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Radio-Diagnosis

TUBULOLOBULAR INVASIVE BREAST CARCINOMA MASQUERADING AS MASTITIS: A CASE REPORT

Nishit Jain	Junior Resident, Department of General Surgery, All India Institute of Medical Sciences, Rishikesh, Uttarakhand.
Dr. Amit Gupta	Professor, Department of General Surgery, All India Institute of Medical Sciences, Rishikesh, Uttarakhand.
Dr. Manish Kulshrestha	Junior Resident, Department of General Surgery, All India Institute of Medical Sciences, Rishikesh, Uttarakhand.
Dr. Ammapalem Satish	Senior Resident, Department of General Surgery, All India Institute of Medical Sciences, Rishikesh, Uttarakhand.
Dr. Dipendra Singh	Junior Resident, Department of General Surgery, All India Institute of Medical Sciences, Rishikesh, Uttarakhand.

KEYWORDS :

INTRODUCTION

Breast carcinoma is a leading cause of cancer-related morbidity and mortality among women worldwide [1]. While infiltrating ductal carcinoma is the most common histological type, rare subtypes like tubulolobular invasive breast carcinoma (TLIBC) present unique diagnostic challenges due to their unusual clinical and radiological presentations [2]. TLIBC is a hybrid carcinoma with features of both tubular and lobular carcinoma, characterized by its low-grade histology but variable clinical behavior [3, 4]. Here we report a rare presentation of TLIBC masquerading as mastitis that highlights the utility of magnetic resonance imaging (MRI) as a diagnostic tool [5].

Review Of Literature

Tubulolobular invasive breast carcinoma constitutes a small fraction of invasive breast cancers. Its histopathological features include small, angulated tubular structures intermixed with single-file infiltrating cells typical of lobular carcinoma. The clinical presentation of TLIBC often mimics benign breast conditions, such as mastitis or abscess, complicating early diagnosis.

Magnetic Resonance Imaging (MRI) is a good diagnostic modality for breast diseases, providing detailed anatomical and functional information that surpasses conventional imaging techniques. In breast carcinoma, MRI is particularly valuable for identifying multifocal, multicentric, and contralateral disease. Key radiological signs of malignancy on MRI include spiculated margins, irregular shapes, heterogeneous internal enhancement, and rapid initial enhancement with delayed washout on kinetic curves [6]. Additionally, diffusion-weighted imaging (DWI) aids in distinguishing malignant lesions by their lower apparent diffusion coefficient (ADC) values [7].

Benign breast diseases also exhibit characteristic features on MRI. Fibroadenomas, for instance, typically display smooth margins, oval shapes, and homogeneous enhancement patterns. Cysts appear as high-signal-intensity lesions on T2-weighted images with no enhancement post-contrast [8]. Mastitis or abscesses demonstrate irregular rim enhancement and may be accompanied by edema in surrounding tissues. Meanwhile, sclerosing adenosis can mimic malignancy but often presents as non-mass enhancement with segmental distribution.

MRI is particularly beneficial in high-risk patients and for problem-solving when conventional imaging is inconclusive. Despite its high sensitivity, limitations such as lower specificity and cost warrant judicious use. Emerging techniques like radiomics and artificial intelligence show promise in enhancing diagnostic accuracy [9].

A study by Spick et al. demonstrated that CE-MRI outperformed mammography in detecting multifocal and multicentric disease in breast cancer patients, particularly in dense breast tissue [10]. Similarly, Sardanelli et al. highlighted the role of MRI in distinguishing malignancy-associated inflammatory changes from benign conditions like mastitis, emphasizing its diagnostic accuracy in complex clinical scenarios [11].

Case Report

Patient History:

A postmenopausal woman aged 58 years with a history of hypertension presented with bilateral breast pain, redness, and fever. She had no significant family history of breast or ovarian cancer. On physical examination, she was conscious, oriented, and hemodynamically stable with a BMI of 30.46 kg/m². Her clinical performance score was assessed as ECOG 1.

Clinical Examination:

Local examination revealed erythematous patches on both breasts. The right breast had a 5x10 cm area of erythema located between the 1-3 o'clock positions, while the left breast showed a 4x4 cm erythematous patch between the 9-11 o'clock positions. (Figure 1) There were no palpable lumps, nipple discharge, or axillary lymphadenopathy.

Investigations:

Initial blood tests revealed leucocytosis, indicating an inflammatory process. Imaging with ultrasound (USG) and mammography (MMG) suggested an inflammatory or infective etiology with potential involvement of the pectoralis muscle. However, given the lack of complete resolution with antibiotics and persistent clinical suspicion of malignancy, contrast-enhanced magnetic resonance imaging (CE-MRI) was performed.

