AMSER Case of the Month: September 2025

57-year-old female with bilateral breast asymmetry

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Patient Presentation

57 year old woman with no breast symptoms presents for screening mammography.

What Imaging Should We Order?

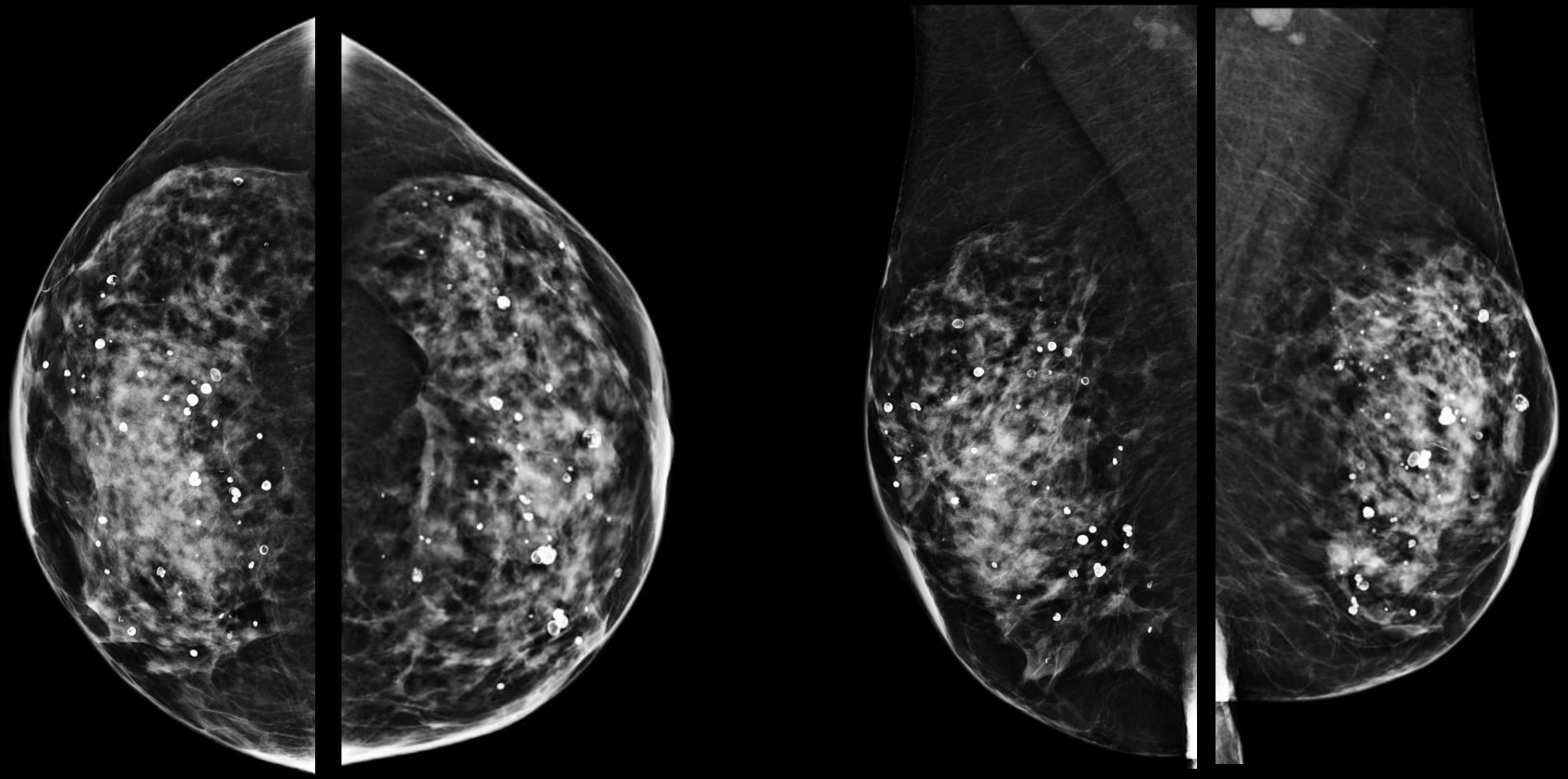
ACR Appropriateness Criteria

Variant 1: **Adult female. Breast cancer screening. Average risk.**

Procedure	Appropriateness Category	Relative Radiation Level
Digital breast tomosynthesis screening	Usually Appropriate	☢☢
Mammography screening	Usually Appropriate	☢☢
US breast	May Be Appropriate	O
MRI breast without and with IV contrast	May Be Appropriate	O
MRI breast without and with IV contrast abbreviated	May Be Appropriate	O
Mammography with IV contrast	Usually Not Appropriate	☢☢
MRI breast without IV contrast	Usually Not Appropriate	O
MRI breast without IV contrast abbreviated	Usually Not Appropriate	O
Sestamibi MBI	Usually Not Appropriate	☢☢☢

