AMSER Case of the Month April 2025

A 39-year-old female with an irregularity of the scalp presents for routine screening mammogram…

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Patient Presentation

- The patient, a 39-year-old female, presented for evaluation after a first degree relative was diagnosed with breast cancer at under 40 years of age.
- She had no documented past medical or surgical history. She had not experienced any recent weight loss, night sweats, or breast changes. At the time of presentation, she was separately pursuing evaluation of an area of irregularity on her scalp.
- On physical exam, the patient had no palpable breast masses or overlying skin changes.

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 2: **Adult female. Breast cancer screening. Intermediate risk.** *

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

Ordered by provider

*Patient considered intermediate risk due to family history of young (<40 y.o) breast cancer in first degree relative WITHOUT genetic correlate (BRCA negative, no evidence of Li Fraumeni).

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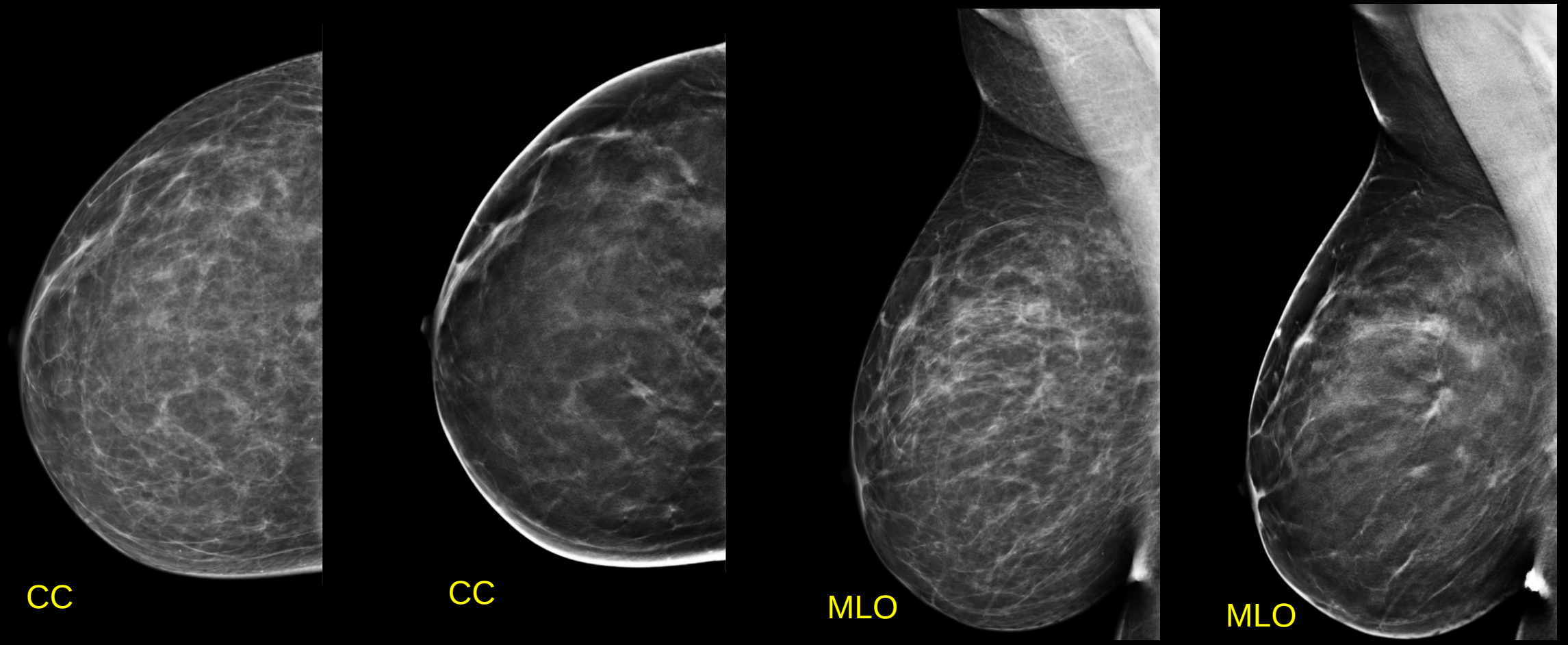
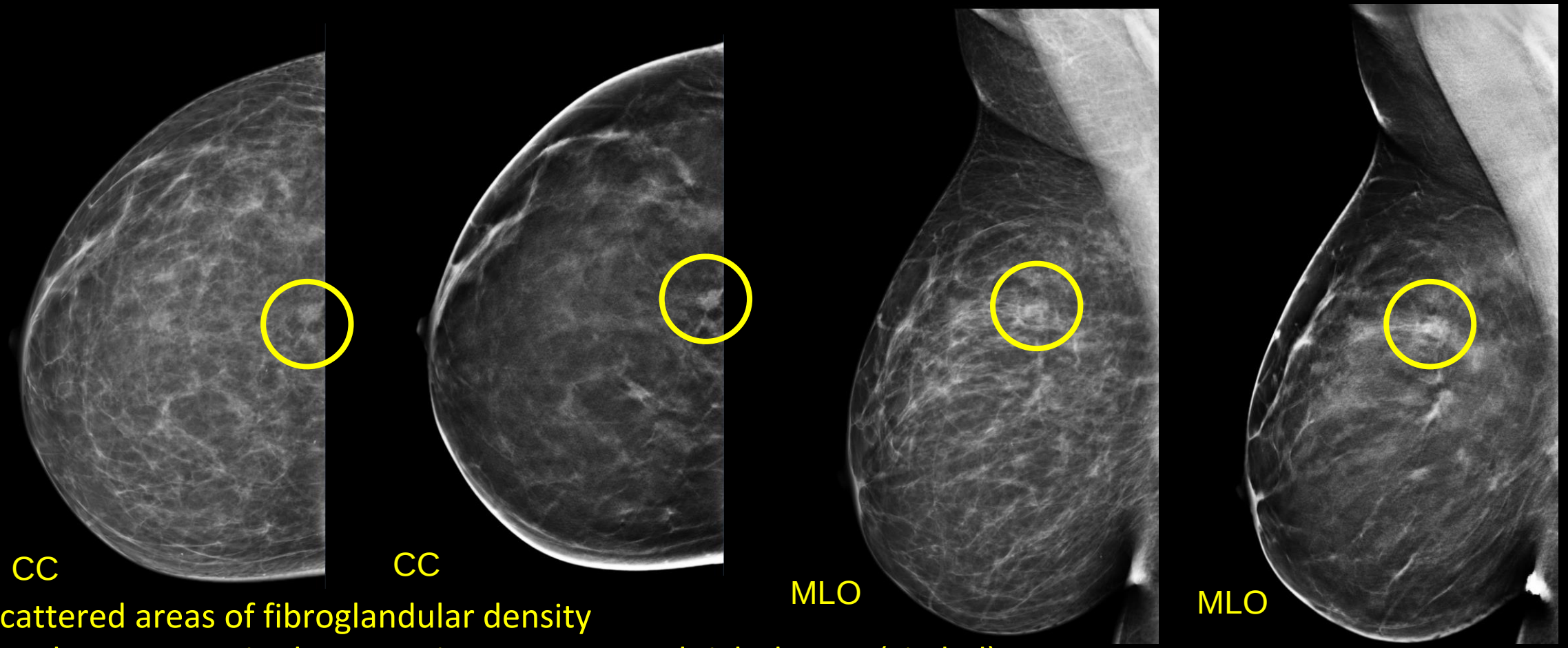
Screening Mammogram (unlabeled)

