

AMSER Case of the Month

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48-year-old woman with palpable right breast mass and pain

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Patient Presentation

48-year-old female presents with a 3-month history of right breast pain and a 1-month history of a palpable right breast mass. She previously underwent routine mammography 3 and 5 years prior, which demonstrated no suspicious masses or calcifications (BI-RADS 1). Her breasts were noted to be heterogeneously dense, potentially limiting mammographic sensitivity. Past medical history is notable for a prior benign right breast biopsy at age 37 and basal cell carcinoma at age 31.

Risk Factors

Family history

- Maternal grandmother: bilateral inflammatory breast cancer (age 78)
- Mother: melanoma
- Maternal grandfather: lung cancer

Breast composition

- Heterogeneously dense breast tissue (ACR Category C)

What Imaging Should We Order?

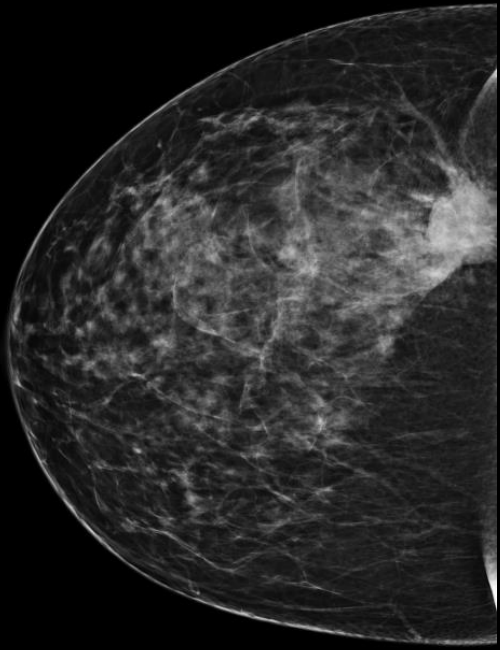
ACR Appropriateness Criteria

Variant: 4 Female with clinically significant breast pain (focal and noncyclical). Age greater than or equal to 40. Initial imaging.

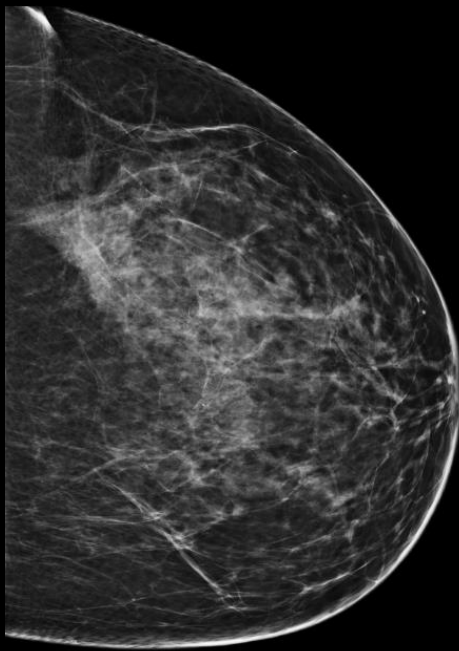
Procedure	Appropriateness Category	Relative Radiation Level
US breast	Usually Appropriate	○
Digital breast tomosynthesis diagnostic	Usually Appropriate	☢☢
Mammography diagnostic	Usually Appropriate	☢☢
MRI breast without and with IV contrast	Usually Not Appropriate	○
MRI breast without IV contrast	Usually Not Appropriate	○
Sestamibi MBI	Usually Not Appropriate	☢☢☢

