

Research Article

Retracted Nipple Does Not Always Indicate Malignancy: Chronic Mastitis Mimicking a BI-RADS 5 Lesion — A Case Report

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Abstract: Introduction: Nipple retraction is frequently considered a warning sign of underlying breast malignancy and is commonly associated with highly suspicious imaging findings. Lesions demonstrating irregular margins, architectural distortion, and nipple inversion are often categorized as BI-RADS 5 according to the classification system established by the American College of Radiology. Nevertheless, certain benign inflammatory conditions of the breast can produce imaging appearances that closely resemble carcinoma. **Case Presentation:** A 50-year-old woman presented with progressive retraction of the left nipple associated with mild retroareolar discomfort. Mammography revealed focal retroareolar asymmetry with nipple retraction. Ultrasonography demonstrated an irregular hypoechoic lesion with indistinct margins and posterior acoustic shadowing. These features were highly suspicious for malignancy and the lesion was provisionally categorized as BI-RADS 5. Ultrasound-guided core needle biopsy was performed. Histopathological analysis demonstrated chronic inflammatory infiltrates with fibrosis and no evidence of malignant cells, consistent with chronic mastitis. **Conclusion:** Chronic inflammatory breast disease may imitate malignant lesions on imaging and clinical examination. Tissue diagnosis remains essential for accurate characterization of suspicious breast lesions and for preventing unnecessary surgical treatment.

Keywords: chronic mastitis, nipple retraction, BI-RADS, breast imaging, benign breast disease

INTRODUCTION

Nipple retraction developing later in life is generally regarded as a concerning clinical sign because of its strong association with breast carcinoma. In breast imaging, several features—including spiculated or irregular masses, architectural distortion, and associated nipple retraction—raise suspicion for malignancy.

To standardize interpretation and reporting of breast imaging findings, the Breast Imaging Reporting and Data System (BI-RADS) was introduced by the American College of Radiology. Lesions assigned to BI-RADS category 5 carry a very high probability of malignancy and require prompt tissue diagnosis.

However, benign breast conditions can occasionally mimic these malignant features. Chronic inflammatory disorders of the breast, including mastitis and periductal inflammation, may cause fibrosis and structural distortion that resemble malignant changes on imaging studies.

This report describes a case of chronic mastitis presenting with nipple retraction and imaging findings strongly suggestive of malignancy, emphasizing the importance of histopathological confirmation in such scenarios.

CASE PRESENTATION

Patient Information

A 50-year-old woman presented to the breast imaging clinic with complaints of gradual inward retraction of the left nipple over the preceding three months. She also described mild discomfort in the retroareolar region. The patient denied fever, trauma, nipple discharge, or constitutional symptoms during the time of presentation. She gave history of purulent discharge from nipple occurring from left breast in the past about two to three years back. There was no history of prior breast disease or family history of breast cancer.

Clinical Findings

On examination, the left nipple appeared retracted compared with the contralateral side. Mild firmness was palpated in the periareolar region without skin ulceration or erythema. No axillary lymphadenopathy was identified.

Diagnostic Assessment

Mammography

Bilateral mammography demonstrated focal asymmetry within the retro areolar region of the left breast associated with thickening and retraction of the nipple areola complex. Few small foci of calcifications were seen in central mammary region posterior to the nipple areola complex.

Ultrasound Examination

Targeted ultrasound revealed an irregular hypoechoic lesion measuring approximately 1.8×1.2 cm located in the retro areolar region. The lesion showed indistinct borders and posterior acoustic shadowing, along with subtle distortion of adjacent breast tissue. Thickening of the skin over the nipple areola region was seen.