This imaging modality was ordered

Screening Mammogram

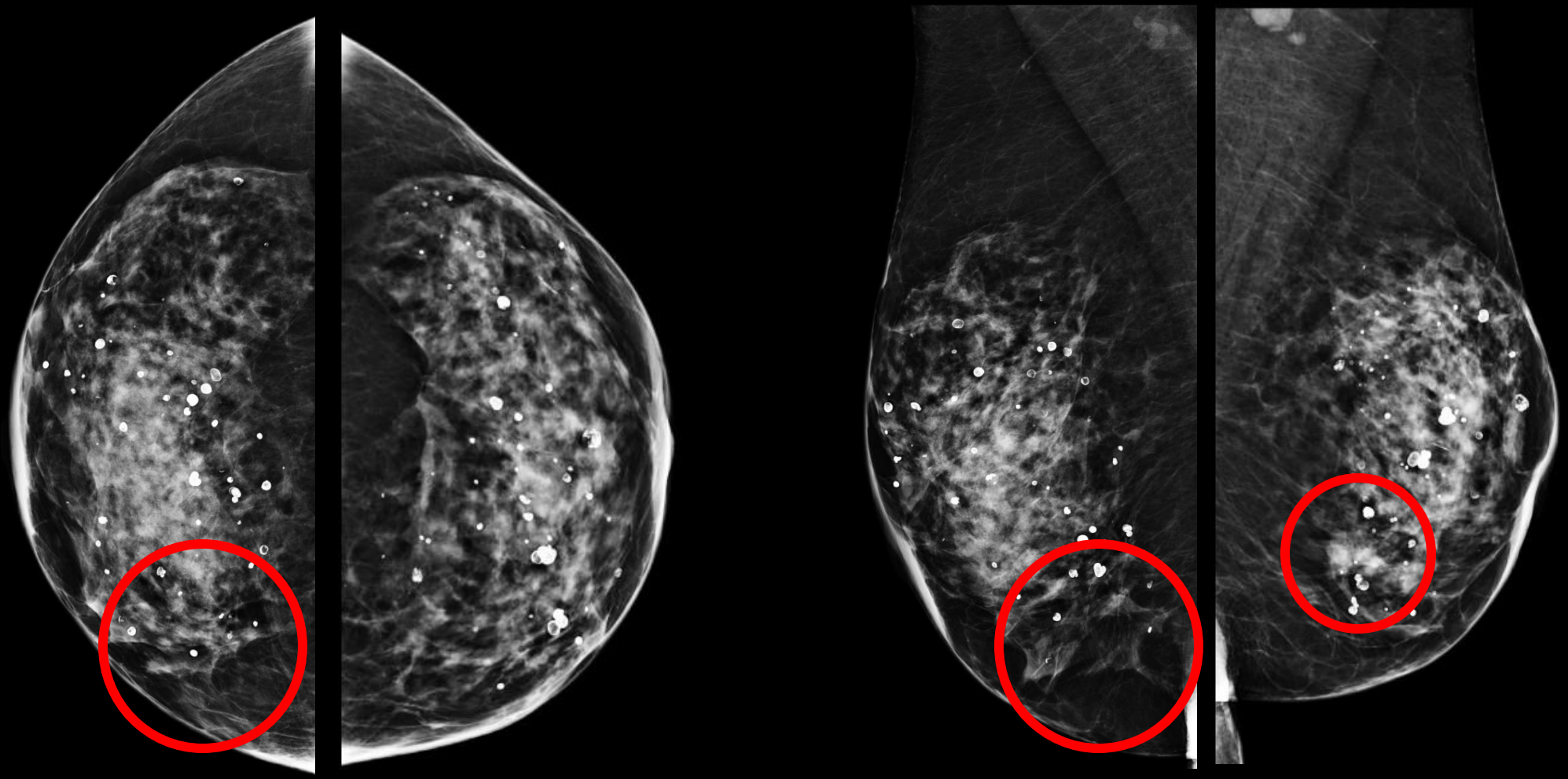


R-CC L-CC R-MLO L-MLO

Patient Presentation

- The patient is recalled from screening for bilateral breast asymmetries, which resolved on diagnostic mammography, and without sonographic abnormality, compatible with summation of normal fibroglandular tissue.
- A left axillary lymph node with cortical thickening of 0.7 cm was noted, with no suspicious breast finding on left whole breast ultrasound. Given isolated adenopathy, **BI-RAD 3** follow-up was recommended in 2 months.