*Right breast



Screening Mammogram (labeled)

*Right breast



- Scattered areas of fibroglandular density
- Focal asymmetry in the posterior upper central right breast (circled)
- Further imaging of right breast indicated. BI-RADS Category 0

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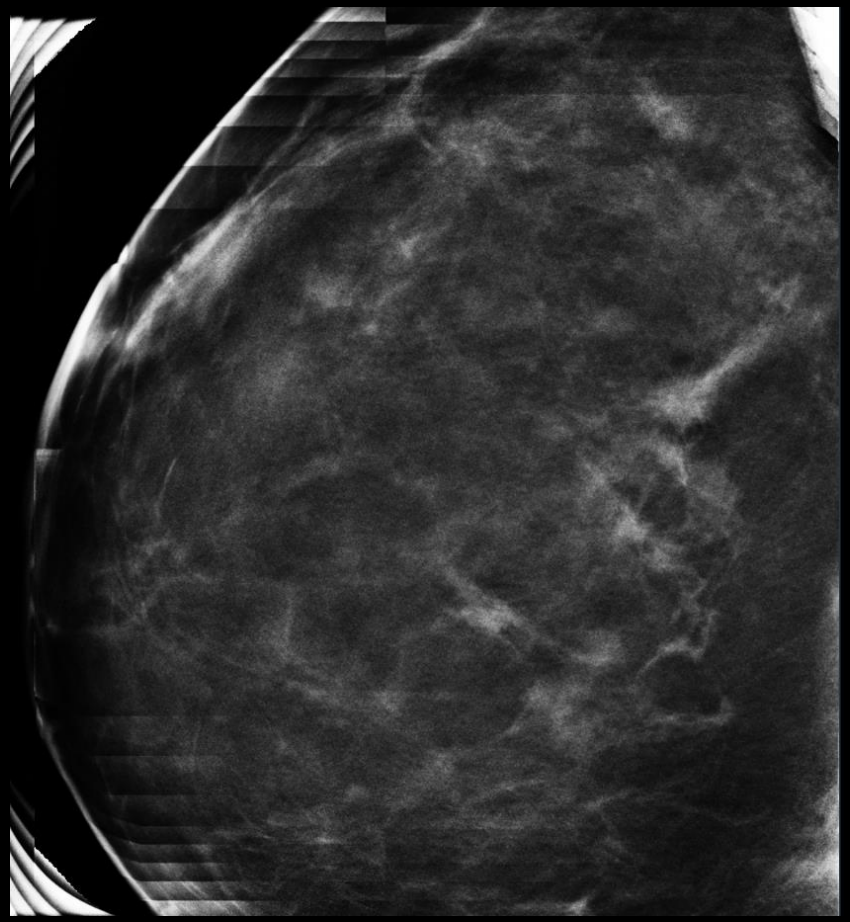
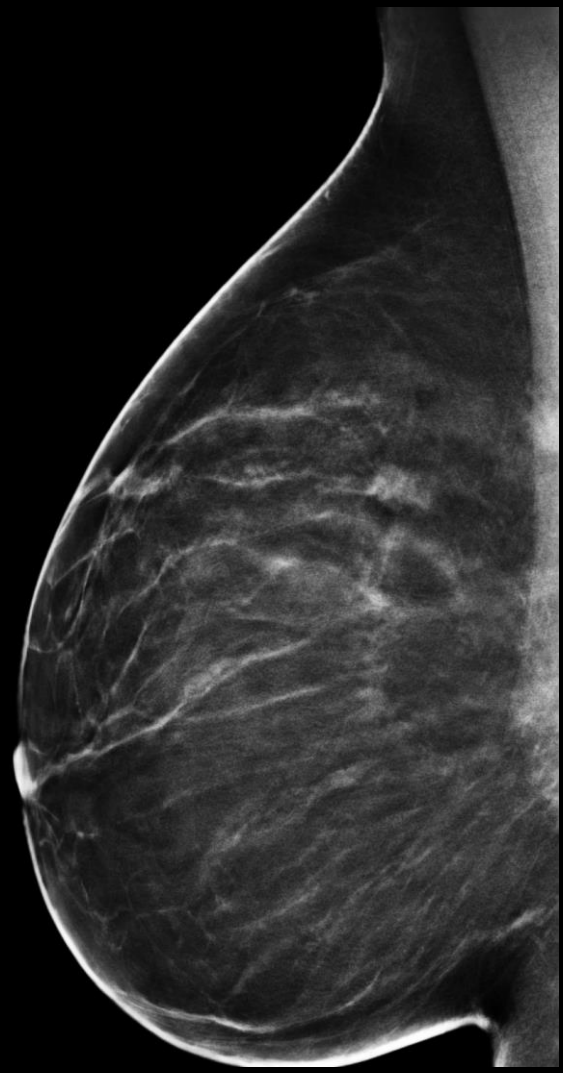
Diagnostic Mammogram (unlabeled)

*Right breast





Spot CC and ML tomosynthesis

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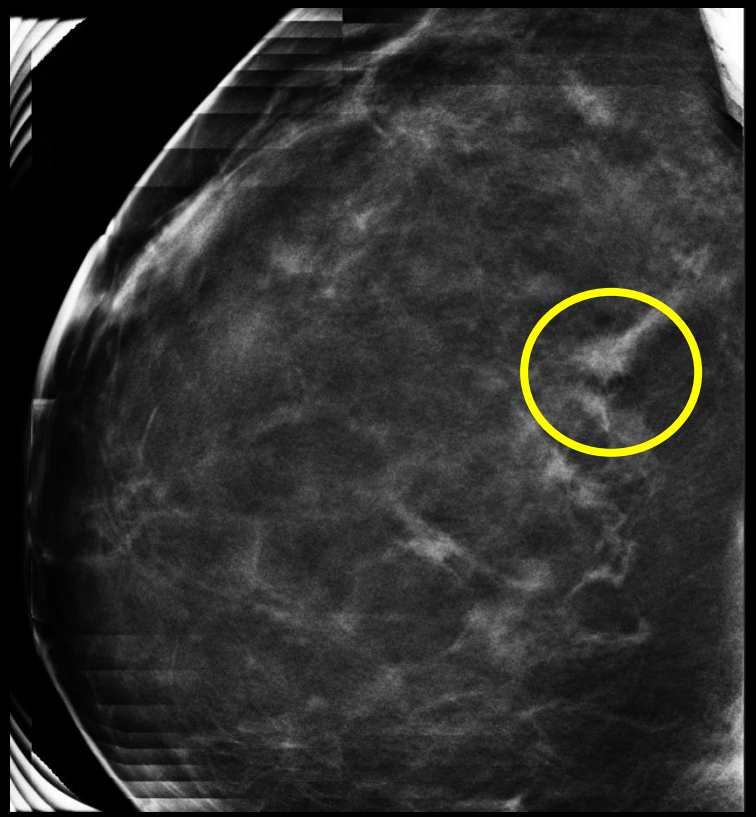
Diagnostic Mammogram (labeled)

*Right breast



- Additional views with SPOT tomosynthesis showed persistence of the asymmetry
- No ultrasound correlate
- Asymmetry on baseline mammogram is BI-RADS Category 3: Probably Benign.