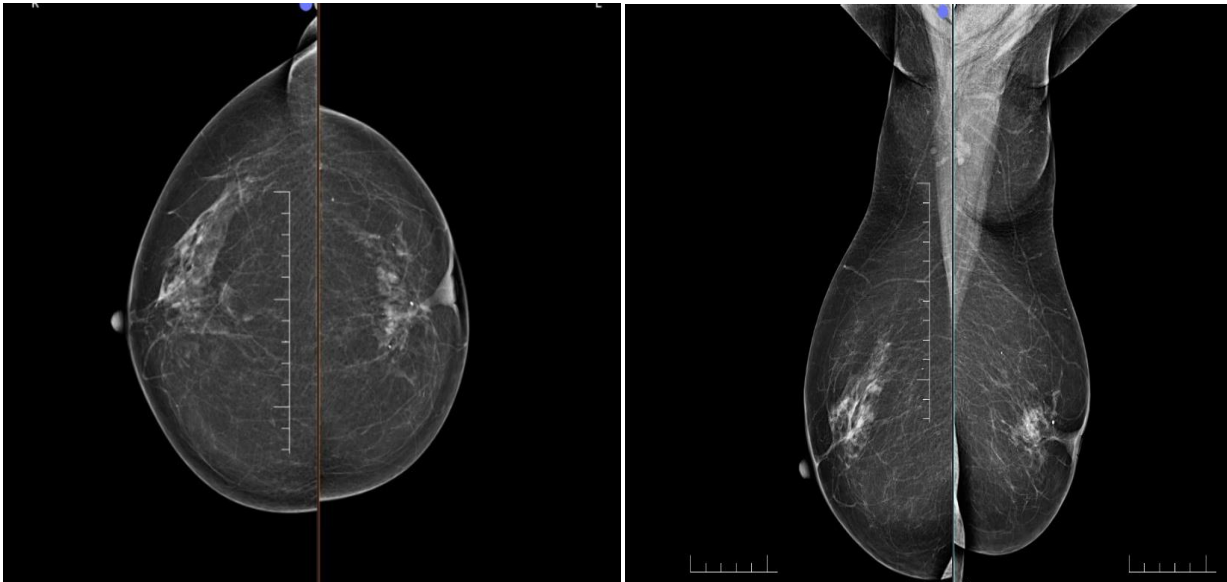
Given these suspicious characteristics, the lesion was initially categorized as BI-RADS 5, indicating a high likelihood of malignancy.

Diagnostic Intervention

To establish a definitive diagnosis, an ultrasound-guided core needle biopsy of the lesion was performed.

Microscopic evaluation demonstrated dense chronic inflammatory infiltrates composed primarily of lymphocytes and plasma cells. Fibrotic stromal changes and ductal inflammation were also noted. Importantly, no malignant epithelial cells were identified.

These histological findings were diagnostic of chronic mastitis.



Case legends : *Cranio - Caudal and Medio- Lateral Oblique views of the bilateral breasts showing thickening and retraction of the nipple areola complex on the left side. Few small oval calcifications seen in the central mammary region posterior to the nipple areolar region. Few axillary lymph nodes appreciated in the left axillary region*

DISCUSSION

Chronic mastitis is a benign inflammatory condition that may produce a wide spectrum of clinical and imaging manifestations. Although breast carcinoma remains the most common cause of acquired nipple retraction, benign inflammatory processes must also be considered in the differential diagnosis.

Inflammatory reactions within breast tissue can lead to fibrosis and ductal distortion. These changes may pull the nipple inward and create architectural abnormalities detectable on imaging studies. As a result, inflammatory lesions can occasionally mimic malignant tumors.

Previous reports have described similar diagnostic challenges in conditions such as chronic mastitis, granulomatous mastitis, and periductal mastitis. Imaging findings in these conditions may include irregular hypoechoic masses, posterior acoustic shadowing, and parenchymal distortion—features commonly associated with carcinoma.

Because imaging characteristics may overlap significantly, histopathological evaluation remains the most reliable method for distinguishing inflammatory lesions from malignant tumors. Core needle biopsy is therefore essential whenever imaging findings strongly suggest malignancy.

Recognizing benign entities that mimic carcinoma is important for radiologists and clinicians to avoid overtreatment and unnecessary surgical procedures.

This was a rare case encountered where BIRADS 5 was down staged to BIRADS 2 lesion on histopathology report.

CONCLUSION

Although nipple retraction combined with suspicious imaging findings is often associated with breast carcinoma, benign inflammatory conditions such as chronic mastitis may present with similar features. Accurate diagnosis requires careful correlation between clinical evaluation, imaging findings, and histopathological examination.

Learning Points

- Acquired nipple retraction is an important clinical sign but is not always caused by malignancy.
- Chronic mastitis can produce imaging findings that closely resemble breast carcinoma.
- Suspicious breast lesions should undergo tissue sampling for definitive diagnosis.
- Radiologic–pathologic correlation is critical in the evaluation of breast abnormalities.

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