AMSER Case of the Month January 2024

68-year-old male with prostate cancer presenting with abnormal radiotracer uptake along the right pectoralis muscle on Prostate-Specific Membrane Antigen (PSMA) PET/CT

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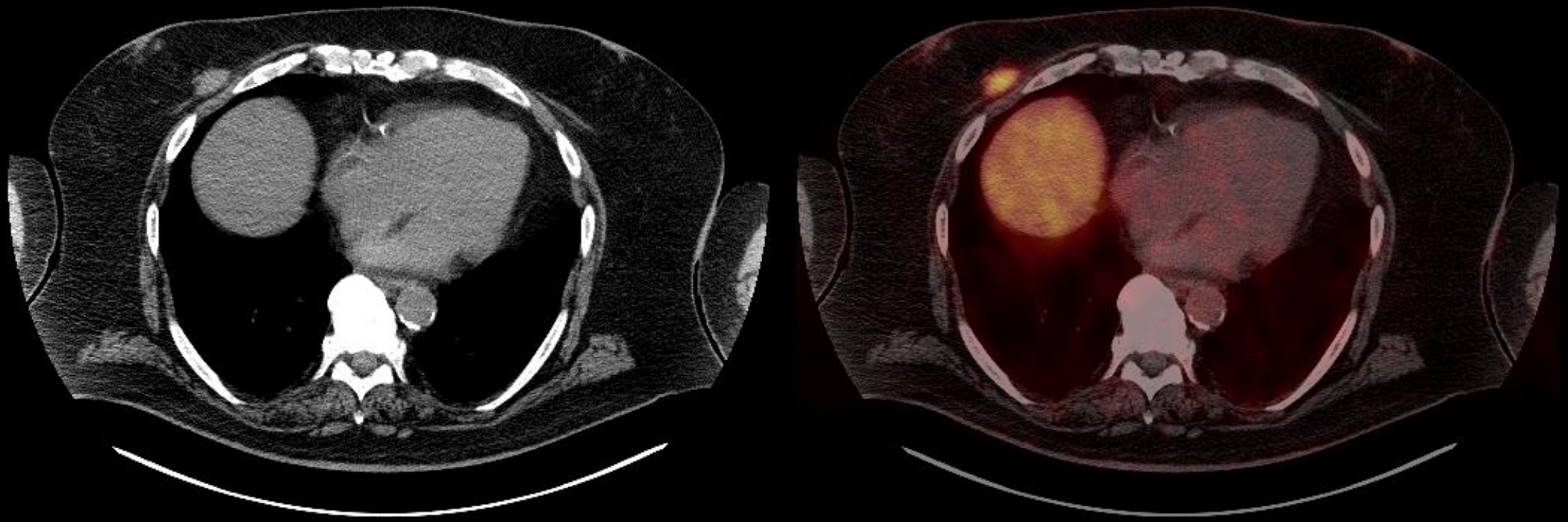
Patient Presentation