Spot CC and ML tomosynthesis views with asymmetry marked

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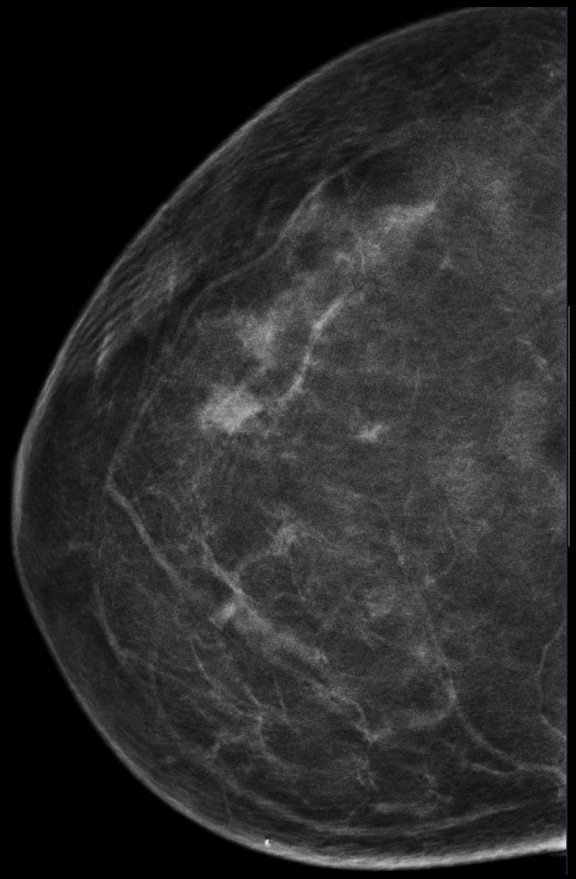
Recommendation by radiologist: Return for diagnostic mammogram in 6 months.

The patient returned for imaging 10 months after initial diagnostic mammogram.

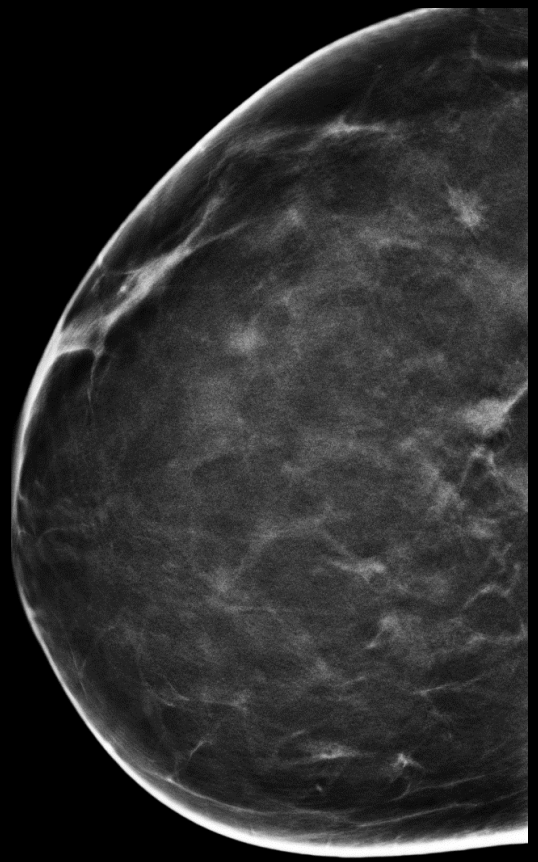
Diagnostic Mammogram (unlabeled)

