

# AMSER Case of the Month: December 2019

## Breast Mass in Male Patient



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# Patient Presentation

- 58 year old male with known metastatic small cell lung cancer presents with new pain, swelling, and a palpable finding in the right nipple region.
- He has been on chemotherapy for metastatic disease including cisplatin, etoposide, carboplatin, and nivolumab.
- Other current medications include: ondansetron, lorazepam, omeprazole, dronabinol, and a multivitamin.
- No other significant PMH.

What Imaging Should We Order?

# Select the applicable ACR Appropriateness Criteria

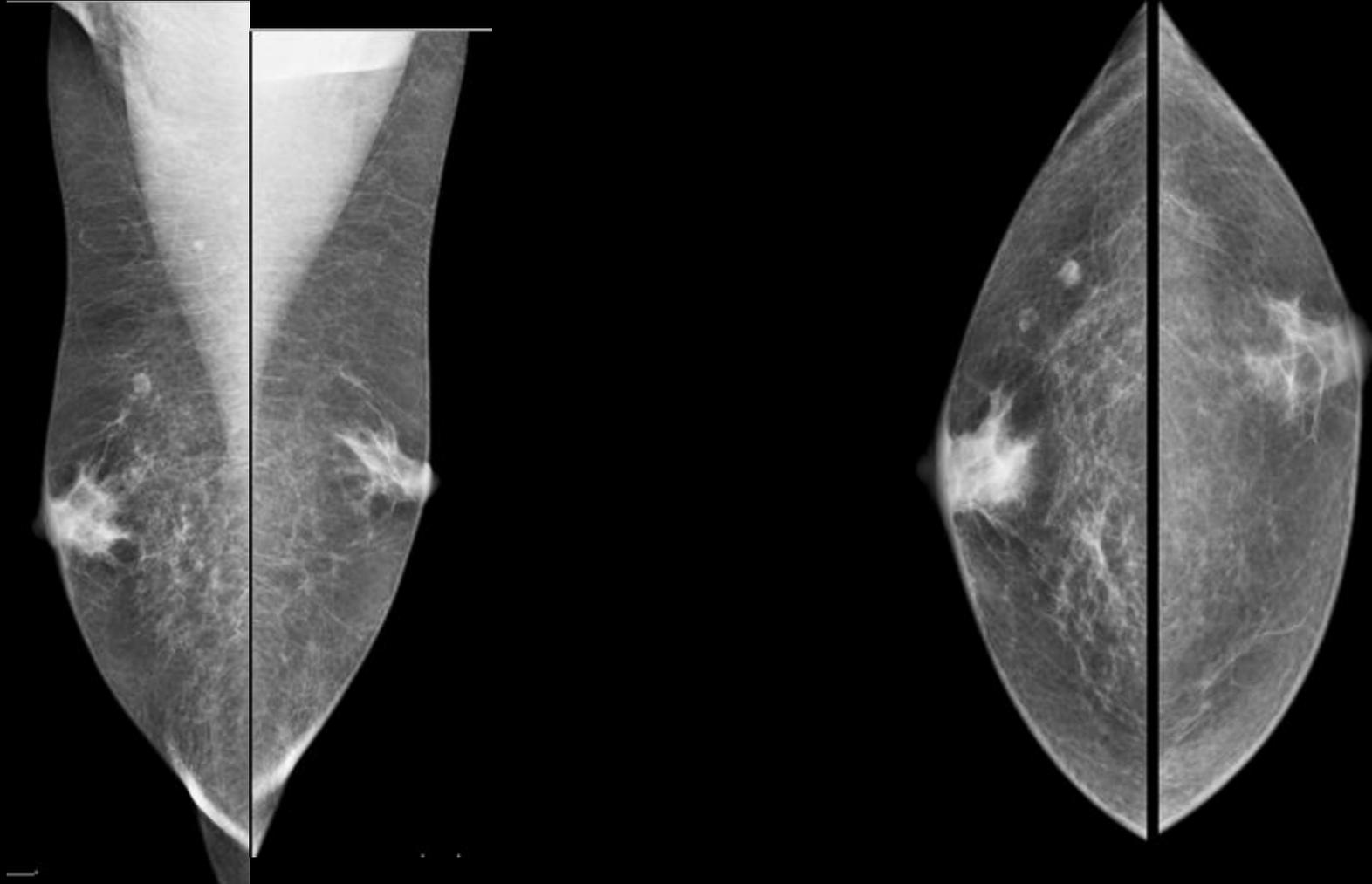
## Variant 3:

