Subareolar Mass

Kira Griffith
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Focused Patient History

• History of Present Illness
  • 65 y/o M with PMHx of degenerative disc disease, HTN, and gout presented with a non-tender small lump beneath left nipple
  • Medications: chlorthalidone 25mg PO daily
  • Past Surgical Hx: none
  • Family Hx: lung cancer (mother – heavy smoker), heart disease (father), kidney cancer (brother); no hx of breast, prostate, or ovarian cancers
  • Social Hx: no smoking, alcohol, or recreational drug use
  • ROS otherwise negative

• Objectives
  • BMI 35.24 kg/m^2
  • Vital signs wnl
  • Physical exam: Inverted left nipple and firm subareolar mass present. No nipple discharge, skin changes, or tenderness.
List of Imaging Studies

• Bilateral Diagnostic 3D Mammogram (Tomosynthesis)
• Left Breast Ultrasound
Bilateral Diagnostic Mammogram

**Right Breast**
- R CC
- R MLO

**Left Breast**
- Left CC
- Left MLO

**Right breast** notable for minimal gynecomastia but otherwise negative for malignancy

VS.

**Left breast** notable for retro-areolar 2.2 x 2.7 cm irregular hyperdense mass containing scattered amorphous heterogeneous microcalcifications

Breast density: scattered areas of fibro-glandular density throughout
Diagnostic Mammogram: Left Breast (cont.)
**Left Breast Ultrasound**

- **Skim**: Normal, glandular tissue
- **2.2 cm hypoechoic, irregular mass**

![Ultrasound Image]

*Image description: A black and white ultrasound image of the left breast, highlighting a hypoechoic, irregular mass measuring 2.2 cm.*
Left Breast Ultrasound (cont.)

- Adjacent cystic component
- Internal vascularity demonstrated with Doppler flow

BI-RADS Category 5
(Imaging Highly Suggestive of Malignancy)

- Normal lymph node morphology in axilla
Patient Treatment & Outcome

Ultrasound-Guided Biopsy

• Diagnosis: Stage IIA (T2 N0 M0) infiltrating ductal carcinoma and grade 2 ductal carcinoma in-situ (ER+, PR+, HER2 negative)

• Etiology unclear for patient
  • Negative for BRCA mutations
  • NATERA 81-gene panel negative for pathogenic mutations
  • No overt gynecomastia or hypogonadism concerning for Klinefelter
  • No other identified risk factors

BI-RADS Category 6 (Biopsy Proven Malignancy)
• Patient underwent localized left breast lumpectomy
  • Initially, had positive anterior nipple margin
  • Re-excised & ultimately had negative margins and a negative sentinel lymph node biopsy

• Adjuvant endocrine therapy (tamoxifen) & adjuvant radiation therapy
Male Breast Cancer

• Extremely rare: ~0.5-1% of all breast cancers occur in men
• Average age of diagnosis: 60-70 y/o
• Most common presentation: painless subareolar mass
  • Presents at a relatively advanced stage compared to female breast cancer
  • Majority of male breast lumps are benign & often due to gynecomastia
• 85-90% of breast cancers in men are invasive ductal carcinoma or ductal carcinoma in situ

• Risk factors: BRCA2 mutation, hx of ionizing radiation to chest wall, cryptorchidism, Klinefelter syndrome, family hx of breast cancer, increased estradiol (eg. transgender patients; liver dysfunction)
Standard Imaging for Workup

ACR Appropriateness Criteria

Variant 5: Male of any age with physical examination suspicious for breast cancer (suspicious palpable breast mass, axillary adenopathy, nipple discharge, or nipple retraction). Initial imaging.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>Relative Radiation Level</th>
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| Mammography diagnostic                 | Usually Appropriate            | 💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫💫Gro
Classic Imaging Findings for Breast Cancer

**Mammogram**

- **Craniocaudal**
- **Mediolateral oblique**

![Mammogram images](Images sourced from Radiopaedia (left) and Radiology Assistant (right))

- Subareolar mass (often round, oval, or lobulated)

**Ultrasound**

- Skin
- Fat & Glandular Tissue
- Hypoechoic, oval mass (cancer)
- Posterior shadowing
- Hypoechoic, often irregularly shaped mass (can be round or oval) with indistinct margins. May have posterior shadowing and calcifications
Sensitivity & Specificity

- Screening **mammogram sensitivity** increases with age up to 94% (Kerlikowske, 1996)
- Screening **mammogram specificity** 92-95% across all ages (Kerlikowske, 1996)

- Combined digital breast tomosynthesis (DBT) + digital mammography (DM) has higher sensitivity & specificity compared to digital mammography alone (Min Jung Ko, et al. 2021)

- **Ultrasound** has a sensitivity of 80% and a specificity of 88% in the detection of breast cancer
Cost in North Carolina & Radiation Dose

• Mammogram
  • Cost: ~$340
  • Radiation Dose: 0.4 mSv
    • Americans get 3 mSv of radiation per year from natural surroundings
    • Each bilateral mammogram is equivalent to 7 weeks of radiation from natural surroundings

• Ultrasound
  • Cost: ~$220
  • Radiation Dose: none (sound waves)
UNC Top Three Teaching Points

• Most palpable breast lumps in men are benign (often due to gynecomastia).

• Although rare, breast cancer in men has a similar clinical presentation to women with a non-tender, palpable breast mass.

• A bilateral diagnostic mammogram and ultrasound are the standard imaging studies obtained in breast cancer workup, with mammograms having a sensitivity & specificity >90%.
References


Thank you! 😊