Screening Mammogram



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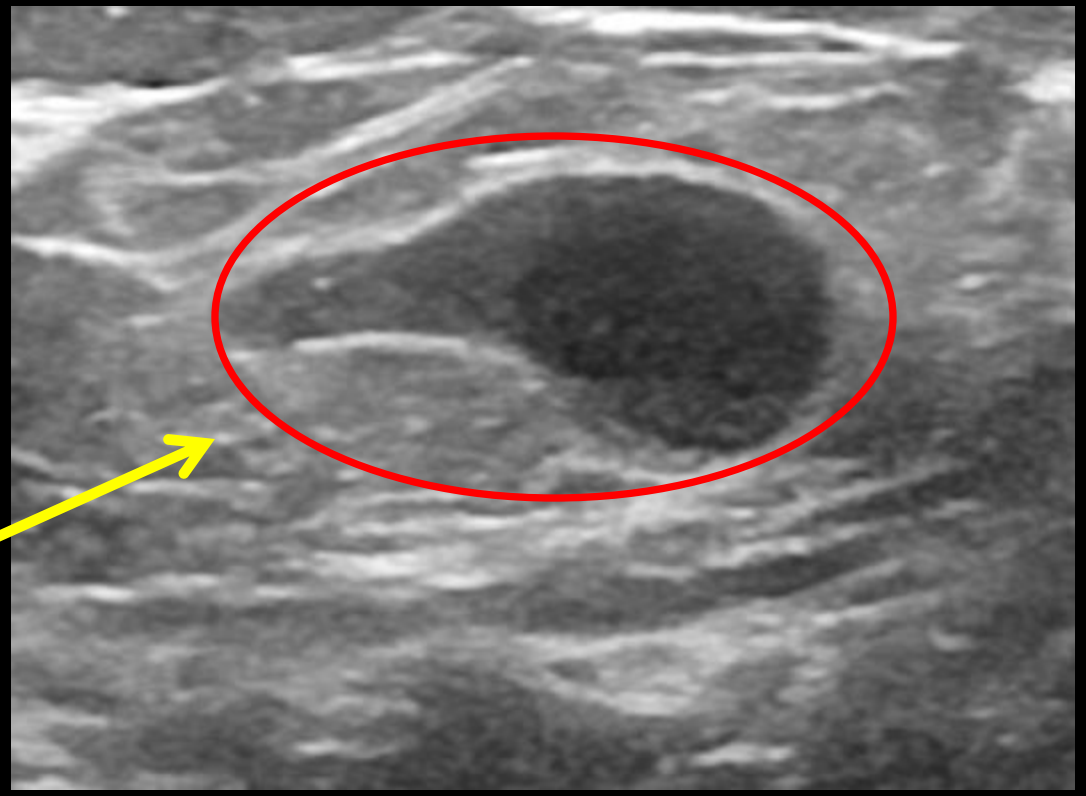
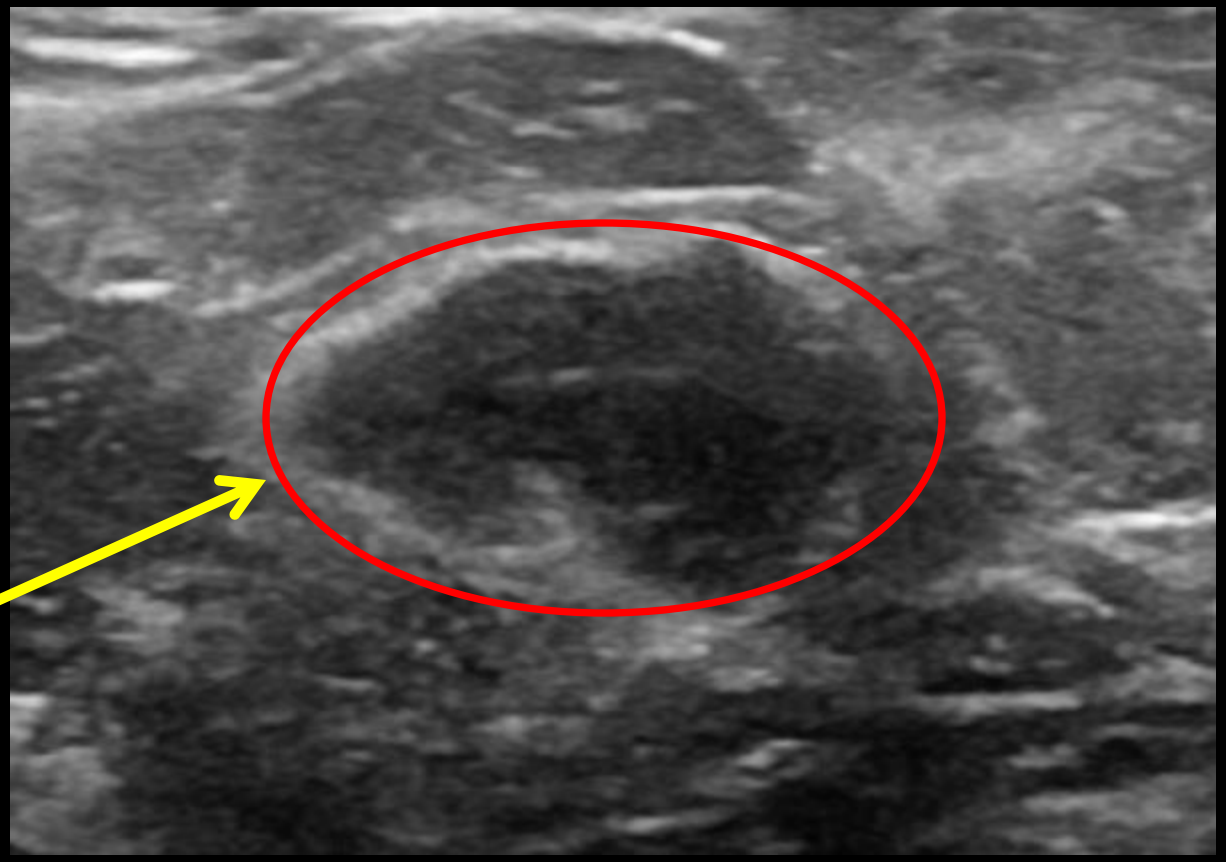
Diagnostic Ultrasound



Abnormal axillary lymph node with cortical thickening of 0.7 cm

A unilateral left axillary lymph node with cortical thickening (0.7 cm) was noted. No evidence of suspicious lesion on left whole breast ultrasound.

Diagnostic Ultrasound



Abnormal axillary lymph node with cortical thickening of 0.8 cm

At **2-month follow up**, cortical thickening increased to 0.8 cm, prompting ultrasound guided biopsy.