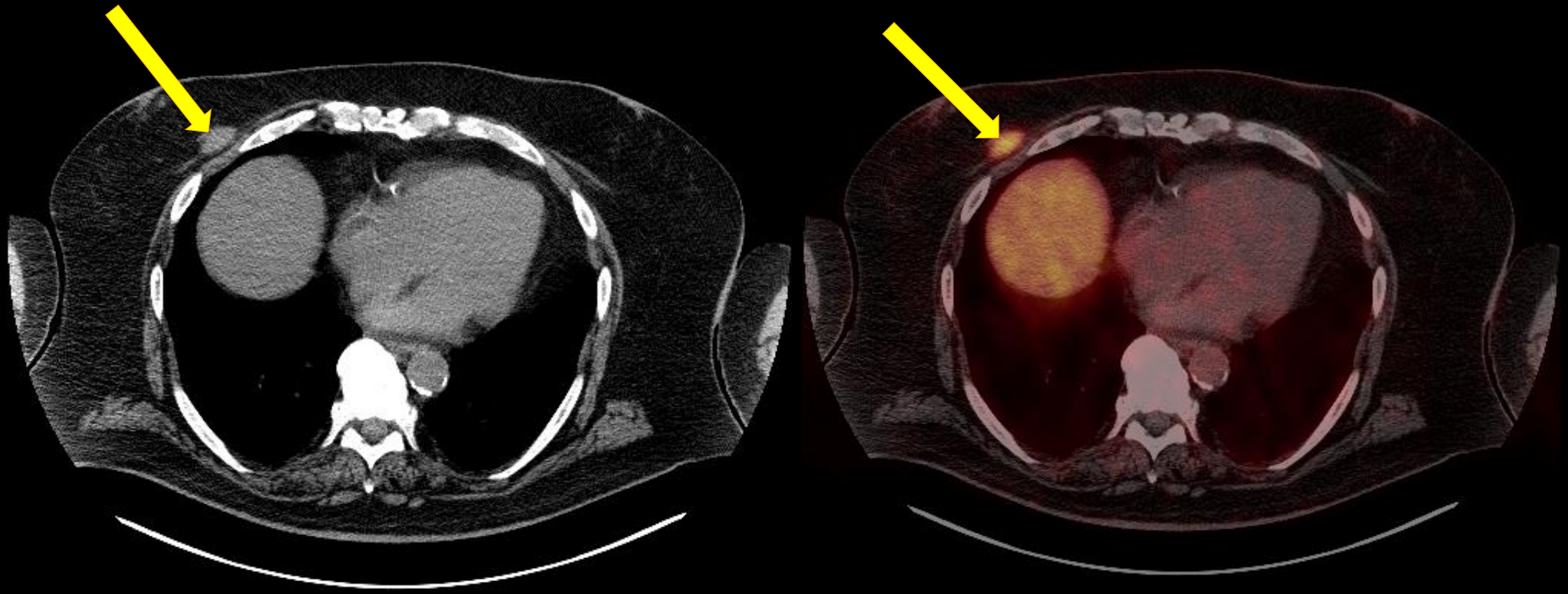
- HPI: 68-year-old male with newly diagnosed Gleason grade group 5 prostate cancer presented to the Breast Clinic after abnormal radiotracer uptake was seen anterior to the right chest wall pectoralis muscle on Prostate-Specific Membrane Antigen (PSMA) PET/CT, which was performed to check for overall prostate cancer metastases.
- PMHx: Hypertension, hyperlipidemia, obesity, gout, diabetes mellitus, nephrolithiasis, benign prostatic hyperplasia on dutasteride (for >5 years)
- FHx: No family history of breast cancer

Original PSMA PET/CT Scan (not labeled)



Original PSMA PET/CT Scan (labeled)

Abnormal radiotracer uptake anterior to the right chest wall pectoralis muscle (SUV max = 7.7)



What is the next appropriate step?