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

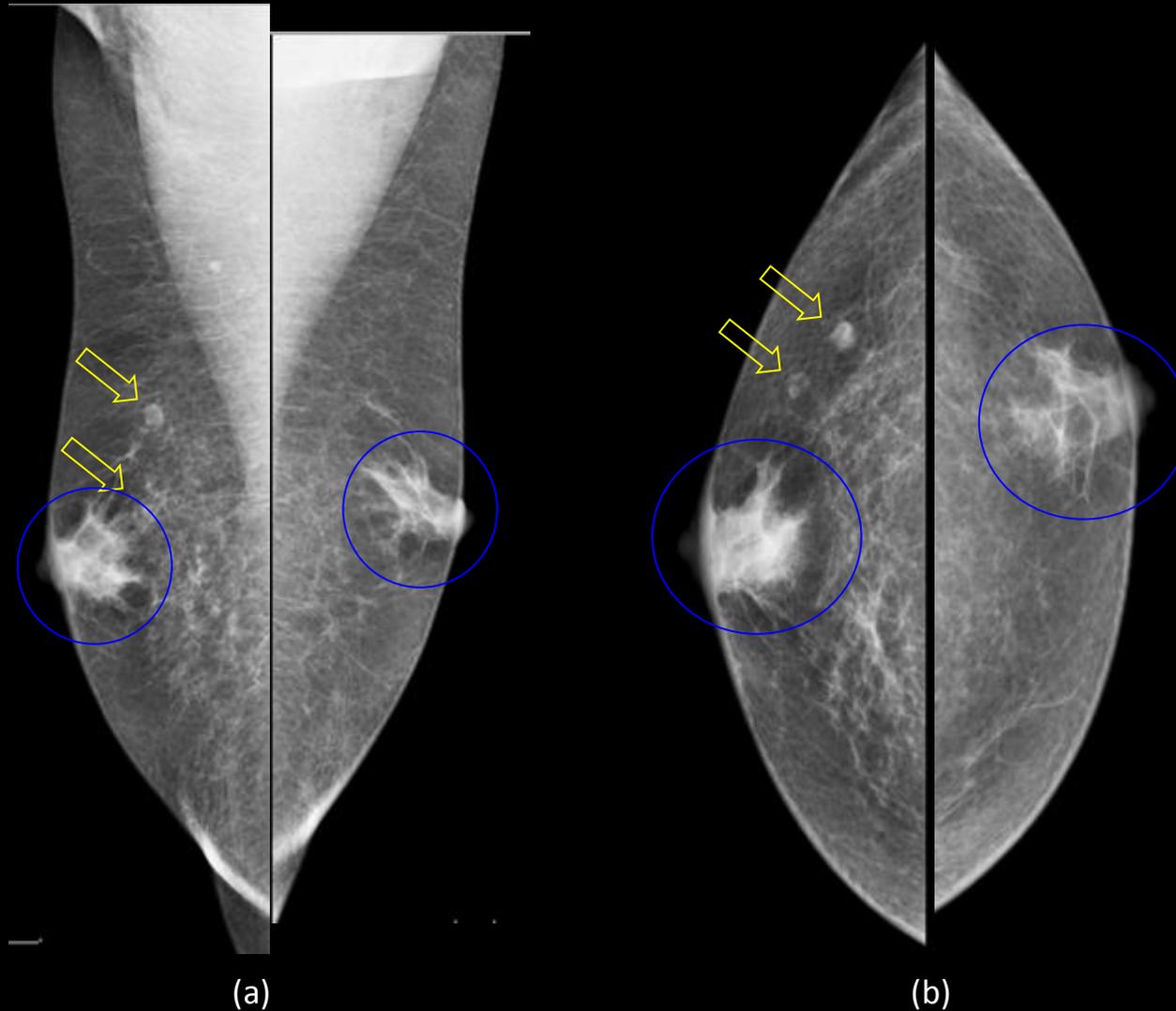
Procedure	Appropriateness Category	Relative Radiation Level
Mammography diagnostic	Usually Appropriate	⊕⊕
Digital breast tomosynthesis diagnostic	Usually Appropriate	⊕⊕
US breast	May Be Appropriate	○
MRI breast without and with IV contrast	Usually Not Appropriate	○
MRI breast without IV contrast	Usually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

