AMSER Case of the Month February 2024

A 25 y/o G1P1 female who presents to ER with a painful, palpable mass in the left breast.

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Patient Presentation

- Pt is a 25 y/o female G1P1 who presents to the ER with a painful, palpable mass located in left inferomedial breast x 4 days.
- ROS: +fever, purulent nipple discharge, erythema, edema
- Three weeks prior to onset of symptoms, patient underwent an outside left breast biopsy in the same area as the current lesion.
  - At that time, patient had a palpable lump in subareolar area, which had been increasing in size for the past year.
  - Ultrasound showed a hypoechoic, well-circumscribed lesion at the 6 o'clock position, located 1 cm from nipple. The lesion was oval shaped and parallel to skin.
  - Pathology showed benign breast tissue with lactational changes, most likely fibroadenoma.

Patient History

- No significant past medical history.
- No family history of breast cancer or any other cancers.
- Gynecological history:
  - Onset of menses at age 12.
  - G1 P1, first live birth at age 24. Patient is now 7 months postpartum and actively breastfeeding.
  - No history of HRT or OCP. Currently on Nexplanon.

Pertinent Labs

- WBC 10.11 K/uL (reference range 4 – 10.4 K/uL)
- Wound cultures positive for 4+ Staphylococcus Aureus, sensitive to Oxacillin

What Imaging Should We Order?

ACR Appropriateness Criteria

Variant 6: **Adult female, younger than 30 years of age. Palpable breast mass. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
US breast	Usually Appropriate	O
Digital breast tomosynthesis diagnostic	Usually Not Appropriate	☢☢
Digital breast tomosynthesis screening	Usually Not Appropriate	☢☢
Mammography diagnostic	Usually Not Appropriate	☢☢
Mammography screening	Usually Not Appropriate	☢☢
Image-guided core biopsy breast	Usually Not Appropriate	Varies
Image-guided fine needle aspiration breast	Usually Not Appropriate	Varies
MRI breast without and with IV contrast	Usually Not Appropriate	O
MRI breast without IV contrast	Usually Not Appropriate	O
Sestamibi MBI	Usually Not Appropriate	☢☢☢
FDG-PET breast dedicated	Usually Not Appropriate	☢☢☢