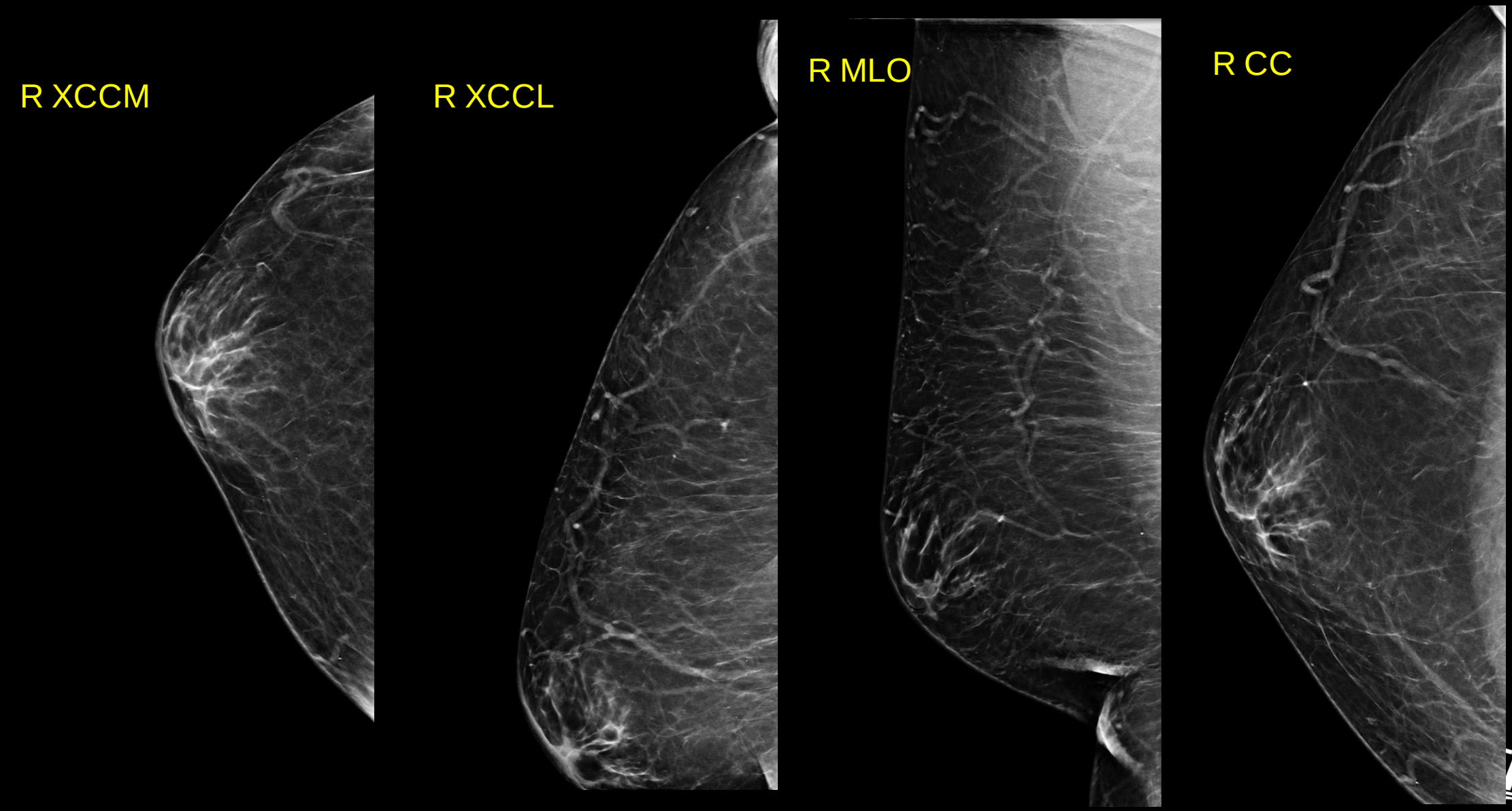
ACR Appropriateness Criteria

Variant 3: **Male 25 years of age or older with indeterminate palpable breast mass. Initial imaging.**

