



Breast Tuberculosis: Radiology Spectrum with Clinical Correlation - A Retrospective Analysis of 13 Patients

Authors

**Dr Nipa Patidar¹, Dr Mona Shastri², Dr Dhara Shah³, Dr Archana Nema⁴,
Dr Neepa Shah⁵**

¹Assistant Professor, Smimer Hospital, Surat

²H.O.D & Prof., ³Assist.Prof., ⁴Add. Prof., ⁵Consultant Radiologist

Introduction

Breast tuberculosis (BTb) -an uncommon entity.

In developed world - 0.1 %

In the developing nations - 4.5%

Coexistence with malignancy, bilateral involvement and female predilection are noted.

Commonly affected age group is 20-50 years.

Radiologically, Breast tuberculosis findings vary-hence; battery of clinico-pathological & microbiological studies are warranted for conformation

Methodology

Radiological imaging, clinical work up, microbiological and FNAC/CNB data of all cases treated as BTb during the past 3 years were reviewed.

Consent

Informed consent obtained from the respective patients.

Position

1. Conventional Mammography– CC & MLO Views.

2. Breast USG – Patient in supine position with both hands resting below the head as the axillary regions could also be scanned.
3. C.T. – Patient in supine position.
4. MRI- Prone with hands on side of body.

Machines

Xatromam mammography.

Linear probes of GE Voluson S8 & P-9
Ultrasound,

PHILIPS 16 SLICE C.T.,

PHILIPS 1.5 T MRI

at SMIMER HOSPITAL,SURAT.



Inflammatory/disseminated breast tuberculosis. Images taken from various patients.

A. Left breast photograph. Inflammatory skin change.

B. Mammogram MLO views. The right breast is enlarged. Non-specific diffuse stromal thickening and skin is oedema.



Healed sinus track in Lt upper inner quadrant

Open sinus track in left lower outer quadrant

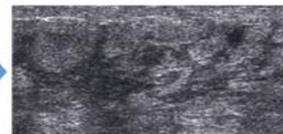
USG findings were divided into three groups

A) Nodular type –

B) multiple round to oval focal hypoechoic lesions in breast.



B) Diffuse type- when abnormal hypoechoic lesions seen in entire breast parenchyma.



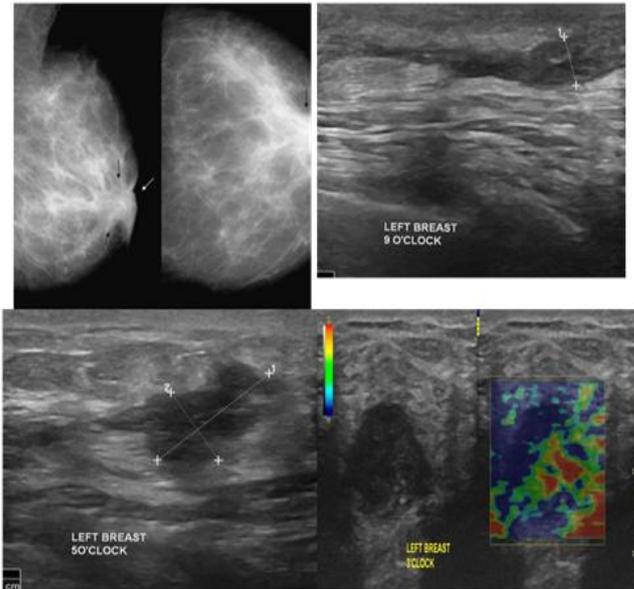
C) Sclerosing variant - lesions with heterogenous irregular, hypoechoic areas inside the breast lesions.



2) Secondary BTb

When history, C/E and imaging findings suggested other organ/body part affected by this disease, prior to breast complaints. Viz.

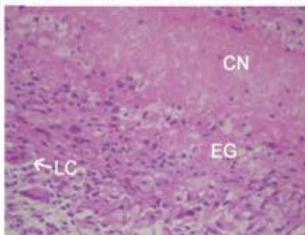
- 1) positive CXR,
- 2) sputum microscopy & culture
- 3) Clinically doughy abdomen with abdominal USG findings s/o Koch's abdomen.