These imaging
modalities
were ordered

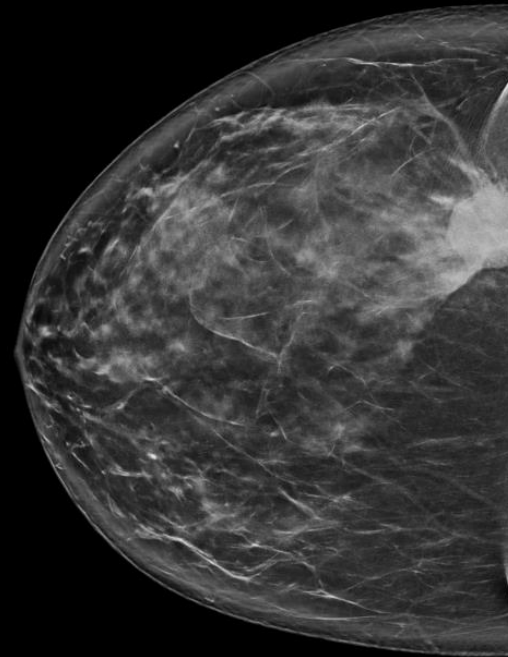
Diagnostic Mammogram



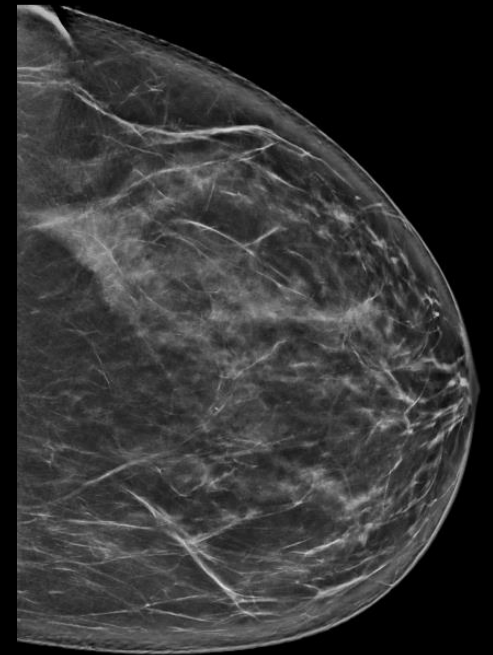
R-CC



L-CC



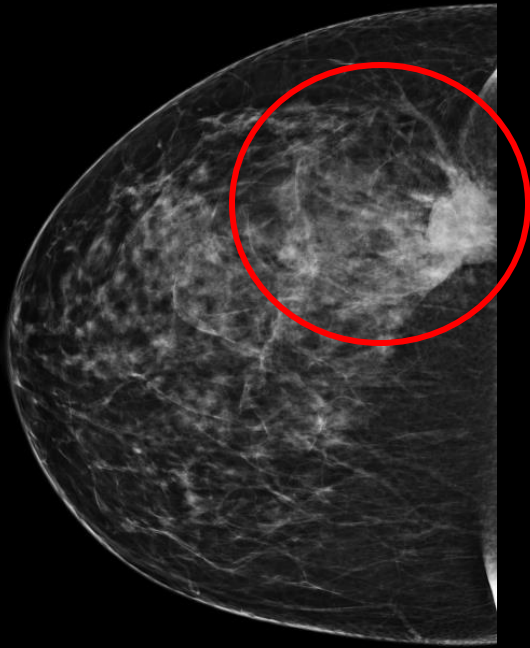
R-CC C-View



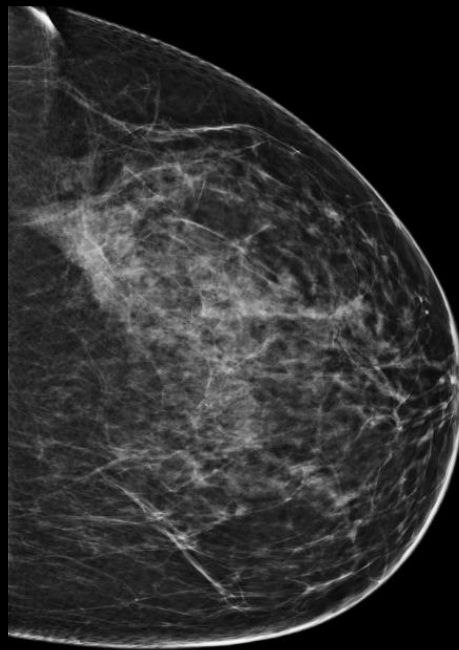
L-CC C-View

A triangular skin marker denotes the site of palpable concern in the upper outer right breast