A diagnostic digital breast tomosynthesis was ordered to evaluate this patient's palpable finding in the right breast

# Findings (unlabeled)

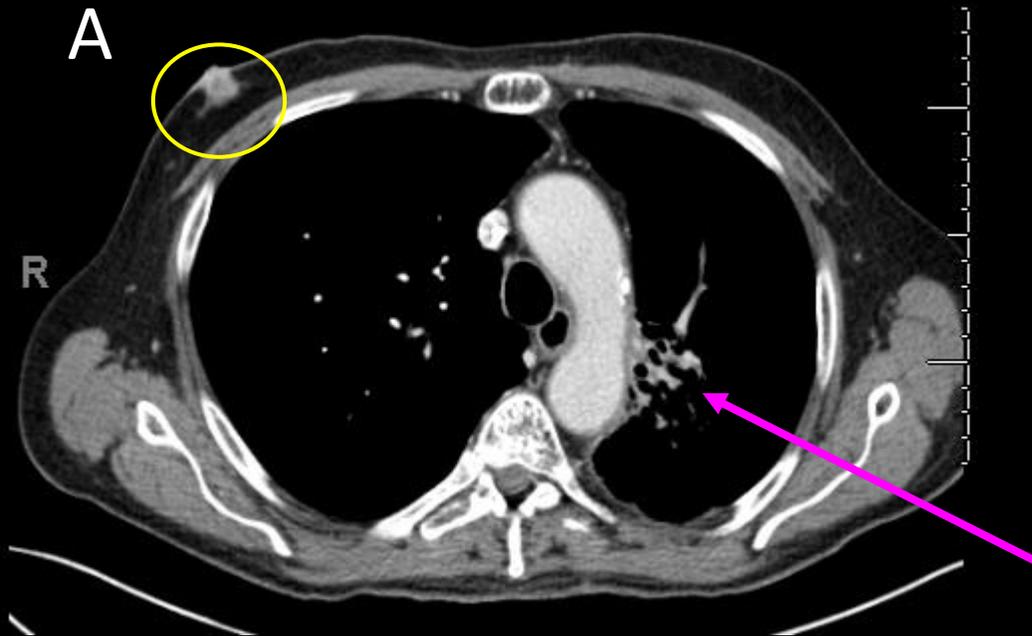


# Findings: (labeled)

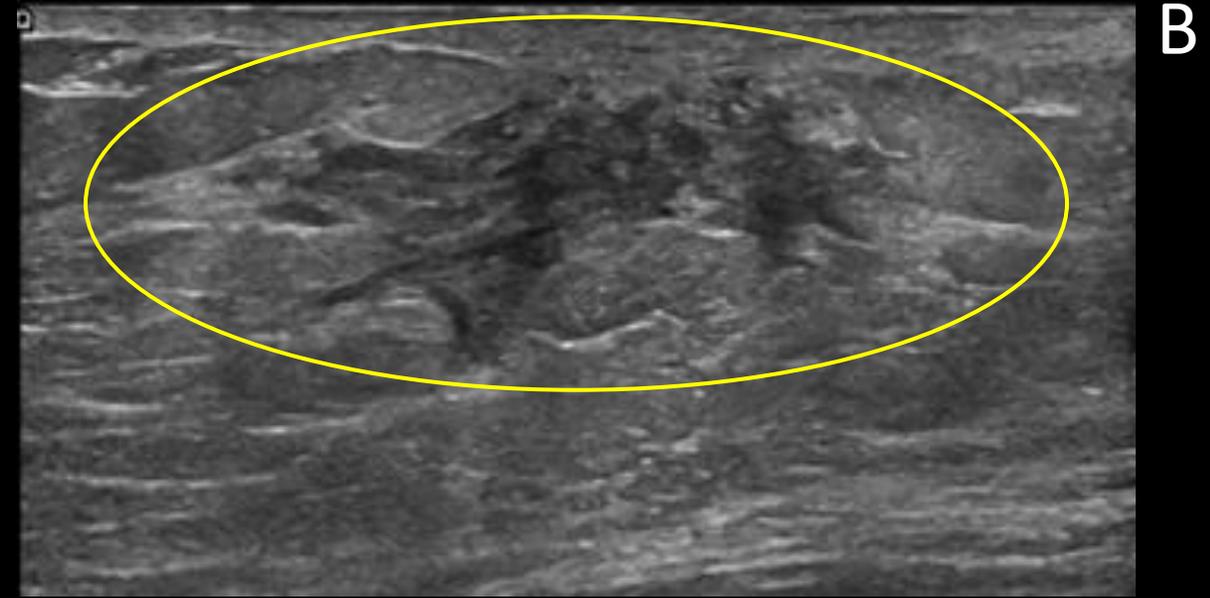


- 58 year-old male with bilateral gynecomastia.
- (a) MLO and (b) CC digital mammogram images demonstrate flame-shaped tissue in the retroareolar locations bilaterally. These findings are consistent with benign gynecomastia (blue open circles).
- Two intramammary lymph nodes are noted in the upper outer quadrant of the right breast (yellow open arrows). ■

# Appearance of gynecomastia on CT and US



An IV contrast enhanced axial CT image through the level of the mid-chest was performed 1 week prior for this patient for restaging of known metastatic lung cancer. Incidentally demonstrated right-sided (A) flame-shaped retroareolar tissue consistent with gynecomastia (yellow circle). Incidental scarring noted in the left upper lobe (pink arrow).