10 months after initial

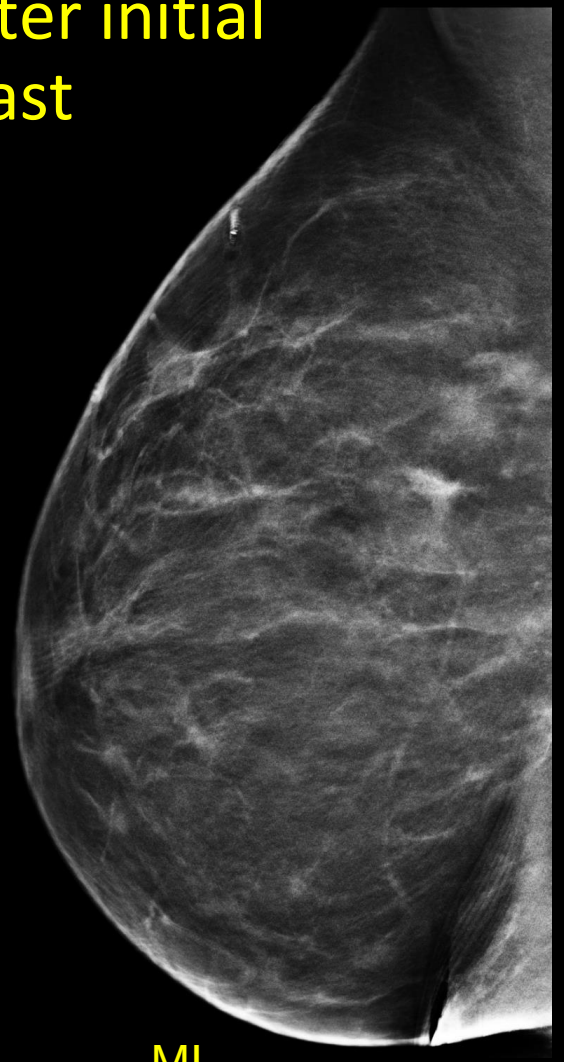
*R breast



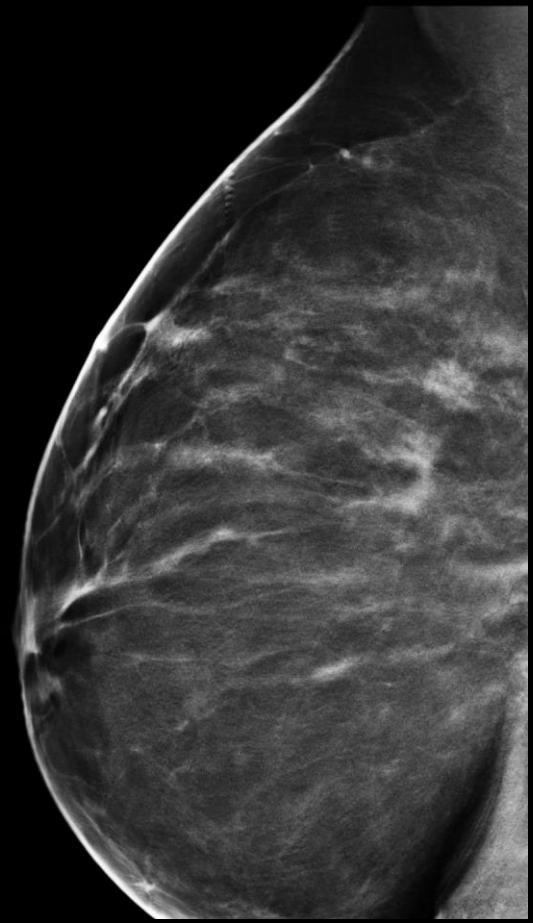
CC



CC



ML



ML

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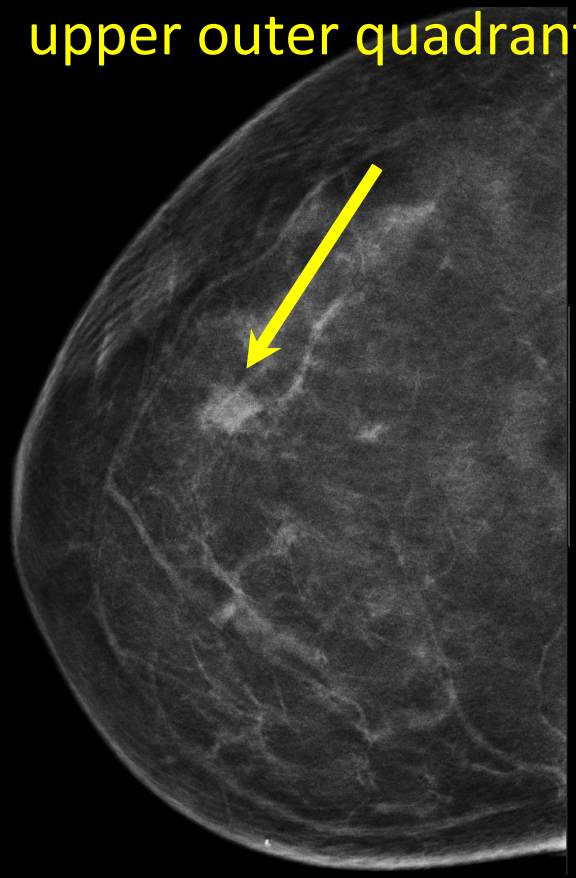
Diagnostic Mammogram (labeled)

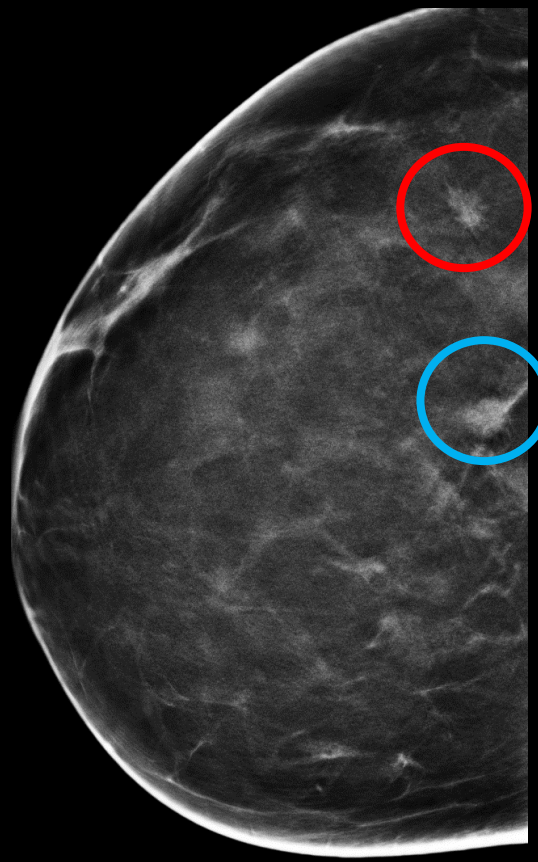
10 months after initial

*R breast

Multiple asymmetries now seen within right upper outer quadrant



CC



CC

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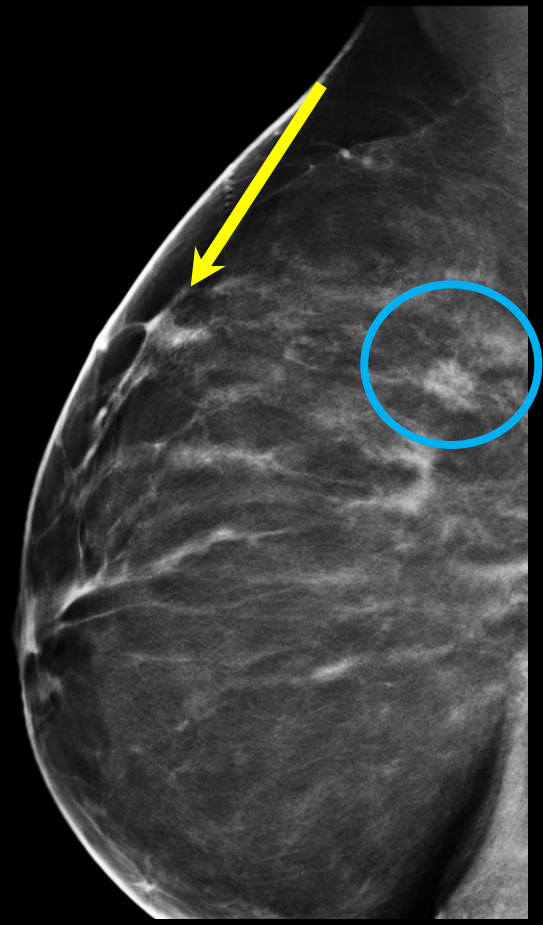

ML

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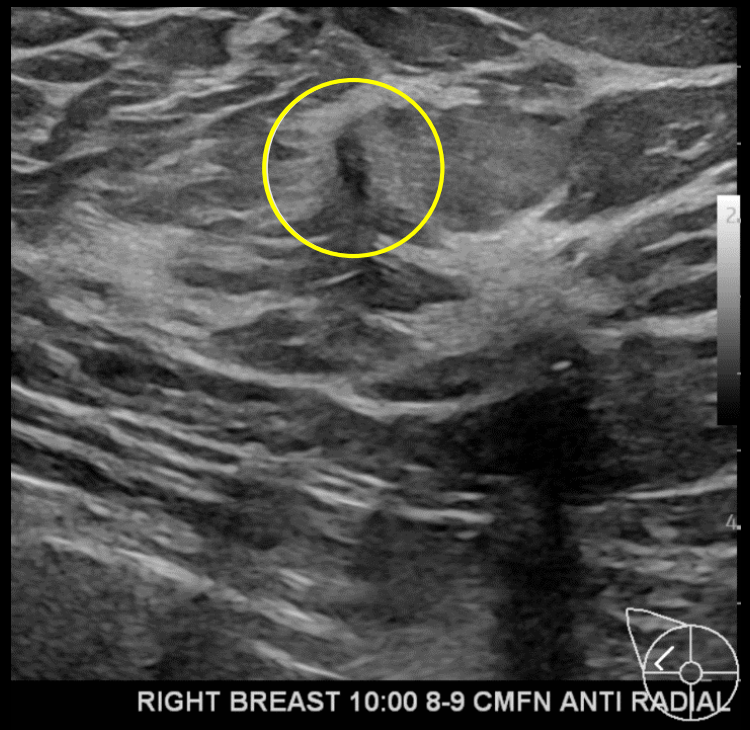
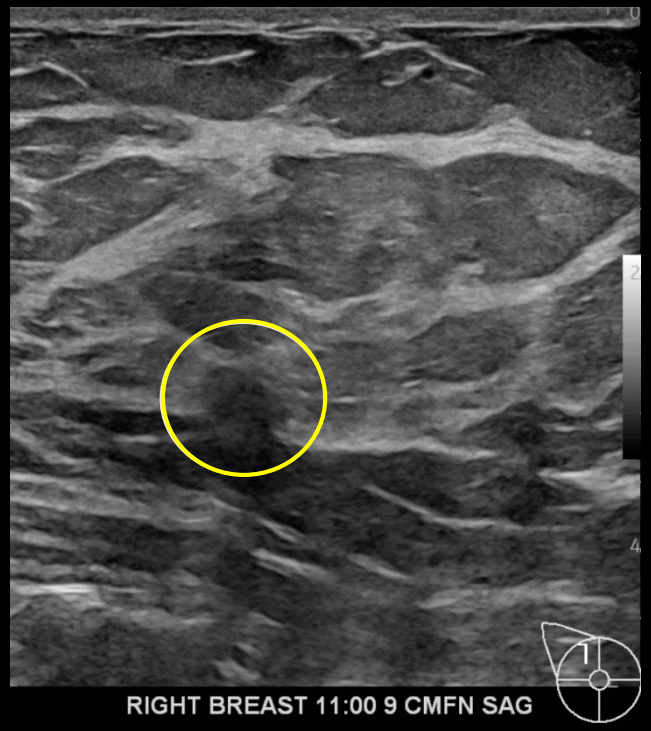
Ultrasound Findings (unlabeled)

