last months, and patients often undergo numerous investigations and unsuccessful treatments before a definitive diagnosis is made. The most common clinical presentation is a lump, with or without a duct, painful or not. The lump can mimic carcinoma, being hard, with irregular borders, and fixed to either the skin or the muscle or even to the chest wall. Other presentations include diffuse breast swelling and edema, diffuse nodularity, nipple retraction, fistulation, multiple sinuses, skin ulcers, and recurrent abscess with or without axillary involvement (Figure 1). Primary infection is through abrasions or through the ducts in the nipple. Secondary spread to the breast can be either through hematogenous route or through lymphatic route from contiguous structures most commonly a retrograde spread from axillary lymph nodes.

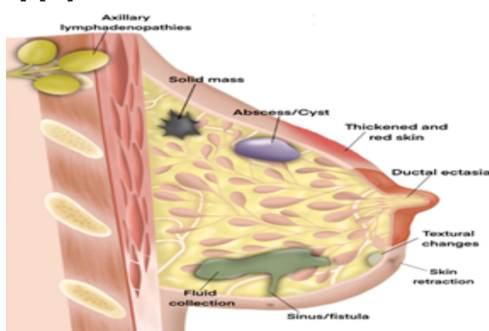


Figure 1 - Breast anatomy and the effects of tuberculosis

Case Presentation

A 77-year-old female presented with an abscess in upper inner quadrant of left breast for 1 month. Local temperature was raised. Nipple areolar complex was normal (Figure 2). There was no axillary lymphadenopathy. Patient was postmenopausal, no history nipple discharge. There was no history of breast carcinoma or tuberculosis in her family. Chest X- ray was normal (Figure 3). In 2019 she underwent implantation of pacemaker (single-chamber pacing in right ventricle) for complete heart block and left ventricular dysfunction. Sputum for acid fast bacilli (AFB) smear was negative. USG Bilateral Chest was performed which showed 4.1x4.3x3.7cm (Volume around 20-25cc) sized heterogeneously hypoechoic collection with presence of dense echoes within and irregular margins with no significant axillary lymphadenopathy (Figure 4).

HRCT Thorax – Plain + Contrast was also performed which shows two fluid density collections with thick irregular enhancing walls and adjacent fat stranding measuring 22x34x32mm (Approx. – 12cc) (HU +18) and another 22x15x24 (Approx. – 8cc) (HU +19) noted in left parasternal anterior chest wall at the level of 2nd and 3rd costal cartilage (Figure 5).

FNAC was done from the abscess was subjected for CBNAAT OR GeneXpert and *Mycobacterium tuberculosis* was detected (Figure 7). Their pathological examinations showed chronic granulomatous inflammation with areas of central necrosis, epithelioid granulomas with Langhans giant cells and lympho-histiocytic aggregates suggestive of tuberculosis.



(Figure 2)

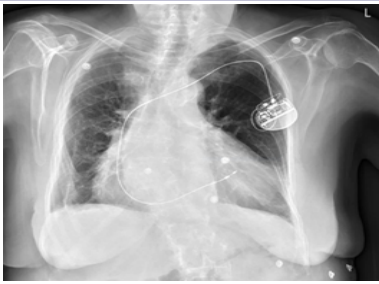


Figure 3 – CXR with Pacemaker in Situ

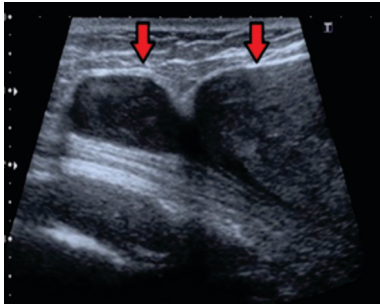


Figure 4

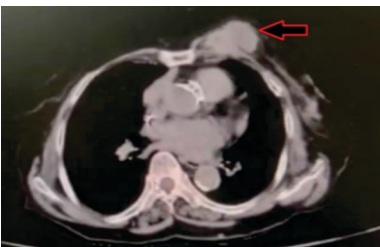


Figure 5

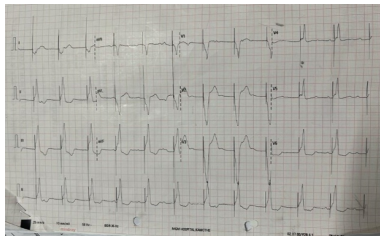


Figure 6 – ECG Showing Pacemaker Spikes

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Test Report

Patient ID: [REDACTED]
 Sample ID: 1662872497
 Test Type: Specimen
 Sample Type: ANAC - Breast (left)

Assay	Assay Version	Assay Type
Xpert MTB-RIF Assay Q4	0	In Vitro Diagnostic

Test Result: **MTB DN DETECTED LOW**
of Resistance NOT IN DETECTED

Analyte Name	CT	EndPT	Analyte Result	Probe Check
Probe D	28.1	144	POS	PASS
Probe C	28.0	136	POS	PASS
Probe E	28.8	122	POS	PASS
Probe B	28.3	107	POS	PASS
SPC	27.2	289	NA	PASS
Probe A	27.3	114	POS	PASS
QC-1	0.0	0	NEG	PASS
QC-2	0.0	0	NEG	PASS