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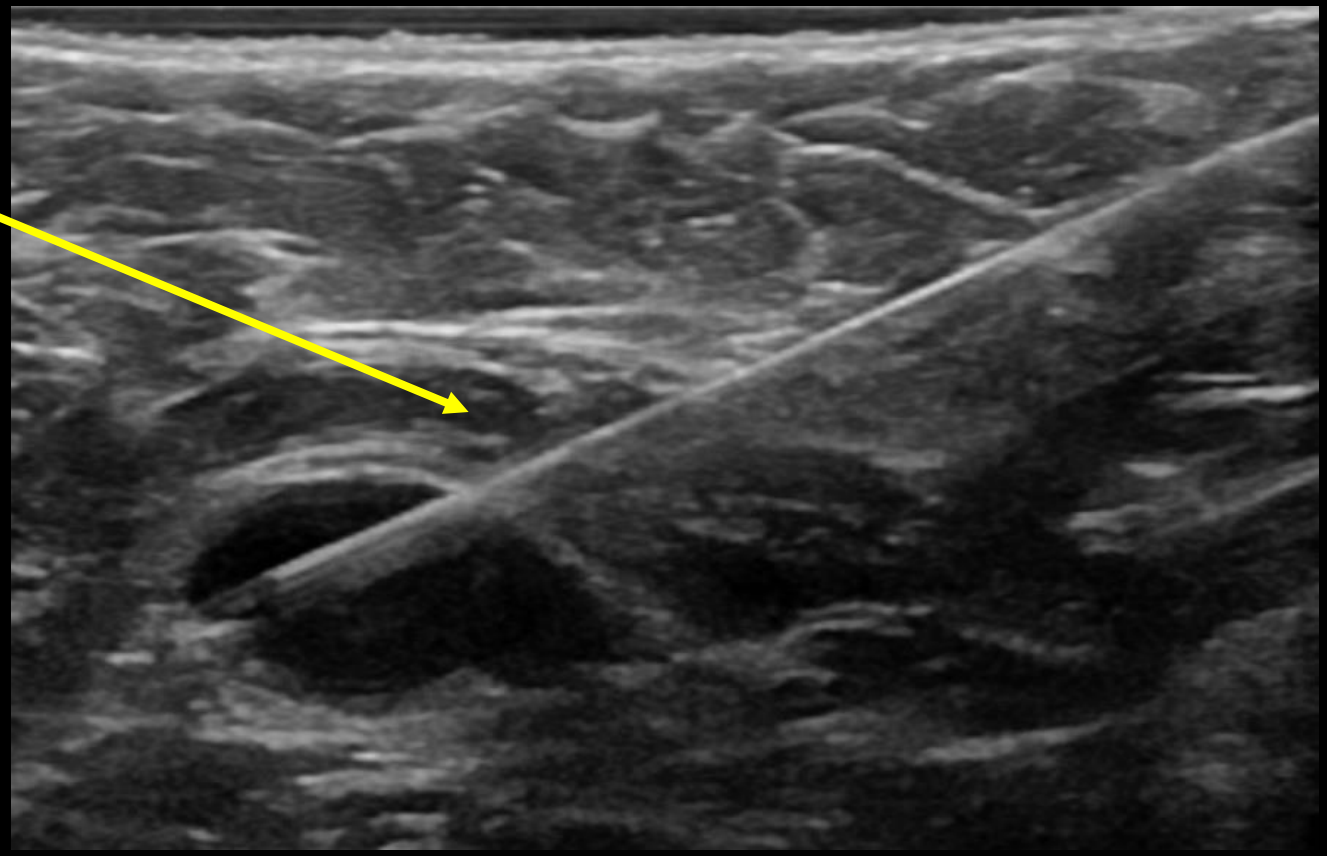
Diagnostic Ultrasound

Core needle biopsy



Biopsy revealed metastatic carcinoma with ER positive, PR positive, HER2/neu negative , Ki-67 6%

Pertinent Labs

Core Needle Biopsy Results:

Flow Cytometry

- No diagnostic features of a lymphoproliferative neoplasm observed.

Histology

- **Diagnosis:** Metastatic carcinoma involving lymph node tissue.
  Immunohistochemistry: The carcinoma is positive for CKAE1/AE3 and GATA3, while negative for SOX10, consistent with a mammary primary.

Hormone Receptor & Proliferation Status

- Estrogen Receptor (ER): Positive (>90% moderate nuclear staining)
- Progesterone Receptor (PgR): Positive (49% moderate nuclear staining)
- HER-2 neu score: 0 (Negative)
- Proliferation Index (Ki-67): 6% nuclear staining

What Imaging Should We Order?

Mammogram and whole breast ultrasound showed no findings of a primary breast cancer. Breast MRI with & without contrast is recommended to identify site of primary carcinoma and breast surgeon consultation.