This imaging modality was ordered by the ER physician

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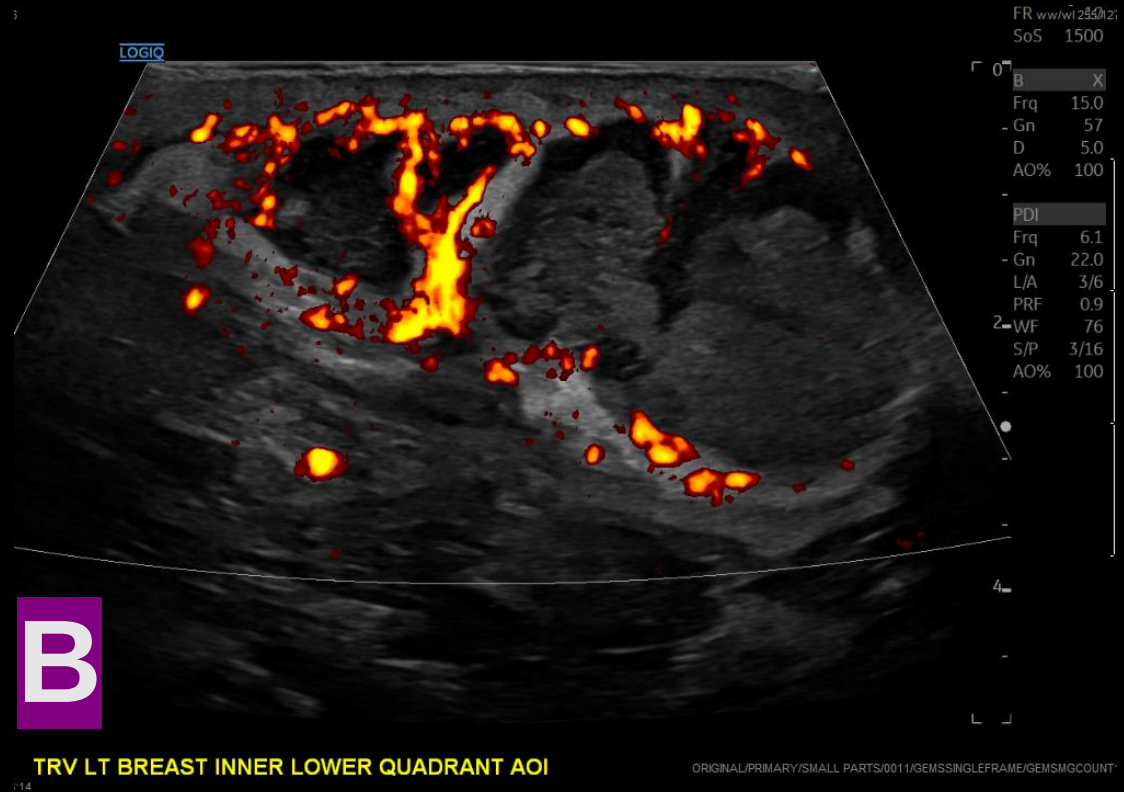
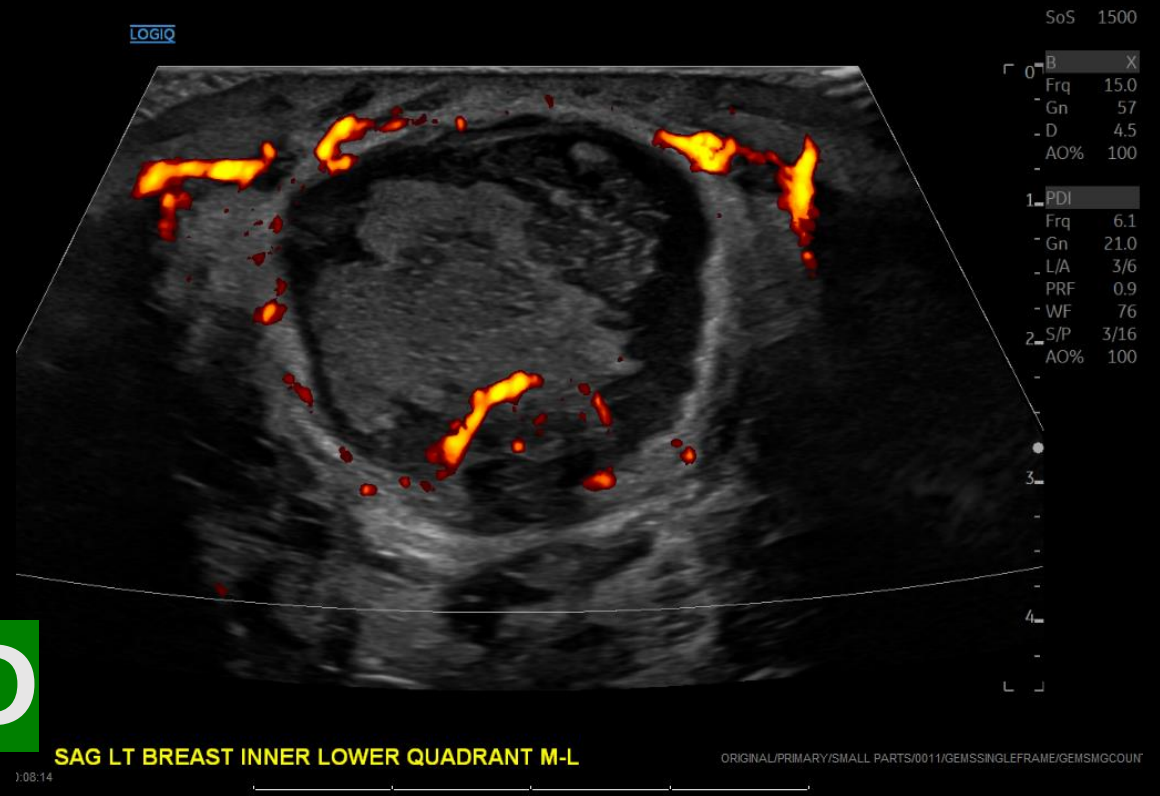
Findings (unlabeled) Transverse