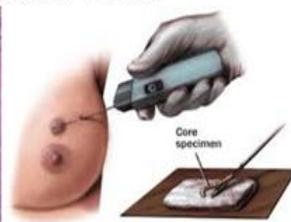
Figures a & b – depicting “sinus track sign” on mammography and usg. Other forms of BTb in c & d resp.



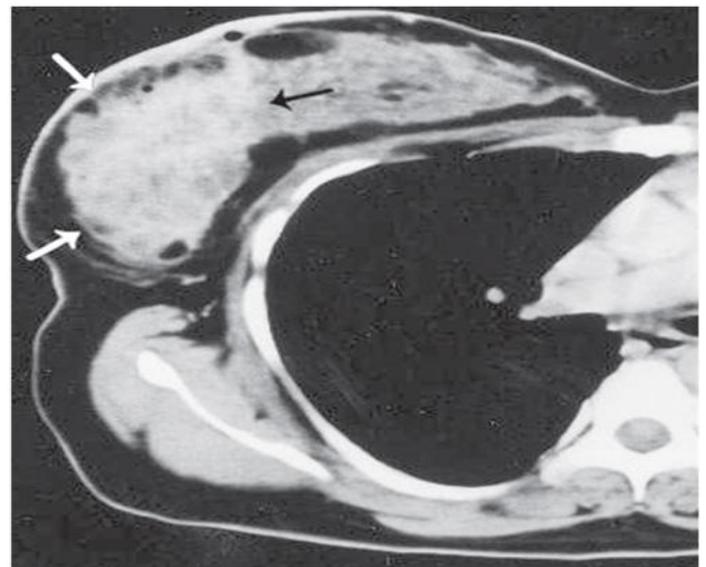
FNAC - Granulomatous lesion with caseous necrosis. - BTb case.



Zeihl Neelsen staining - Acid fast bacilli seen -lesion was considered as BTb positive.



Core needle biopsy required in some cases

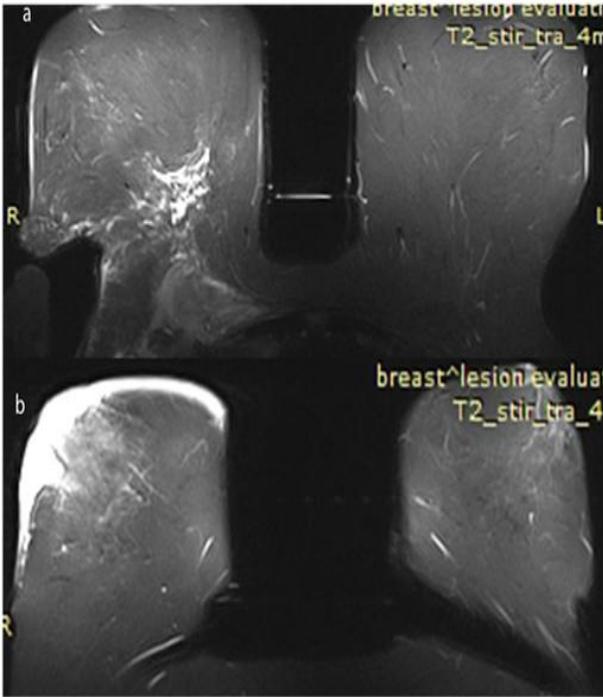


On transverse thoracic CT image, lobulated mass with poorly defined margins measuring 10x9.5x5 cm shows heterogeneous enhancement after intravenous injection of contrast media (arrows). There is skin thickening and obliteration of subcutaneous fat tissue adjacent to the mass.