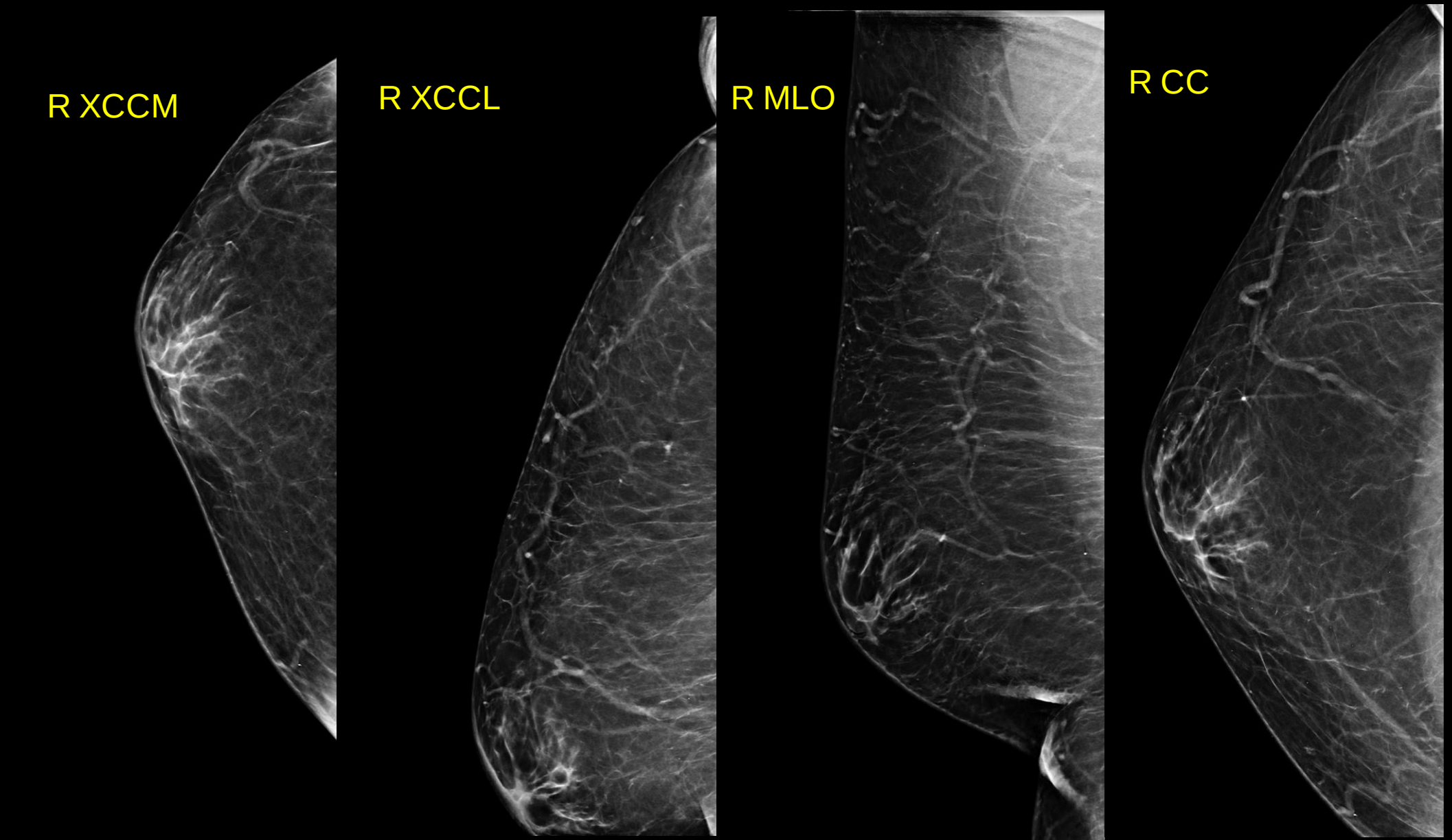
Procedure	Appropriateness Category	Relative Radiation Level
Mammography diagnostic	Usually Appropriate	☢☢
Digital breast tomosynthesis diagnostic	Usually Appropriate	☢☢
US breast	May Be Appropriate	O
MRI breast without and with IV contrast	Usually Not Appropriate	O
MRI breast without IV contrast	Usually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