Findings (unlabeled) Long/Sag

C



D

Findings: (labeled) Transverse

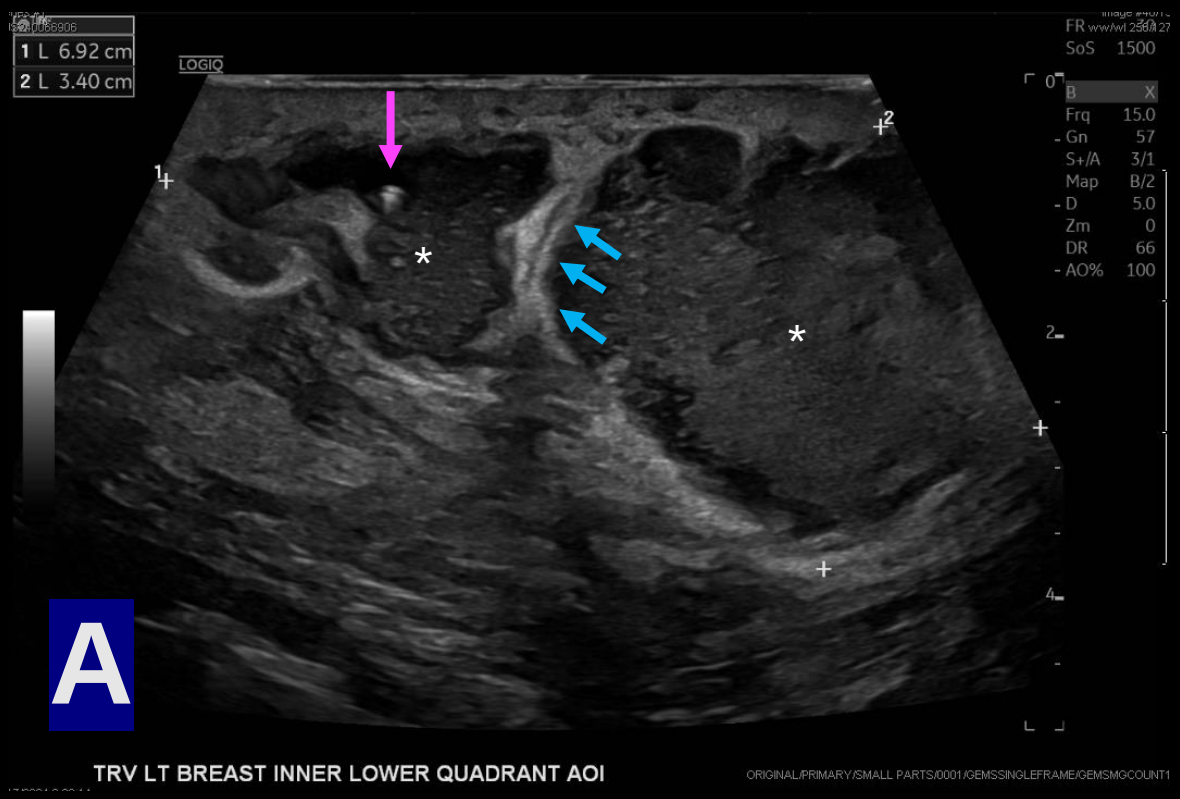


Figure A Transverse ultrasound of left breast. Thick-walled, complex, multiloculated fluid collection with thick intervening septa (blue arrows) and heterogenous internal echoes (asterisks). Lesion measures 7 x 3.8 x 3.4 cm, with a focal area of echogenicity consistent with a post-biopsy clip (pink arrow).