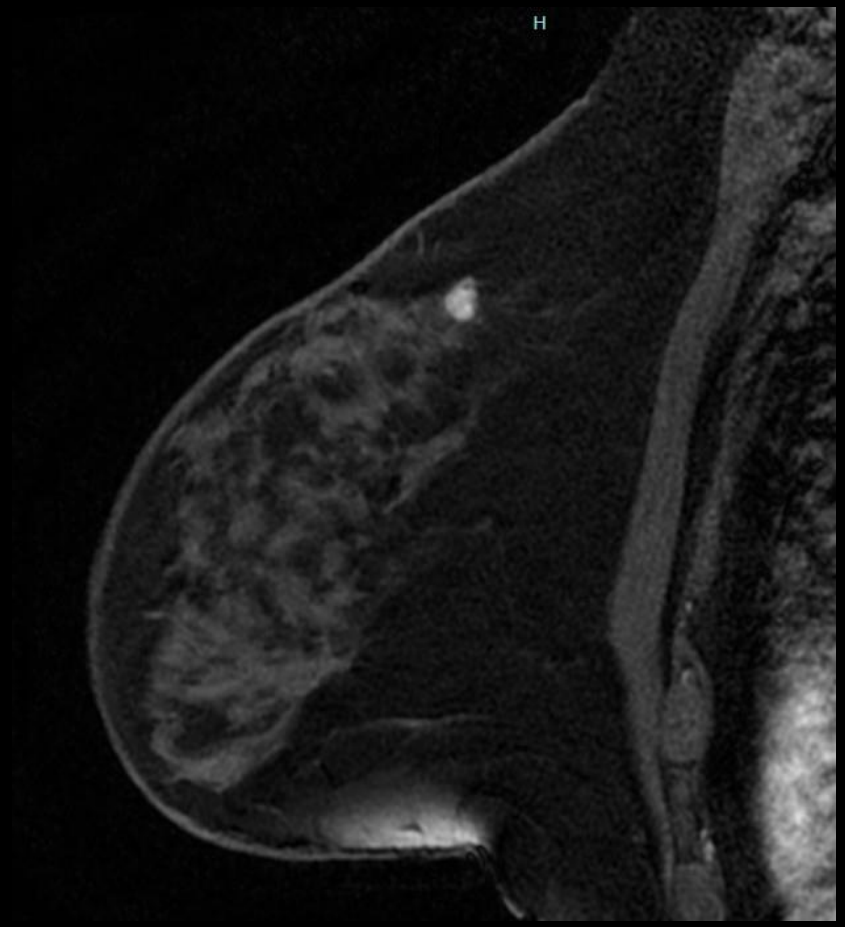
ACR Appropriateness Criteria

Variant 1: **Newly diagnosed. Clinical stage I-IIA (early stage) breast cancer at presentation. Evaluation for locoregional disease (includes invasive ductal carcinoma [IDC], or invasive lobular carcinoma [ILC], or not otherwise specified [NOS]).**