Right Diagnostic Mammogram

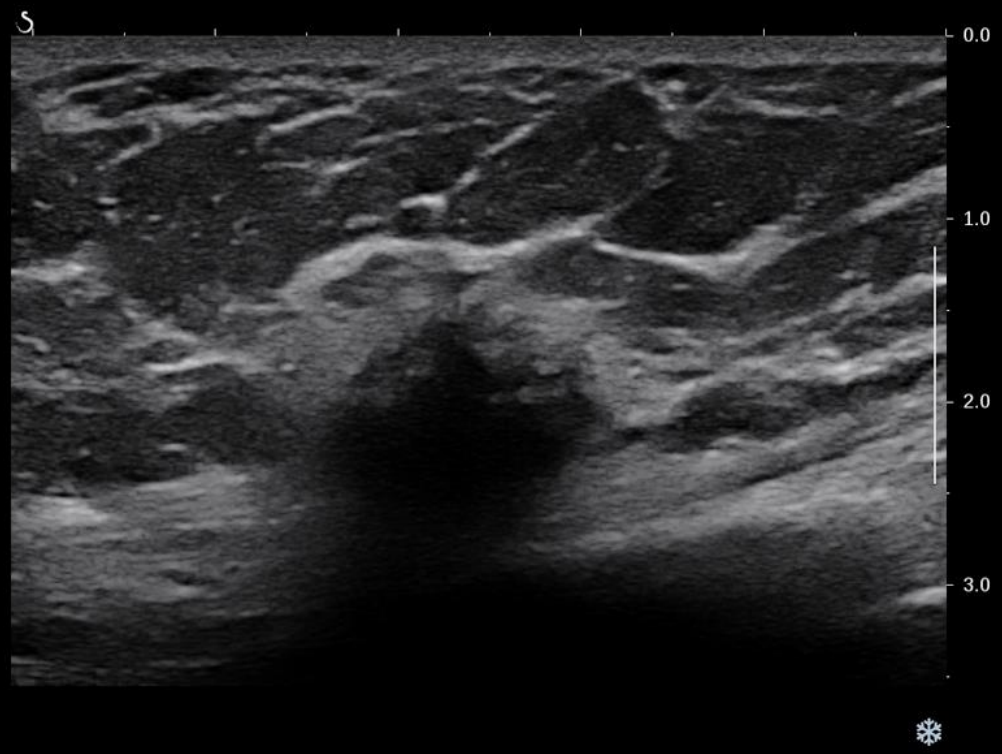
(not labeled)



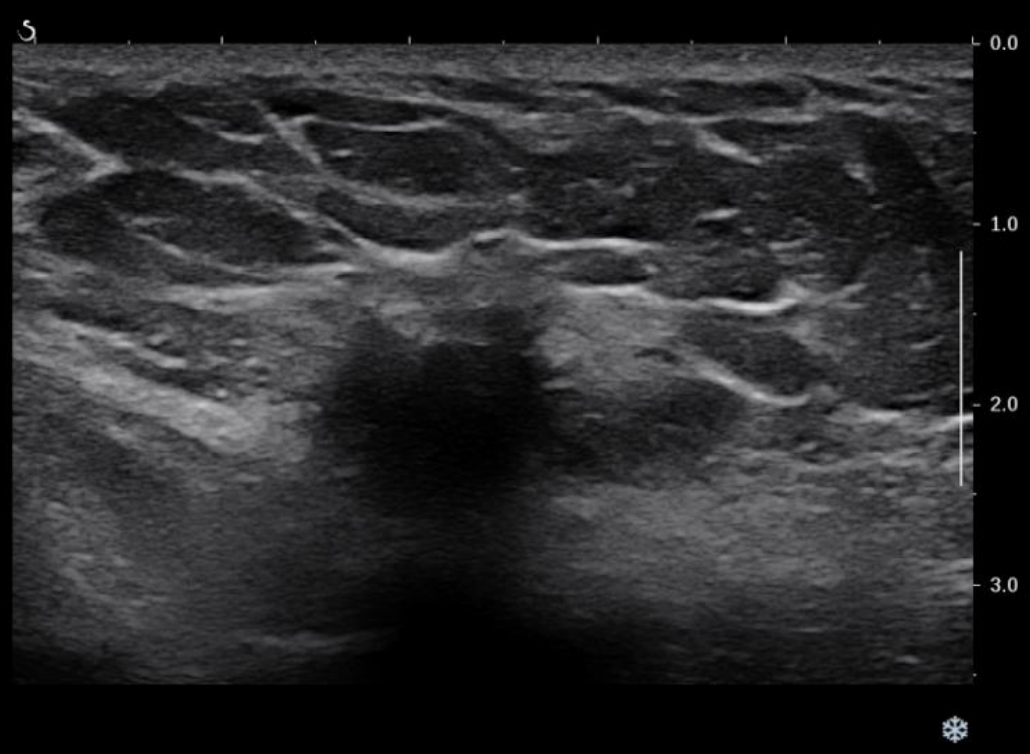
Right Diagnostic Mammogram: No mammographic abnormality seen in the expected location of the mass on PET scan