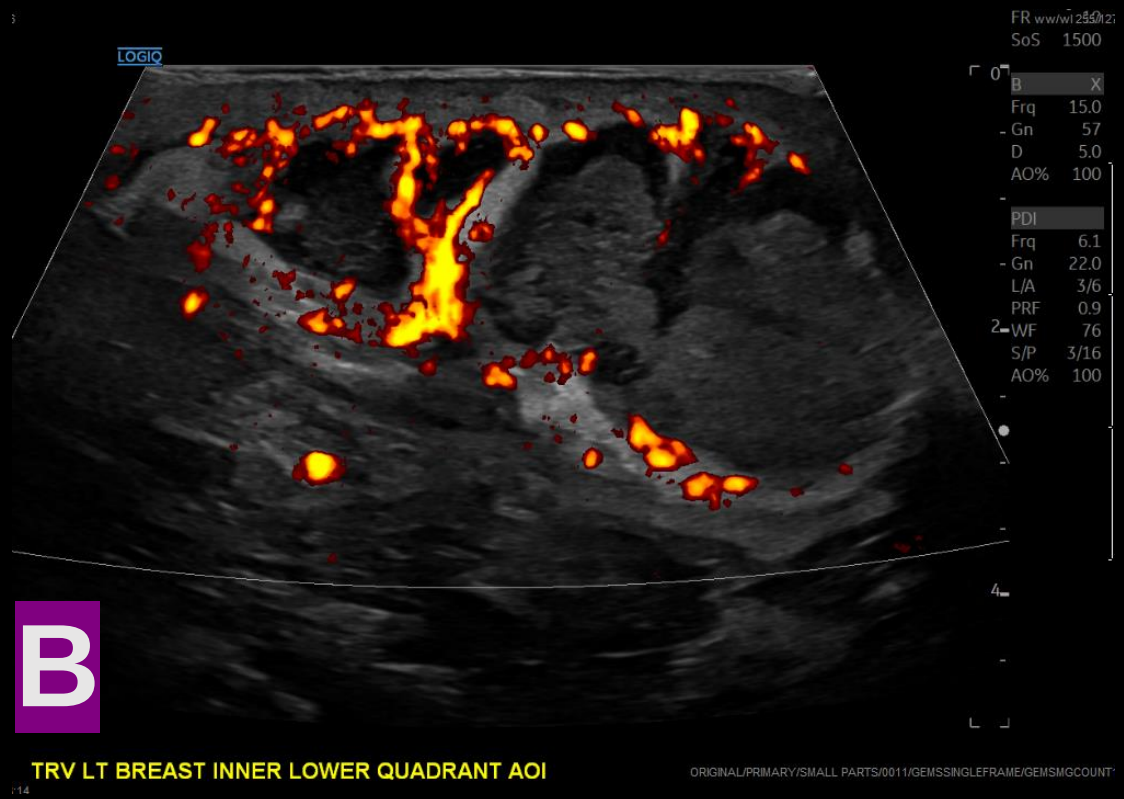


Figure B Color Doppler transverse ultrasound shows increased vascularity surrounding the fluid collection, consistent with hyperemia.