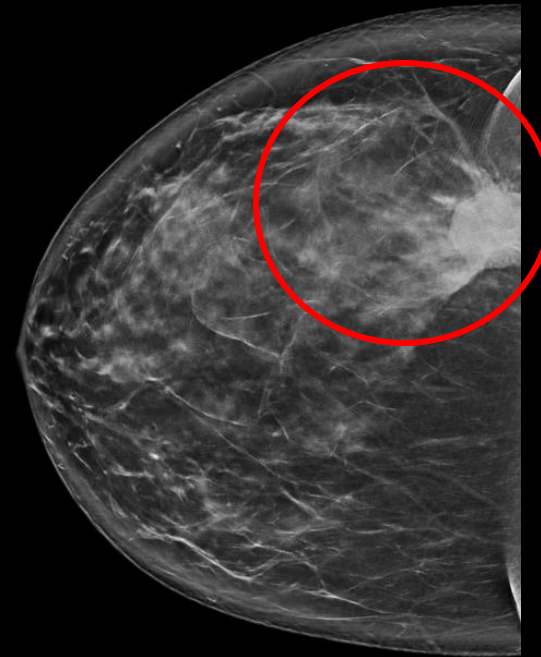
Diagnostic Mammogram



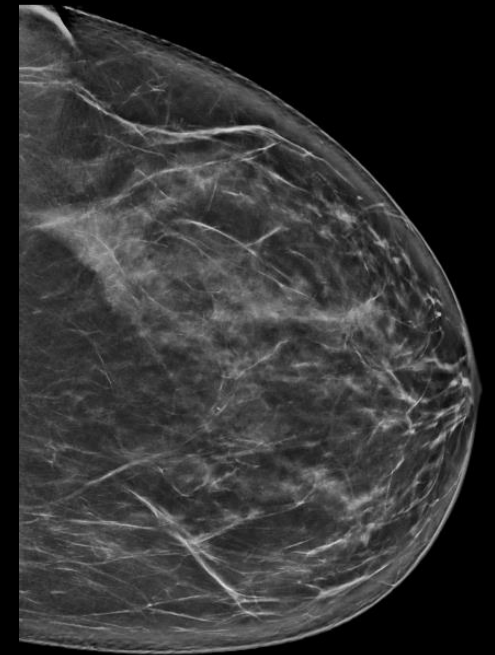
R-CC



L-CC



R-CC C-View



L-CC C-View

3.0 cm oval, isodense mass with indistinct margins located in the posterior upper outer quadrant of the right breast

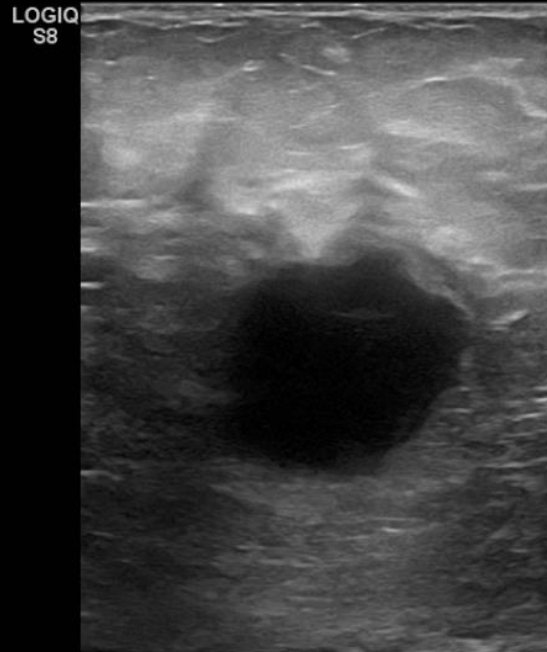
Right Breast Ultrasound

- 3.2 x 2.2 x 2.8 cm hypoechoic mass
- Located at the 10:30 position, 12 cm from the nipple
- Features include
 - Indistinct margins
 - Increased posterior acoustic transmission
 - Heterogeneous breast parenchymal pattern
 - No internal vascular flow
 - Normal axillary lymph nodes
- **Findings are suspicious despite partially cystic appearance**

BI-RADS Assessment

- BI-RADS 4: suspicious abnormality
- Estimated malignancy risk: 2-95%
- Recommendation: Ultrasound-guided aspiration with possible core needle biopsy

Ultrasound-guided FNA and core biopsy

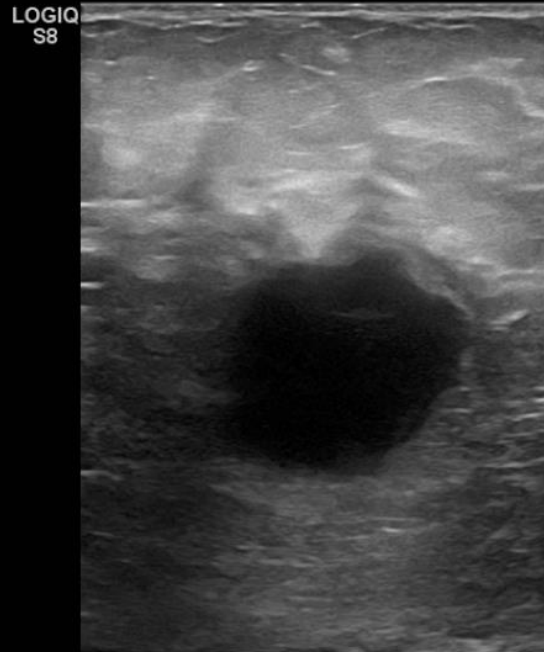


RIGHT BREAST 10:30 12 CMFN PRE BX ARAD



RIGHT BREAST 10:30 12 CMFN FNA POST

Ultrasound-guided FNA and core biopsy



RIGHT BREAST 10:30 12 CMFN PRE BX ARAD



RIGHT BREAST 10:30 12 CMFN FNA POST

FNA yielded ~10 cc of **serosanguinous fluid**. Core needle biopsy was performed.
FNA cytology: **malignant epithelial cells**.
Ki-67 proliferation index: **90%**