Right Breast Ultrasound (not labeled)



RT BREAST RADIAL 5:00 3 cm fn



RT BREAST ANTIRADIAL 5:00 3 cm fn

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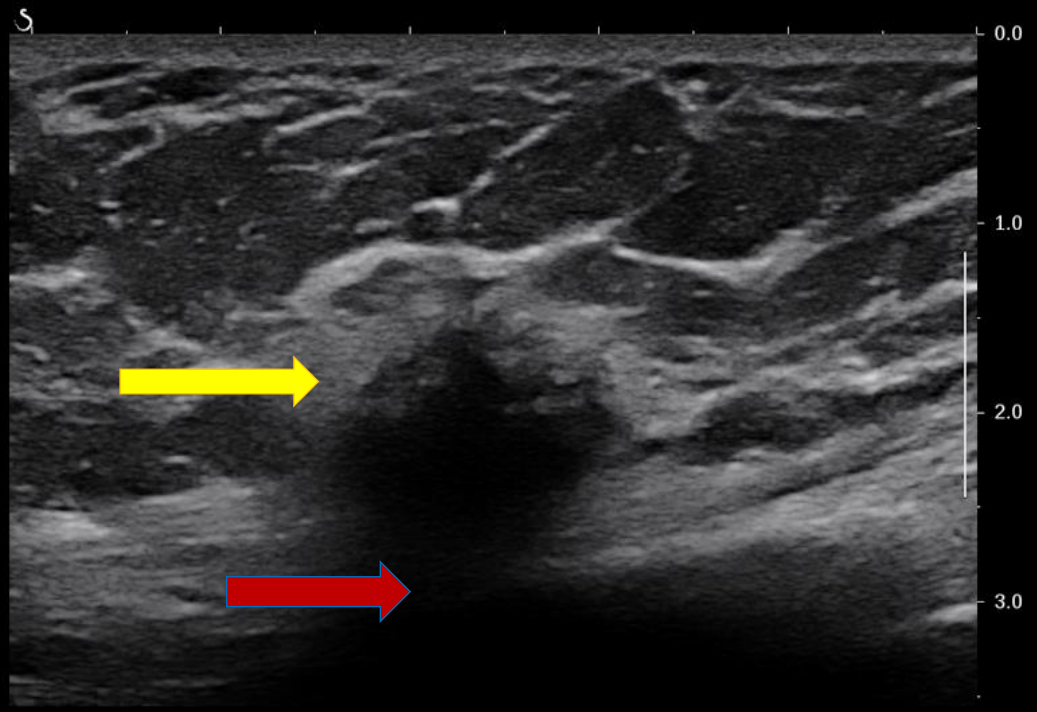
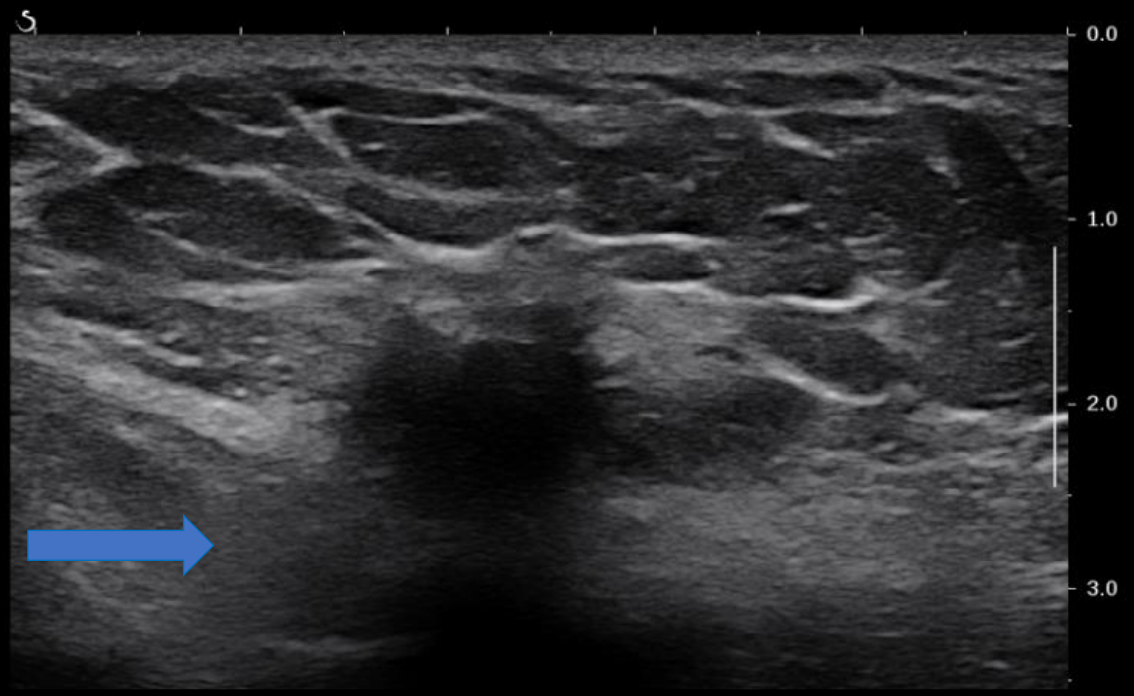
Right Breast Ultrasound (labeled)