Figure 7 – GeneXpert Report Of FNAC

Treatment

After GeneXpert and the histological reports confirming the diagnosis of Tuberculosis. The patient was registered with DOTS (Directly Observed Treatment Short course) under NTEP (National Tuberculosis Eradication Program – 2021) and was started on Fixed Dose Combination of H/R/Z/E (isoniazid, rifampicin, pyrazinamide, and ethambutol) for 2 months initially as intensive phase according to her weight band along with pyridoxine (Vit.B6) and is advised regular follow up.

DISCUSSION

Isolated tuberculosis of the breast is very rare, even in

endemic countries like India where pulmonary and other forms of extra-pulmonary tuberculosis are common. Generally unilateral involvement is common. Bilateral involvement is rare and may occur in up to 3% cases. Breast tuberculosis was first classified into five different types by McKeown and Wilkinson. Presently, it has been reclassified as nodular, disseminated and abscess varieties.

Nodular type is the most common and the lesion presents as a localized mass with extensive caseation. Disseminated type involves the whole breast with numerous sinuses. Breast abscess is often a common mode of presentation of breast tuberculosis, commonly in young women. A lump is the most common presentation, with other less common forms being cold abscess and diffuse breast inflammation. Breast lumps are mostly misdiagnosed as fibroadenoma, malignancy, or breast abscess. Pain is the most common constitutional symptom.

Typically, its manifestation is a noncyclical mastalgia, that is, not linked to the menstrual cycle (as in fibrocystic disease, periductal mastitis, or breast abscess). Comparatively, localized pain is very rare in breast cancer. Breast tissue is highly resistant to TB as it provides an infertile environment for survival and multiplication of tubercle bacilli. Mammary TB could be primary with no other identifiable focus in the body or secondary from another focus. Secondary spread to breast from lung can be through tracheobronchial, paratracheal, mediastinal lymph trunks and internal mammary nodes or retrograde spread from the axillary lymph nodes. Axillary lymph node enlargement is found in 50–75% cases.

Other mode of spread is from contiguous structures such as infected rib, costochondral cartilage, sternum, and shoulder joint. Direct inoculation through skin abrasions is also possible. Another possible route of spread is hematogenous, however, breast tissue is usually resistant to this mode of spread even in immunocompromised patients (Figure 8).

It has been observed that there is increased incidence of mammary TB in women of reproductive age especially in pregnant and lactating women. One of the explanations is that female breast undergoes frequent changes during this period and is more liable to trauma and infection. Breasts with increased vascularity and dilated ducts again predispose to tuberculous infection in pregnancy and lactation. Breast TB is often difficult to diagnose. When diagnosis is suspected, commonly chest X-ray helps to rule out lung lesions. Other imaging such as CT scan, MRI, mammography and ultrasound can all contribute valuable information in confirming the diagnosis and assessing the extent of the disease. However, none of these image findings are specific for TB. The gold standard in establishing the diagnosis is demonstration of the causative organism *Mycobacterium tuberculosis* in Z-N stain or in culture but is difficult to demonstrate.

Fine needle aspiration (FNAC) can be helpful and up to 73% cases with breast TB can be diagnosed with this technique. PCR results are available within 2 hours. Histopathology of specimen such as abscess wall biopsy can show epithelioid cell granulomas and caseous necrosis.

Treatment involves administration of anti-tubercular therapy. Surgery may be required for excisional biopsy, drainage of abscess, procuring biopsy from abscess wall, management of sinuses in the breast; segmentectomy and occasionally simple mastectomy have been employed. For large ulcerating masses involving the entire breast and the draining axillary lymph nodes, simple mastectomy with or without axillary clearance is required. Modified radical mastectomy is considered only if a co-existing malignancy is present.

Pathogenetic mechanisms for development of breast TB
Haematogenous spread
Spread via the lymphatics
Centripetal spread via lymphatics from the lung
Retrograde lymphatic spread from axillary, paratracheal and internal mammary lymph nodes
Direct extension from contiguous structures
Direct inoculation
Ductal infection
TB = tuberculosis

Figure 8

CONCLUSION

Elderly women may also be affected as we reported in case, whereas the disease is very rare under the age of 18. Breast TB remains a rare and overlooked disease. The reported case showed the difficulties to diagnose and manage a breast TB along with her underlying heart condition but the disease. Although, imaging results were non-specific, they might aid in guiding clinicians. However, confirmation of a diagnosis of TB usually requires FNAC or an excision biopsy providing histological or bacteriological evidence of infection. The management of breast TB consists of administration of standard anti-TB treatment and surgery in certain situations. Anti-TB treatment is the mainstay of therapy. The standard six-month anti-TB treatment is considered adequate for most of the patients; in some patients, the treatment may have to be extended by further three months.

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