*R breast

Ultrasound findings (labeled)

*R breast





- Three masses on ultrasound: Suspicious, Biopsy Recommended
  - 10:00, 8 to 9 cm from the nipple 0.4 x 0.6 x 0.3 cm mass
  - 11:00, 9 cm from the nipple 0.7 x 0.5 x 0.7 cm mass
  - 12:00, 5 cm from the nipple 0.8 x 0.6 x 0.6 cm mass

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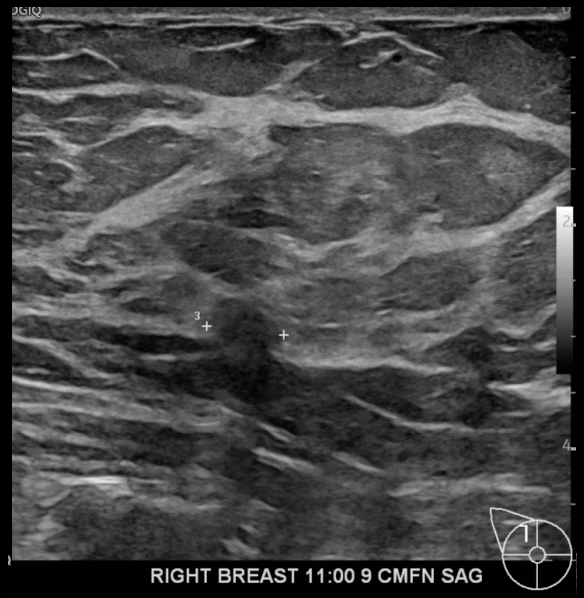
Ultrasound Guided Core Needle Biopsy of R Breast

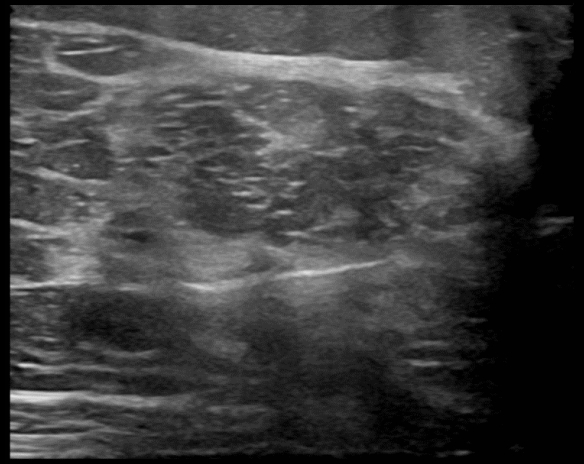
RIGHT BREAST 12:00 5 CMFN RADIAL



RIGHT BREAST 11:00 9 CMFN SAG

RIGHT BREAST 10:00 8-9 CMFN ANTI RADIAL

RT BREAST 12:00 5 CM FN CORE BX
POST-FIRE 1



RT BREAST 11:00 9 CM FN CORE BX
PRE-FIRE 4

RT BREAST 10:00 8-9 CM FN CORE BX
PRE-FIRE 2

Pathology findings at all sites show…

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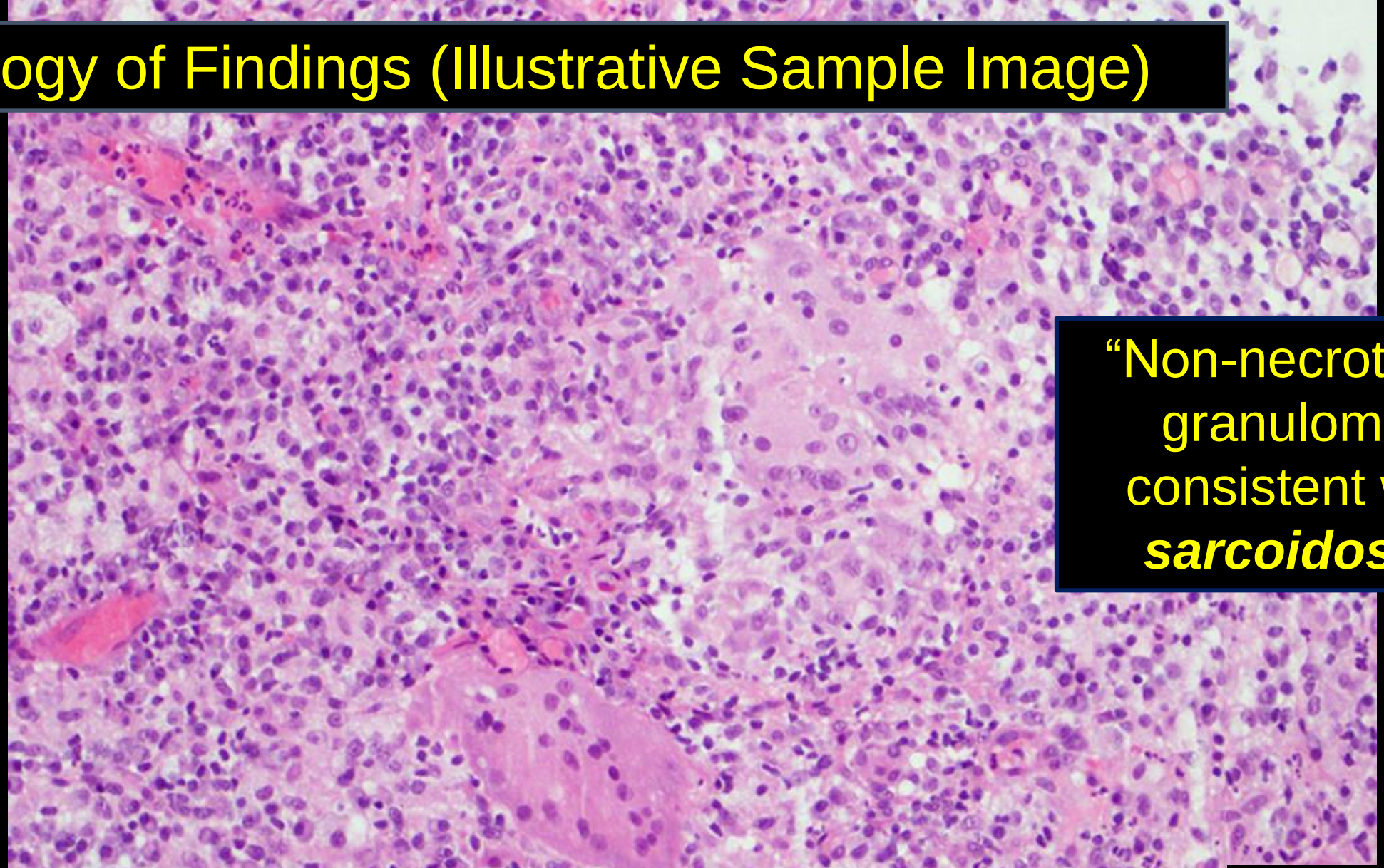
Pathology of Findings (Illustrative Sample Image)