Irregular hypoechoic mass (yellow arrow) with spiculated margins and posterior shadowing (red arrow) directly involves the pectoralis musculature (blue arrow)

BI-RADS Category 4
Suspicious abnormality - Biopsy should be considered

Differential Diagnosis

- Primary Breast Malignancy (usually ductal carcinoma)
- Metastasis (including prostate cancer)
- Diabetic mastopathy (given PMH of Diabetes Mellitus)
- Granular Cell Tumor of Breast
- Fibromatosis of Breast
- Soft tissue sarcoma

Final Dx:

Granular Cell Tumor of the Breast

Granular Cell Tumor of the Breast

- Definition
  - Soft tissue neoplasms thought to be derived from Schwann cells

- Characteristics
  - Most commonly arise in the 4^{th}-6^{th} decades of life
  - 0.1% of all breast tumors
  - Typically benign, rarely malignant (only 6 cases to date)
  - Develop within interlobar stromal tissue in breast
  - Multiple lesions in 18% of granular cell tumors of breast
  - May have a predilection for upper inner quadrant (supraclavicular nerve cutaneous branches)
  - Can mimic breast carcinoma both clinically and radiologically

Granular Cell Tumor: Imaging/Radiology

Mammography

- Focal asymmetry or mass (hyper/isodense)
- Irregular shape with obscured, indistinct or spiculated margins
- Microcalcifications not typically present