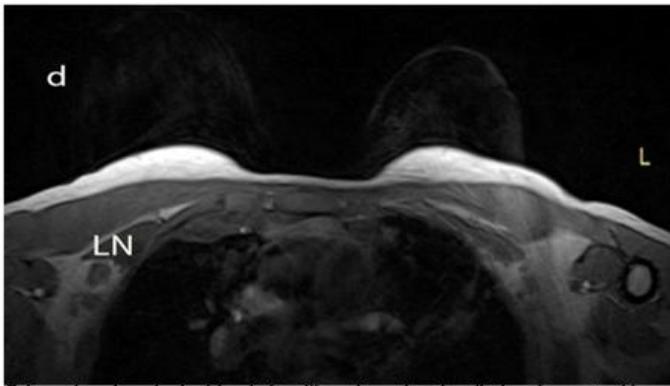
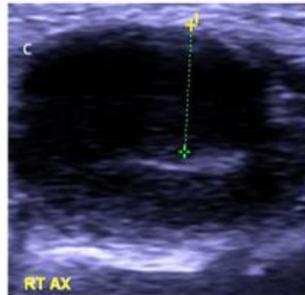
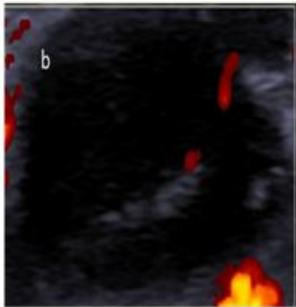
Types of Breast Tuberculosis

1) Primary BTb

When history, clinical examination and imaging studies showed no other organ /body part was involved.



Breast MRI T2 STIR axial image. A. The right breast has diffuse trabecular hyperintensity, more intense posteriorly abutting the pectoral muscles. B. Skin oedema.



Tuberculous lymphadenitis. Left axilla enlarged nodes discharging onto skin sinuses. B. Ultrasound Doppler, hilum vessel and thick cortex seen. C. Ultrasound shows node with thick 7mm cortex (callipers). D. Breast MRI T1 post contrast axial image. Right axillary nodes (LN) have peripheral rim enhancement and central low signal (PRECLO).

Result

In a span of 36 months, out of all cases which were imaged, only few were diagnosed & treated as BTb.

5 cases were from parent institute while rest were referred from private practitioners.

All were females in the age group of 18 – 47 years. Upper-outer quadrant was commonly affected quadrant (15 cases - 71.42%) followed by lower –inner quadrant (14.28%) and upper-central portion – the nipple areola complex (14.28%).

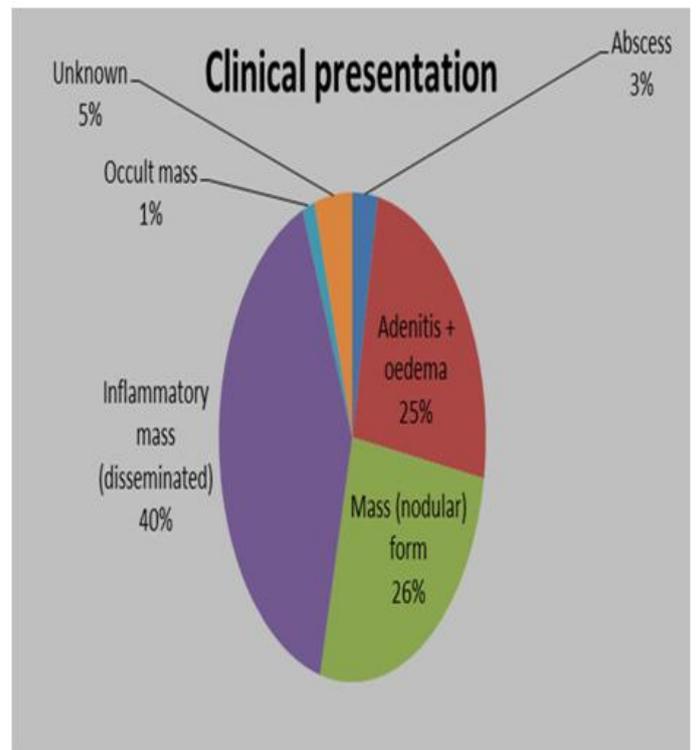
Secondary Tb was (57.2%) more common than the primary form (42.85).

Commonest site of origin incases secondary BT b was from -

Lung > abdomen >neck.

Patho - microbiological studies were in agreement in (42.7%). Only microbiological studies positive in (28.3%) and in them FNAC showed only inflammatory changes without any granulomatous lesions.

Various patterns that were retrospectively seen were nodular pattern(57.14%),diffuse pattern (28.5 %) and sclerosing pattern (14.3 %).



Discussion

TB affects the breast directly (primary BTb) or as spread from another system which is already involved (secondary BTb).

BTb are known to be associated with skin abrasions and nipple ductal openings in reproductive age women also known pathways of infection entry.