"Non-necrotizing granulomas consistent with ***sarcoidosis***"

Kaddoura, R., Al Haj, M., Faraji, H., Abdalbari, K., Mohamed, A. (2023, October 16). A rare case of sarcoidosis presenting as an isolated breast mass and pain: A case report and literature review. *American Journal of Case Reports, 24*, e940919-1-e940919-5. https://doi.org/10.12659/AJCR.940919

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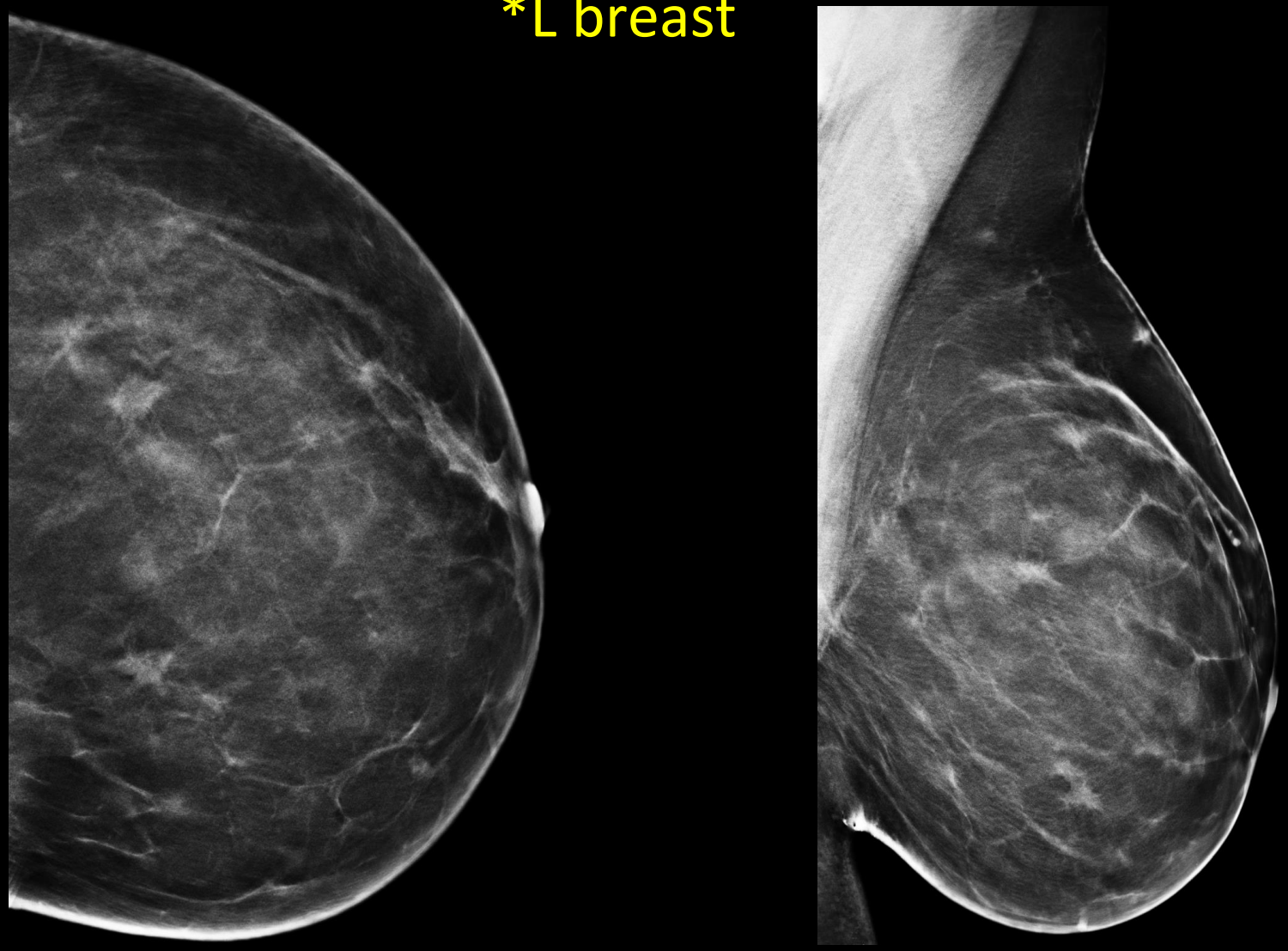
Diagnostic Mammogram (unlabeled)