Findings: (labeled) Long/sag

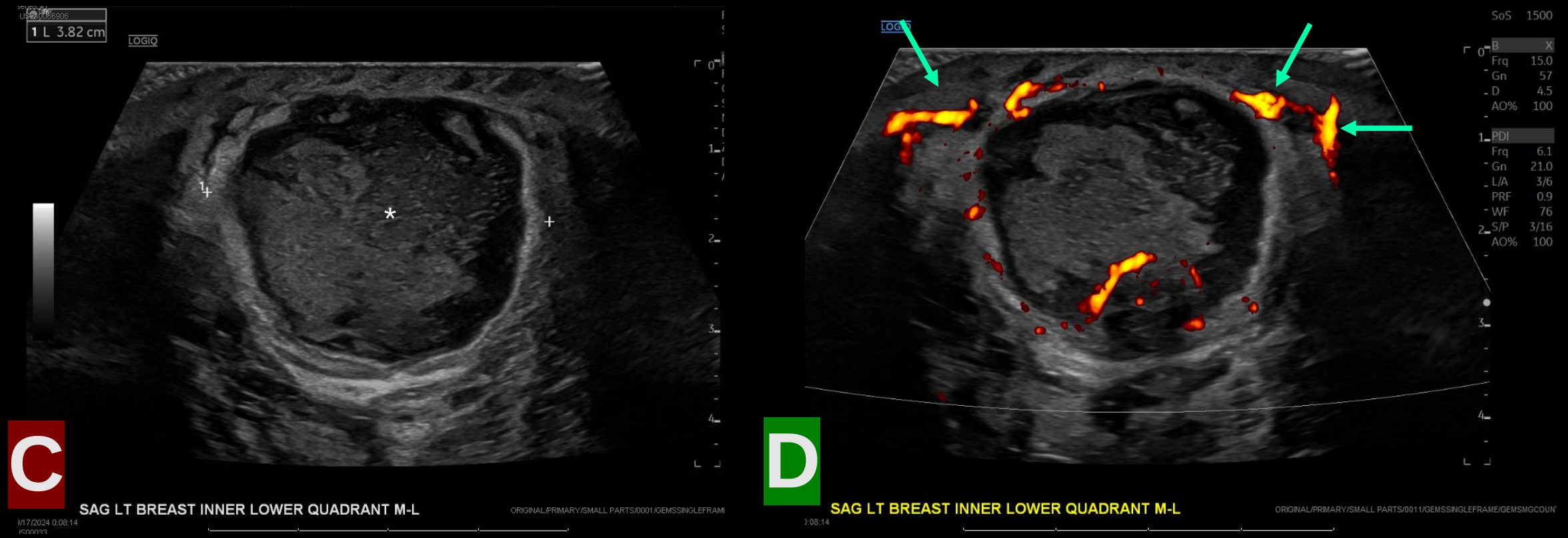


Figure C Thick-walled fluid collection again demonstrating heterogenous internal echogenic texture (asterisk). Figure D Color Doppler demonstrates surrounding hyperemia (green arrows).

Differential Diagnosis

- Palpable breast mass in lactating adult female
  - Breast cyst
  - Fibroadenoma
  - Lactating adenoma
  - Galactocele
  - Breast abscess
  - Malignant breast mass

Final Dx:
Puerperal breast abscess associated with prior breast biopsy

Puerperal Breast Abscess

- Summary
  - Breast abscess that develops in the postpartum period during lactation, often seen in primiparous mothers.
  - Approximately 3-11% of mastitis cases will develop into breast abscess, with overall reported incidence rate of 0.1-3% in breastfeeding women.[1] This most commonly occurs in women of childbearing age, average age of 32 years.[2]
  - Staph Aureus is the most common cause, with MRSA (Methicillin Resistant Staph Aureus) becoming increasingly common.[2]
- Pathophysiology
  - Abscesses typically begin with a fissure or abrasion on the nipple that allow bacteria to enter.
  - Keratin production in lactiferous ducts can lead to obstruction, leading to milk stasis, colonization of bacteria, and formation of abscess.

Puerperal Abscess

- Initial diagnosis
  - Thorough history and physical exam are pertinent. Ultrasound is the initial imaging study of choice to confirm.
  - Ultrasound features of breast abscess include hypoechoic collection, mostly multiloculated, echogenic vascular rim, and posterior enhancement due to fluid content.[3]
  - Mammogram sensitivity may be reduced in dense breast tissue commonly found in younger or lactating women. Findings may not be specific (ex. diffuse skin thickening, focal asymmetry, axillary lymphadenopathy).[4]
- Treatment
  - Abscesses are commonly treated with antibiotics, percutaneous aspiration and/or incision and drainage (I&D). I&D may be preferred for abscesses that are multiloculated or larger than 5 cm.[5]

Case Resolution and management

- Incision and drainage of the abscess was performed (likely chosen over aspiration due to to size and multi-loculated nature), followed by sterile Nu gauze packing and sterile 4x4.
- Patient was started on antibiotic therapy with Bactrim (trimethoprim sulfamethoxazole) for 2 weeks.
- Regular follow up with breast care clinic subsequently showed resolution of fever and improvement in erythema and discharge.
- Recommended continuation of breastfeeding and/or pumping to prevent stasis of milk product.

Case Resolution and management

- There is low suspicion of malignancy due to patient's age less than 30 years, negative family history, and improving clinical symptoms after antibiotic treatment.
- Symptoms also presented in context of lactation (milk stasis can commonly lead to bacterial infection) and recent biopsy in the same area, consistent with diagnosis of abscess.
- Therefore, no additional imaging is required at present unless symptoms persist. Continue with clinical management.

References:

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2. Toomey A, Le JK. Abscess, Breast. Nih.gov. Published January 11, 2019. https://www.ncbi.nlm.nih.gov/books/NBK459122/
3. Radswiki T, Brien P, Chieng R, et al. Breast abscess. Reference article, Radiopaedia.org (Accessed on 01 Nov 2024). https://doi.org/10.53347/rID-14818
4. Woodard GA, Bhatt AA, Knavel EM, Hunt KN. Mastitis and More: A Pictorial Review of the Red, Swollen, and Painful Breast. *Journal of Breast Imaging*. 2020;3(1):113-123. https://doi.org/10.1093/jbi/wbaa098
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