Targeted grey scale ultrasound image of the retroareolar location of the right breast in an 18 year-old male demonstrates the typical appearance of gynecomastia (B) on ultrasound with tapering hypoechoic tissue behind the nipple.

**Final Dx:**

**Bilateral Gynecomastia**

# Gynecomastia Differential Dx

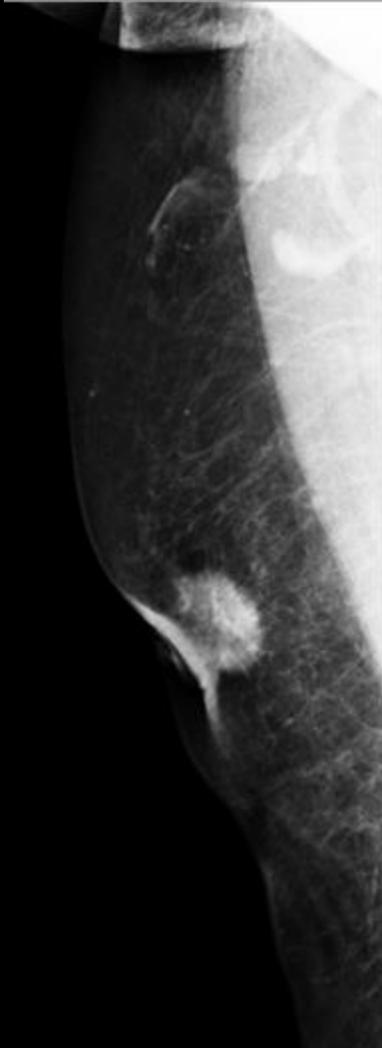
- Gynecomastia is defined as a benign proliferation of breast tissue in men
- Differential diagnosis for male breast disease
  - Gynecomastia
    - ductal hyperplasia and stromal proliferation
  - Pseudogynecomastia
    - retroareolar fat
  - Breast Cancer
    - circumscribed or irregular mass often eccentric to the nipple
  - Lipoma
    - circumscribed, fatty mass; typically isoechoic or hyperechoic on ultrasound
  - Angiolipoma
    - circumscribed mass, mixed echotexture