Ordered at 10 mo. follow-up of R breast findings

*L breast

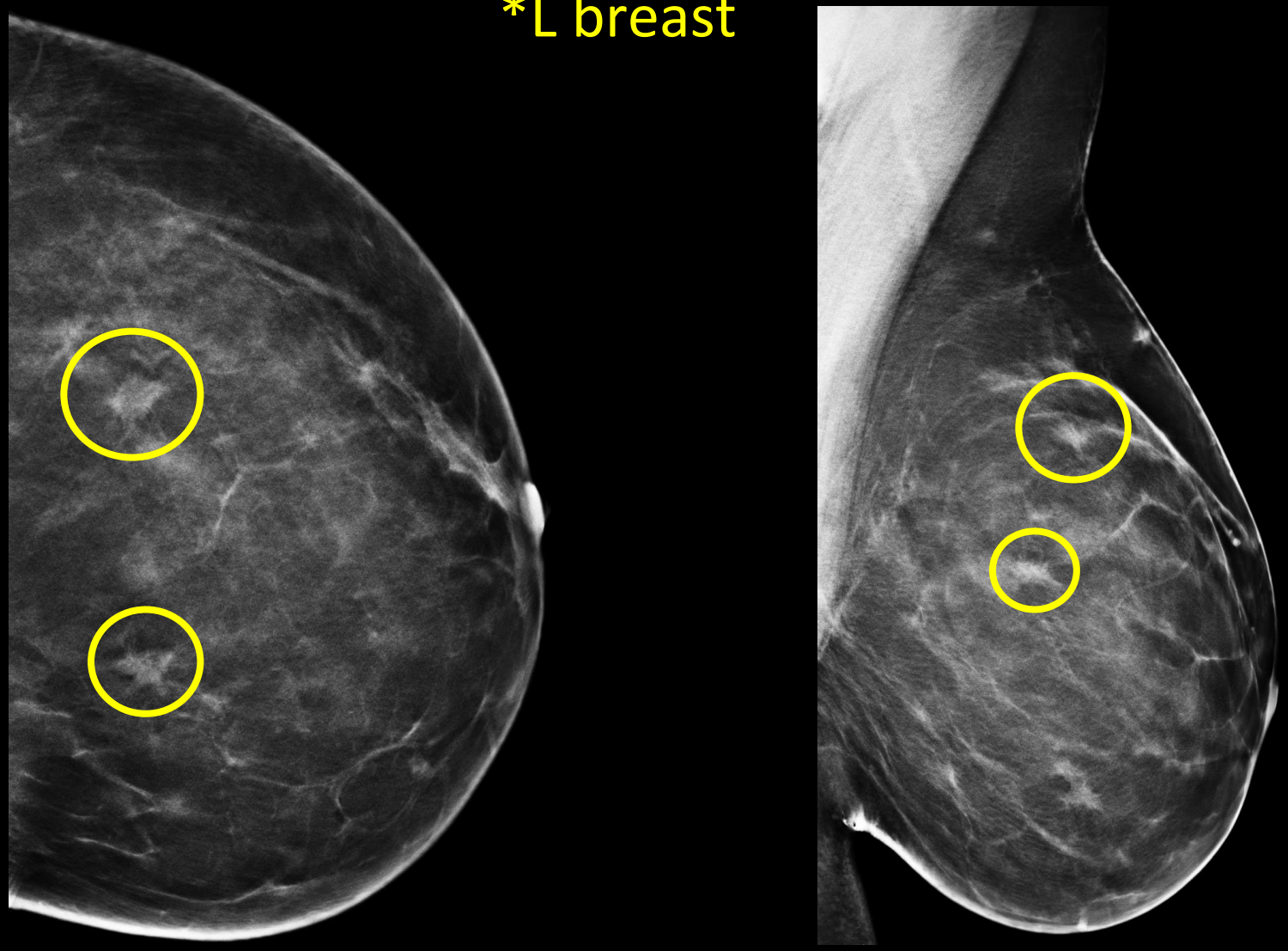


Diagnostic Mammogram (labeled)

Ordered at 10 mo. follow-up of R breast findings

*L breast

- Multiple findings in right breast prompted re-imaging of the left breast at follow-up
- Similarly, multiple asymmetries seen



What Imaging Should We Order?

After biopsy of the right breast findings and identifying radiologically similar findings in the left breast, we decided to pursue imaging to demonstrate the extent of bilateral breast involvement

Select the applicable ACR Appropriateness Criteria

Ordered by provider

MRI ordered per criteria despite non-malignant pathology. The patient's multiple additional abnormal breast findings on diagnostic mammogram indicated utility of MRI for evaluation of scope of breast involvement. Risk remains intermediate due to family history.

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Sestamibi MBI	Usually Not Appropriate	☢☢☢