Clinical presentation of BTb may be as painful mass though sometimes as painless, edema or local abscess which is insidious onset and gradually progressive.

On USG, three morphological forms are known, viz nodular mimicking as fibroadenoma or carcinoma. Diffuse form that results in caseation and sinus formation and a sclerosing form which presents as dense, fibrotic breast tissue, is slow growing in the absence of any suppuration.

In our study, nodular form was commonest (57.1%), followed by the diffuse (28.6%) and the sclerosing type (14.3%) resp.

The various radiological studies were nonspecific and depended very much on morphological subtype. In case of abscess, then bulging of the overlying skin with or without formation of 'sinus tract sign' may be seen on mammogram as well as USG.

USG alone is not definitive for diagnosing BTb and the confirmation of Acid Fast Bacillus positive status from microbiological studies or evidence of chronic granulomatous disease on FNAC studies is must before labeling the patient as a BTb case.

Usually BTb presents as benign looking lesions which do not respond to antibiotics. Nonspecific clinical, imaging, micrological & histopathological findings cause delay in the diagnosis.

Tuberculosis and cancer may coexist. While nodular form most difficult to distinguish from carcinoma, the diffuse form may mimic inflammatory carcinoma. Treatment is by anti-tuberculosis therapy using standard regimes.

No specific guidelines for BTb treatment.

In primary BTb, surgical removal of mass and 4 drug ATT with for 6 months but may extend upto 9 months.

In multi drug resistant TB, second line of drugs like ofloxacin and kanamycin are indicated.

Surgery in patients with abscess or sinuses.

An open biopsy (incision or excision) of breast lump, ulcer, sinus or from the wall abscess cavity almost always confirms BTb.

In our case series, FNAC was positive in 8 patients, core needle biopsy in 3 and an open biopsy was required in 1 patients.

All of the BTb in abscess formation responded to repeat aspiration in conjunction with ATT.

All patients were treated with ATT (2EHTRZ/7HR) for 9 months and were disease free in 12 to 24 months of follow up.

Simple mastectomy was performed in one patient who was ATT defaulter after initial diagnosis and returned with a large ulcerated breast lesion and matted axillary nodes

Conclusion

The varied clinical and radiological presentations of breast tuberculosis have been demonstrated.

Early diagnosis can lead to full response following treatment with standard anti-TB treatment, averting more invasive surgical treatment or even breast disfigurement.

The practising clinician requires an awareness of these patterns and a high index of suspicion if misdiagnosis and inappropriate management is to be avoided.

Limitations

In this retrospective study, the data regarding follow up post completion of treatment was not complete, even though patients were scheduled for further visits.

References

1. Betal D,macneil FA. Chronic breast abscess due to Mycobacterium Fortuitum: a case report. J Med case Report ,2011;5:188.

2. Benqualid V,Singh V,Singh ,et al. Mycobacterium fortuitum and anaerobic breast abscess following nipple piercing : case presentation and review of literature . J Adolesc Health. 2008;42(5): 530-2.
3. Del Agua C,Felipo F, Parico J, et al. Tuberculosis of the breast as a pseudotumoral image. Breast J.2006 ;12(2):180.
4. MAKANJUOLA d,Murshid K, Sulaimani S,et al. Mammographic features of the breast tuberculosis: the skin bulge and sinus tract sign. Clin. Radiology .1996;51(5): 354-8.
5. Da Silva BB, Dos Santos LG,Costa PV , et al. Primary tuberculosis of the breast mimicking as carcinoma. Am J Trop Med Hyg. 2005; 73(5): 975-6.
6. Gupta D,Rajwansi A,Gupta SK,et al. Fine needle aspiration cytology in the diagnosis of tubercular mastitis . Acta Cytol. 1999;43 (2)191-4.
7. Pandey M,abraham EK, Rajan B. Tuberculosis and metastatic carcinoma co existence in axillary lymphnode : A case report. World J Surg Oncol.2003;1(1):3.
8. Ahmed R, Sultan F, granulomatous mastitis : a review of 14 cases. J Ayub Med coll Abbottabad. 2006;41(1): 61-3.
9. Kumar P, Sharma N. Primary MDR –TB of breast . Indian J Chest Dis Allied Sci. 2003; 45(1): 63-5.