CE-MRI of the bilateral breast demonstrated an irregularly shaped, T1- and T2-isointense lesion with non-circumscribed margins and spiculations in the lower outer quadrant, at the 8 to 9 o'clock position, measuring 16 x 13.9 x 11.7 mm, located 46 mm from the nipple. The lesion exhibited diffusion restriction on DWI and homogeneous enhancement on post-contrast imaging, with a Type II and Type III kinetic curve. These findings were consistent with a BIRADS 4 classification, suspicious for malignancy. Associated mild edema and reactive skin thickening (maximum thickness: 3 mm) were noted. Additionally, the right pectoralis major and minor muscles appeared bulky with heterogeneous enhancement, suggestive of myositis (BIRADS 3, likely benign). No aspirable collection was identified, and the underlying ribs were normal. (Figure 3)

Second-look ultrasonography (USG) revealed an irregular hypoechoic lesion with spiculated margins measuring 11 x 8 mm at the 9 o'clock position, correlating with MRI findings. USG-guided biopsy of the BIRADS 4 lesion and FNAC of the lesion and right axillary lymph node were performed.

A core needle biopsy of the lesion was performed, and histopathological analysis confirmed the diagnosis of invasive breast

carcinoma of the tubulolobular subtype, graded as Nottingham Grade 1. (Figure 4) Immunohistochemistry revealed estrogen receptor (ER) positivity, progesterone receptor (PR) positivity, and HER2 negativity.

Management:

The initial presentation mimicked mastitis, and the patient was treated with antibiotics, resulting in a reduction in redness and pain. However, the biopsy-confirmed malignancy necessitated a shift in the management plan. (Figure 2) The patient was staged according to the TNM classification, and a multidisciplinary tumor board recommended upfront surgery.

The patient underwent wire localization under ultrasound guidance, followed by wide local excision and sentinel lymph node biopsy (SLNB). SLNB was negative for metastatic involvement. Final histopathological analysis of the excised specimen confirmed invasive carcinoma with clear margins. There was no lymphovascular invasion or additional lymph node involvement.

Follow-Up:

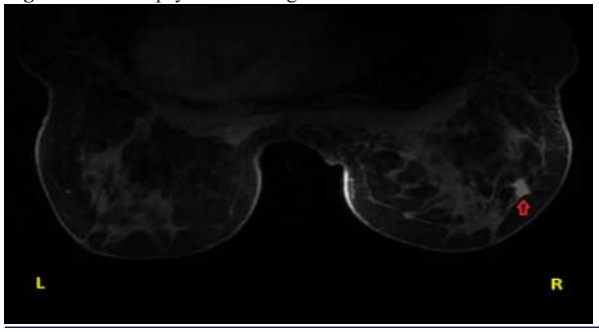
Postoperative recovery was uneventful. The patient was started on adjuvant chemotherapy, followed by hormonal therapy due to ER and PR positivity. At the six-month follow-up, the patient showed no signs of recurrence and continued to undergo regular surveillance imaging and clinical evaluations.

CONCLUSION

This case underscores the diagnostic challenges posed by TLIBC, particularly when it mimics benign inflammatory conditions like mastitis. Standard imaging techniques such as USG and MMG may not detect all lesions, emphasizing the utility of CE-MRI in complex cases. A thorough clinical assessment, combined with advanced imaging modalities and histopathological confirmation, is essential for accurate diagnosis and timely management of breast malignancies. This report highlights the importance of considering patient age, risk factors, and persistent symptoms when evaluating breast abnormalities, to avoid missed or delayed diagnoses of malignancy.

Figure 1: Clinical image at presentation

Figure 2: Post biopsy clinical image



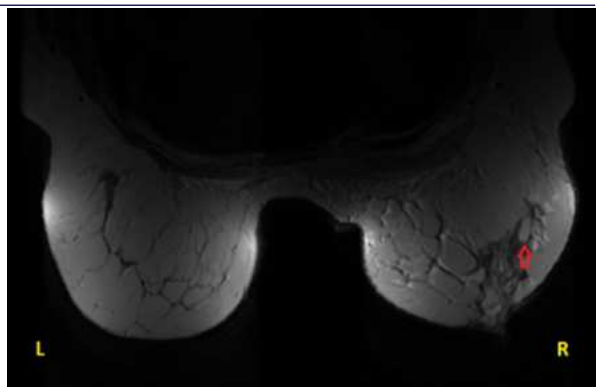


Figure 3: MRI image showing BI-RADS 4 lesion in right breast (Marked with a red arrow): An irregular shaped T1, T2 isointense lesion with non-circumscribed margins with few spiculations is seen in lower outer quadrant at 8 to 9 o'clock position measuring 16 x 13.9 x 11.7mm, 46mm away from nipple.

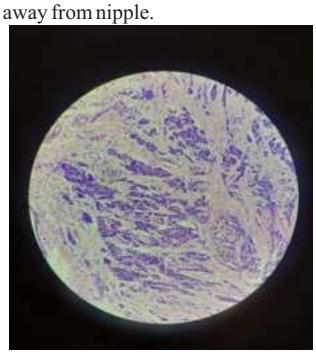


Figure 4: Histopatology slide suggestive for tudulolobular invasive breast carcinoma

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