Final Dx:

Poorly differentiated triple-negative invasive ductal carcinoma of the right breast

Case Discussion

Background

- Invasive ductal carcinoma (IDC) accounts for 70%–85% of all invasive breast cancers.¹
- Triple-negative breast cancer (TNBC) represents 8-13% of breast cancer cases.²
- TNBC is associated with younger age(<50 years), African American ethnicity, BRCA1/2 mutations, higher parity without breastfeeding, early menarche, and family history of breast cancer.^{3,4,5}
- IDC arises from ductal epithelial cells invading beyond the basement membrane.⁶ Absence of ER, PR, and HER2 (triple negative) results in high proliferative rates and aggressive behavior.^{1,2}

Case Discussion

Diagnosis

- TNBC often presents as a palpable mass and may mimic benign lesions on mammography, contributing to delayed diagnosis.^{7,8}
- IDC is increasingly detected on screening, but TNBC is more often symptomatic at presentation.¹

Management

- Neoadjuvant pembrolizumab + platinum-containing chemotherapy followed by adjuvant pembrolizumab is standard of care for stage II–III TNBC.⁹

Prognosis

- TNBC has an aggressive clinical course with peak recurrence risk in the first 3–5 years.¹
- TNBC 5-year survival: localized 91%, regional 66%, distant 12%²

Case Discussion

Connecting to Case

- 48-year-old female is consistent with the younger age distribution of TNBC.³
- The patient's presentation with a palpable mass rather than detection on screening mammography is characteristic of TNBC, which is frequently diagnosed after symptoms arise due to its rapid growth rate.⁷
- The poorly differentiated (grade 3) histology in this case is typical, as approximately 80–85% of TNBCs are high grade.^{3,10}
- Diagnostic imaging mammogram demonstrated a 3.0 cm oval isodense mass with indistinct margins located in the posterior upper outer quadrant of the right breast. FNA cytology confirmed **triple-negative invasive ductal carcinoma**.
- The cystic appearance and serosanguinous aspirate highlight that malignancy should not be excluded in lesions presumed to be benign cysts.

References:

1. Waks AG, Winer EP. Breast Cancer Treatment: A Review. *JAMA*. 2019;321(3):288–300. doi:10.1001/jama.2018.19323
2. Adrada BE, Moseley TW, Kapoor MM, et al. Triple-Negative Breast Cancer: Histopathologic Features, Genomics, and Treatment. *Radiographics*. 2023;43(10):e230034. doi:10.1148/rg.230034
3. Plasilova ML, Hayse B, Killelea BK, Horowitz NR, Chagpar AB, Lannin DR. Features of triple-negative breast cancer: Analysis of 38,813 cases from the national cancer database. *Medicine (Baltimore)*. 2016;95(35):e4614. doi:10.1097/MD.0000000000004614
4. Couch FJ, Hart SN, Sharma P, et al. Inherited mutations in 17 breast cancer susceptibility genes among a large triple-negative breast cancer cohort unselected for family history of breast cancer. *Journal of Clinical Oncology*. 2015;33(4):304-311. doi:10.1200/JCO.2014.57.1414
5. Kumar N, Ehsan S, Banerjee S, et al. The unique risk factor profile of triple-negative breast cancer: a comprehensive meta-analysis. *J Natl Cancer Inst*. 2024;116(8):1210-1219. doi:10.1093/jnci/djae056
6. Ghannam SF, Rutland CS, Allegrucci C, Mongan NP, Rakha E. Defining invasion in breast cancer: the role of basement membrane. *J Clin Pathol*. 2023;76(1):11-18. doi:10.1136/jcp-2022-208584
7. Schopp JG, Polat DS, Arjmandi F, et al. Imaging Challenges in Diagnosing Triple-Negative Breast Cancer. *Radiographics*. 2023;43(10):e230027. doi:10.1148/rg.230027
8. Foulkes WD, Smith IE, Reis-Filho JS. Triple-negative breast cancer. *N Engl J Med*. 2010;363(20):1938-1948. doi:10.1056/NEJMra1001389
9. National Comprehensive Cancer Network. *NCCN Clinical Practice Guidelines in Oncology: Breast Cancer*. 2026; Vers April 1, 2026. <https://www.nccn.org>
10. Gangi A, Chung A, Mirocha J, Liber V, Giuliano AE. Breast-conserving therapy for triple-negative breast cancer. *JAMA*. 2014;149(3):252-258. doi:10.1001/jamasurg.2013.3037