Ultrasound

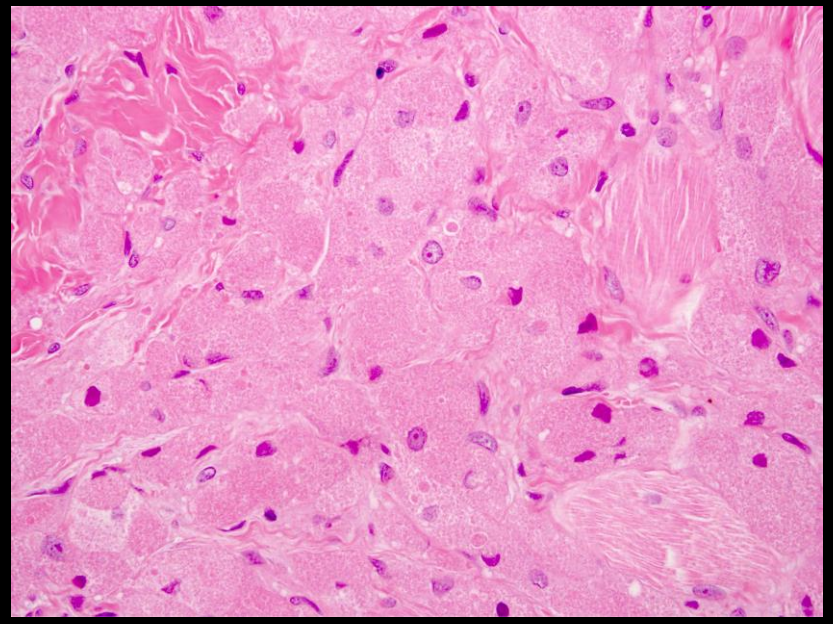
- Irregular mass with heterogenous echogenicity and spiculated margins
- Non-parallel orientation
- Can cause intense posterior shadowing

Breast MRI

- Mass with spiculated margins
- Iso to hyperintense on T2-weighted
- Hypointense on T1-weighted
- Avid early enhancement with washout or mild progressive enhancement

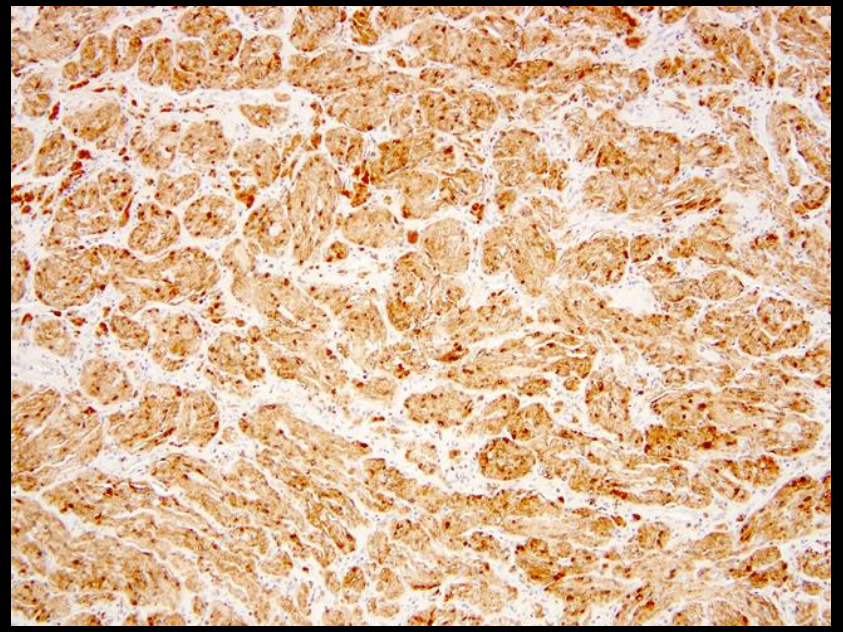
Granular Cell Tumor: Pathology

Tissue sampling with IHC studies is critical for establishing diagnosis



Microscopy:

- Cytoplasm: full of coarse granules of varying size
- Granules: accumulation of lysozyme within cytoplasm



IHC staining:

- Positive for S100, CD68, CD63, and NSE
- Negative for cytokeratin (differentiates from an invasive carcinoma)

Granular Cell Tumor: Management

- Benign
  - Wide local excision
  - Can recur if positive surgical margins
- Malignant
  - Standard surgical treatment
  - Sentinel lymph node biopsy

References

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8. Pankratjevaite L, et al. Granular cell tumour of the breast: A case report. Breast Dis. 2023;42(1):219-222.

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