# Male Breast Cancer

(a)



(b)



(c)



- Example of a 66 year-old male with right sided invasive ductal breast carcinoma presenting as a palpable mass.
- Right CC (a) and MLO (b) images demonstrate an dense irregular mass with spiculated borders in the retroareolar location of the right breast with associated nipple retraction.
- Targeted grayscale ultrasound image (c) of the right breast in the location of the mammographic mass in the retroareolar location demonstrates a solid, hypoechoic mass with irregular borders and associated posterior acoustic shadowing.

Figure 1

# Gynecomastia Etiologies

- Caused by an imbalance between estrogen action relative to androgen action in the breast tissue
- Relative increase in estrogen action in the male breast leads to ductal hyperplasia and stromal proliferation
- Gynecomastia has many known causes demonstrated in Figure 1
- This patient's gynecomastia was likely multifactorial, possibly caused in part by chemotherapy agents and dronabinol (a synthetic marijuana)

Physiologic causes
Neonatal period or infancy
Puberty
Senescence
Drugs
Marijuana
Anabolic steroids
Leuprolide acetate (Lupron Depot®)
Thiazide diuretics
Cimetidine
Tricyclic antidepressants
Estrogen therapy
Spironolactone
Digitalis
Cirrhosis
Hypogonadism
Klinefelter syndrome (XXY)
Pituitary hormone deficiency
Neoplasms
Germ cell tumors
Leydig cell tumor
Sertoli cell tumor
Adrenocortical tumors
Pituitary tumors
Hepatoma
Hyperthyroidism
Chronic renal disease and dialysis
Idiopathic causes

# Summary

- Gynecomastia is a benign proliferation of breast tissue in men
- Our patient presented with pain, swelling, and an ill-defined retroareolar mass in the right breast which warranted diagnostic imaging
- Physical exam is often sufficient to diagnose gynecomastia, however, when an indeterminate palpable mass is found, diagnostic imaging is appropriate. For men under 25, ultrasound is first-line; for men 25 or older diagnostic mammography is first-line.
- Using the ACR appropriateness criteria to guide decision making, our patient underwent bilateral diagnostic tomosynthesis mammogram for evaluation of the mass
- Tomosynthesis mammogram demonstrated flame-shaped tissue bilaterally in the retroareolar region consistent with a diagnosis of bilateral gynecomastia
- Gynecomastia can be seen on other imaging studies, such as CT, MRI, and ultrasound

# References:

- Braunstein, Glenn D. “Gynecomastia: NEJM.” *New England Journal of Medicine*, 20 Dec. 2007, [www.nejm.org/doi/full/10.1056/NEJMcp070677](http://www.nejm.org/doi/full/10.1056/NEJMcp070677).
- Eghtedari, Mohammad, and Wei Tse Yang. “Gynecomastia.” *STATdx*, 2019, [app.statdx.com/document/gynecomastia/2a90397c-702e-4089-9b5a-8ce55a3009fb?searchTerm=gynecomastia](http://app.statdx.com/document/gynecomastia/2a90397c-702e-4089-9b5a-8ce55a3009fb?searchTerm=gynecomastia).
- “Evaluation of the Symptomatic Male Breast.” *Appropriateness Criteria*, 2019, [acsearch.acr.org/list/GetEvidence?TopicId=205&TopicName=Evaluation%2Bof%2Bthe%2BSymptomatic%2BMale%2BBreast](http://acsearch.acr.org/list/GetEvidence?TopicId=205&TopicName=Evaluation%2Bof%2Bthe%2BSymptomatic%2BMale%2BBreast).
- Nguyen, Cheri, et al. “Male Breast Disease: Pictorial Review with Radiologic-Pathologic Correlation.” *RadioGraphics*, 3 May 2013, [pubs.rsna.org/doi/10.1148/rg.333125137](http://pubs.rsna.org/doi/10.1148/rg.333125137).