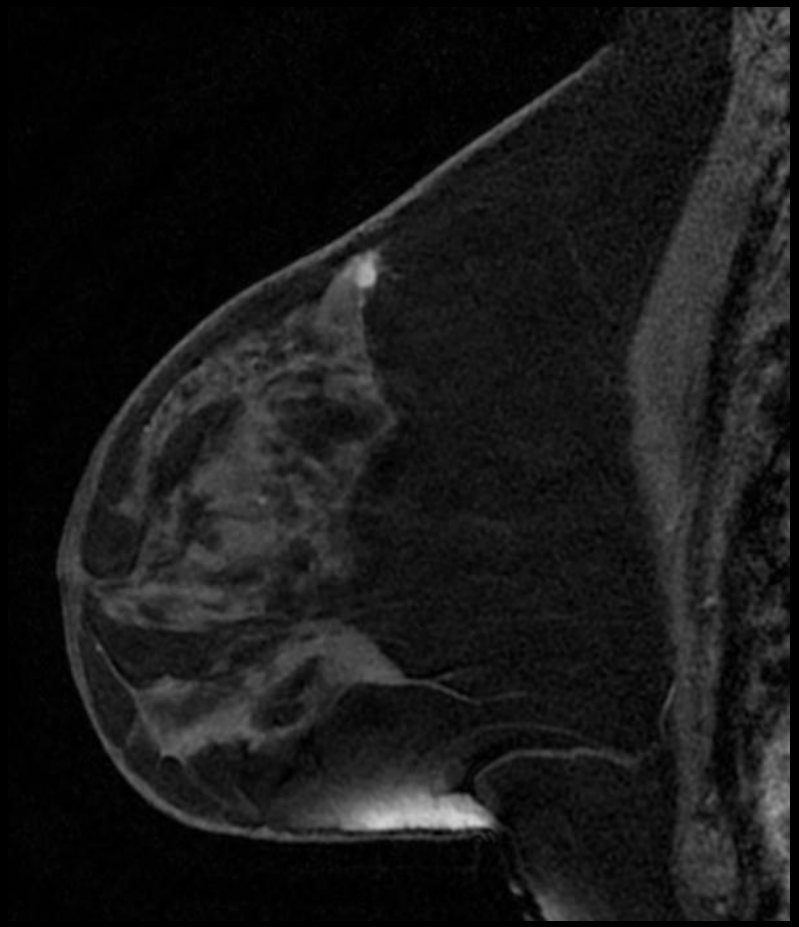
Procedure	Appropriateness Category	Relative Radiation Level
US breast	Usually Appropriate	O
Digital breast tomosynthesis diagnostic	Usually Appropriate	☢☢
Mammography diagnostic	Usually Appropriate	☢☢
MRI breast without and with IV contrast	Usually Appropriate	O
US axilla	May Be Appropriate	O
Mammography with IV contrast	May Be Appropriate	☢☢
MRI breast without IV contrast	Usually Not Appropriate	O
Bone scan whole body	Usually Not Appropriate	☢☢☢
CT chest abdomen pelvis with IV contrast	Usually Not Appropriate	☢☢☢☢
CT chest abdomen pelvis without and with IV contrast	Usually Not Appropriate	☢☢☢☢
CT chest abdomen pelvis without IV contrast	Usually Not Appropriate	☢☢☢☢
FDG-PET/CT skull base to mid-thigh	Usually Not Appropriate	☢☢☢☢