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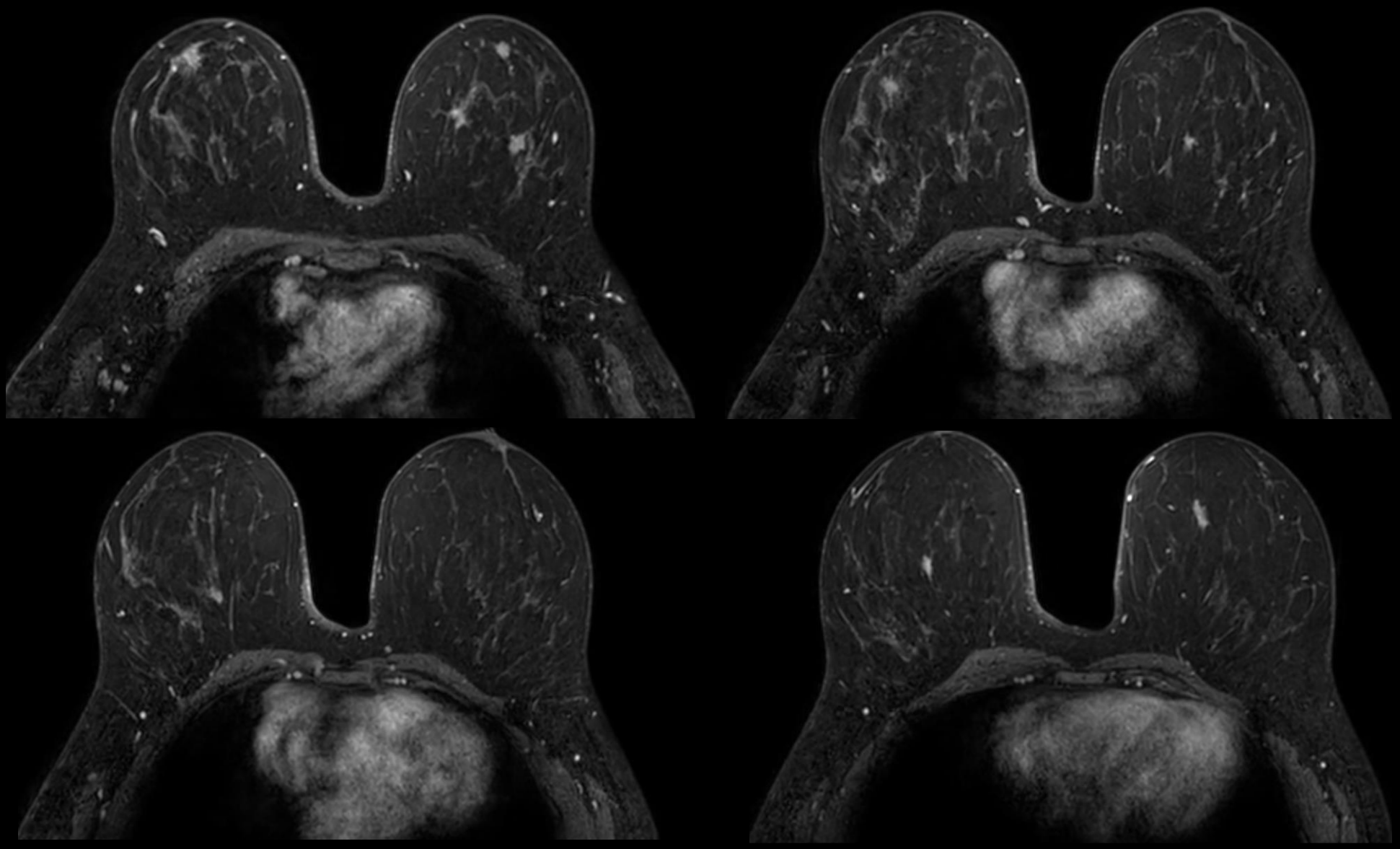
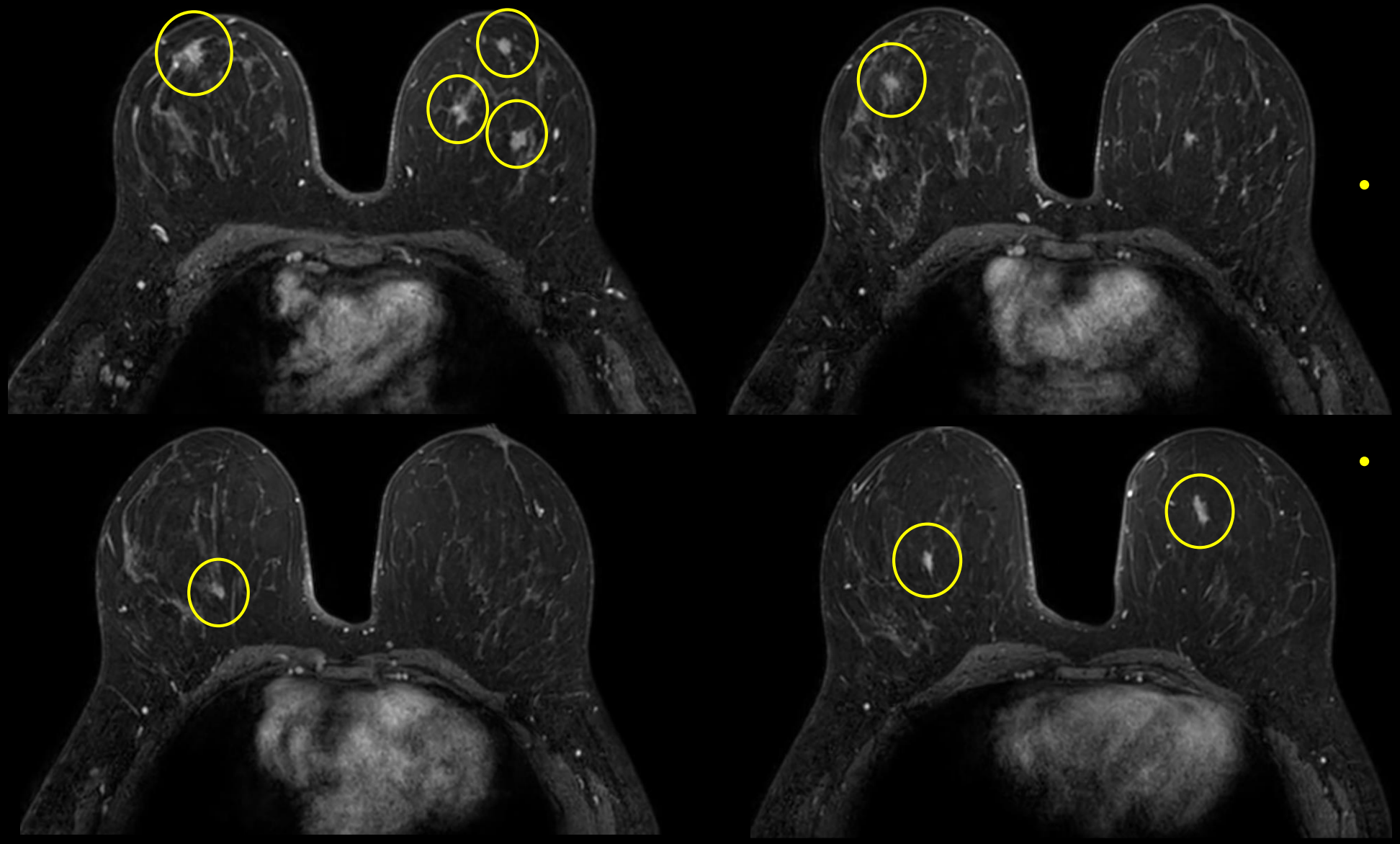
Bilateral MR (unlabeled)



Post-contrast T1 with fat sat

- The patient underwent bilateral breast MRI to evaluate the extent of breast involvement

Bilateral MR (labeled)



Post-contrast T1 with fat sat

- Multiple, similar-appearing, bilateral, enhancing masses with comparable appearance to the three biopsied masses on the right
- Radiologic similarities to already-biopsied sites indicate no further pathology investigation needed at this time

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Final Dx:

Sarcoidosis of the breast

Case Discussion: Sarcoidosis

- Our patient was undergoing workup of a scalp irregularity in parallel with her breast workup. Scalp biopsy also demonstrated sarcoidosis.
- Sarcoidosis: A non-caseating granulomatous disease of unknown origin, affecting multiple systems
  - Most commonly affects women ages 25-40
  - Sarcoidosis may present with “B symptoms”. However, 50% of patients are asymptomatic at time of diagnosis, as are a majority of breast sarcoid patients [2]
  - Elevated ACE enzymes in serum, pulmonary findings on imaging [5]

Sarcoidosis Manifestations

- Cutaneous sarcoidosis occurs in 30% of sarcoid patients, often presenting prior to pulmonary manifestations [1]
  - Most frequently on face and neck
- Breast sarcoidosis is a rare manifestation -- <1% of cases [4]
  - Often found later than other forms of sarcoidosis
  - Breast mass, pain may be present based on size
- May mimic breast carcinoma at initial presentation [4]

Case Treatment and Outcome

- Pulmonary function tests were pursued to evaluate possible lung involvement. These showed possible upper airway obstruction, however CXR showed no evidence of pulmonary sarcoidosis.
  - The patient remained asymptomatic for pulmonary manifestations at time of imaging.
- The patient was referred to rheumatology for comprehensive sarcoid evaluation. She has yet to follow up with breast imaging after initial diagnosis.
- Annual mammogram is recommended.

Recommendations

- Initial screening findings + family history raised concerns for breast cancer, prompting quick follow up with diagnostic mammogram and biopsy
  - Ideally, a shorter interval would exist between this patient's initial diagnostic evaluation and follow up
- Sarcoidosis far more often presents with pulmonary manifestations.
  - PFTs and CXR should always be next steps, along with referral to rheumatology.
- Although rare, consider breast sarcoidosis in the differential diagnosis for breast cancer, even without systemic symptoms [3]

References:

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2. Kaddoura R, Al Haj M, Faraji H, Abdalbari K, Mohamed A. A rare case of sarcoidosis presenting as an isolated breast mass and pain: A case report and literature review. Am J Case Rep. 2023;24:e940919-1-e940919-5. doi:10.12659/AJCR.940919

3. Ojeda H, Sardi A, Totoonchie A. Sarcoidosis of the breast: implications for the general surgeon. Am Surg. 2000;66(12):1144-1148.

4. Panzacchi R, Gallo C, Fois F, Dalpiaz G, Cucchi MC, Degli Esposti R, Foschini MP. Primary sarcoidosis of the breast: case description and review of the literature. Pathologica. 2010;102(3):104-107.

5. Valkovic Zujic P, Grebic D, Valencic L. Chronic granulomatous inflammation of the breast as a first clinical manifestation of primary sarcoidosis. Breast Care (Basel). 2015;10(1):51-53. doi:10.1159/000370206