This imaging modality was ordered

MRI Left Breast

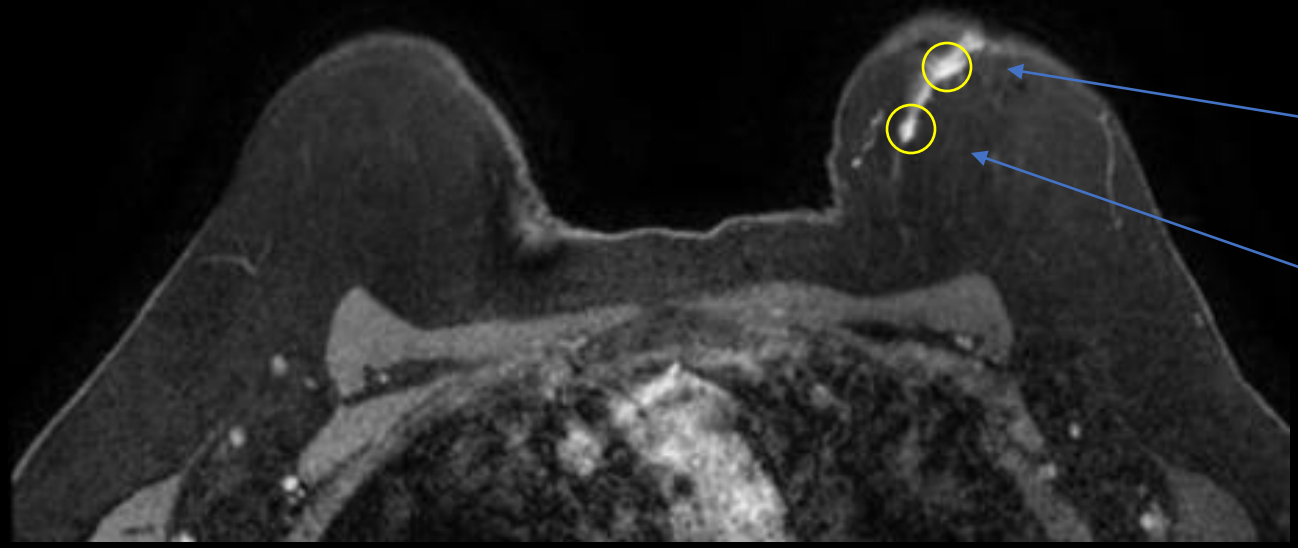


Sagittal post contrast sequence, 10:00 Mass
No associated T2 hyperintensity



Sagittal post contrast sequence, 11:00 Mass

Breast MRI



Axial postcontrast images showing two masses, intertervening non mass enhancement forming linear distributions

MRI Biopsy Results

A. Left breast, mass at 11:00; MRI guided biopsy:
- Invasive ductal carcinoma, grade 1, measuring 4 mm in maximum length

Immunohistochemical stains show that the tumor cells are positive for CK7. p63 and calponin support the impression of invasive carcinoma. The tumor cells have strong membranous expression of E-cadherin, supporting ductal phenotype.

B. Left breast, mass at 10:00; MRI guided biopsy:
- Fibroadipose tissue with blood.

Final Dx:

Invasive Ductal Carcinoma of the Breast

Case Discussion

Background

- Occult breast cancer without a detectable primary tumor in the breast is rare, accounting for less than 1% of all breast cancer diagnoses.
- Invasive ductal carcinoma (IDC) is the most common type of invasive breast cancer (80%)[1]
- Incidence in US ≈ 285 per 100,000 women [1]
- IDCs come in different subtypes including tubular, invasive cribriform, and mucinous carcinoma [2]

Diagnosis

- Breast MRI is most accurate in determining tumor margins and size.[3,4]
- All specimens should be tested for ER, PR, and HER-2 receptors [4,5]
- Other histological components include tumor grade, Ki-67 Index, morphology, tumor necrosis, and precancerous lesions. [5]

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Case Discussion

Management

- Recent studies suggest Breast MRI is the most accurate imaging modality for IDC tumor size evaluation. [4]
- Once a suspicious lesion is identified, tissue biopsy is performed with imaging guidance. [5]
- Options to excise the primary tumor include partial mastectomy to a total mastectomy. [4,5]
- Chemotherapy is indicated based on the tumor's molecular profile. [3,4]
- Anti-estrogen or aromatase inhibitor therapy is indicated in patients with positive hormone receptors. [4,5]

Case Discussion

Connecting to Case

- Mammography and ultrasound did not identify a primary lesion; however, breast MRI in this patient revealed a suspicious lesion corresponding to the positive axillary lymph node. Aligning with published evidence supporting MRI's high sensitivity in Occult Breast Cancer (OBC).
- OBC may present as an isolated axillary metastasis on mammogram and ultrasound.
- Breast MRI is the imaging modality of choice when mammogram and ultrasound are negative.
- Management of OBC follows invasive breast cancer protocols and is guided by tumor's biological profile.

References:

1. Kao, Y., Wu, YJ., Hsu, CC. *et al.* Short- and long-term recurrence of early-stage invasive ductal carcinoma in middle-aged and old women with different treatments. *Sci Rep* **12**, 4422 (2022). https://doi.org/10.1038/s41598-022-08328-4
2. Makki J. Diversity of Breast Carcinoma: Histological Subtypes and Clinical Relevance. Clin Med Insights Pathol. 2015;8:23-31. Published 2015 Dec 21. doi:10.4137/CPath.S31563
3. Schnitt SJ, Moran MS, Giuliano AE. Lumpectomy Margins for Invasive Breast Cancer and Ductal Carcinoma in Situ: Current Guideline Recommendations, Their Implications, and Impact. J Clin Oncol. 2020;38(20):2240-2245. doi:10.1200/JCO.19.03213
4. Menon G, Alkabban FM, Ferguson T. Breast Cancer. [Updated 2024 Feb 25]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK482286/
5. Watkins EJ. Overview of breast cancer. JAAPA. 2019;32(10):13-17. doi:10.1097/01.JAA.0000580524.95733.3d

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