

AMSER Case of the Month

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A 57 year old man presents with palpable breast mass
and nipple discharge

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Patient Presentation

- **HPI:** A 57-year-old male patient presents to clinic with a palpable, nontender right breast mass. The mass has been present for several weeks and he reports nonspontaneous white, milky discharge from his left nipple. He had no personal or family history of breast cancer. He denies any prior history of nipple discharge, headaches, or vision changes.
- **PMH:** Hypertension, Hyperlipidemia, Diabetes Mellitus type 2. No history of liver disease or alcohol abuse.
- **Physical Exam:** On physical exam, the patient was noted to have bilateral breast enlargement. There was a palpable, nontender mass located in the right breast. No skin or nipple retraction, breast erythema, warmth, or tenderness bilaterally.

Pertinent Labs

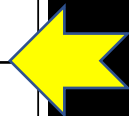
- TSH was within normal limits at 1.27 UIU/mL (Normal 0.4 – 5.1 UIU/mL)
- Prolactin was elevated at 292 ng/mL (Normal in males: 2.5 – 17.4 ng/mL)
- Total testosterone was decreased at 23 ng/dL (Normal in males: 241 – 827 ng/dL)
- Free testosterone was decreased at 2.2 pg/mL (Normal in males: 4.3 – 30.4 pg/mL).

What Imaging Should We Order?

Palpable Breast Mass - 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	○



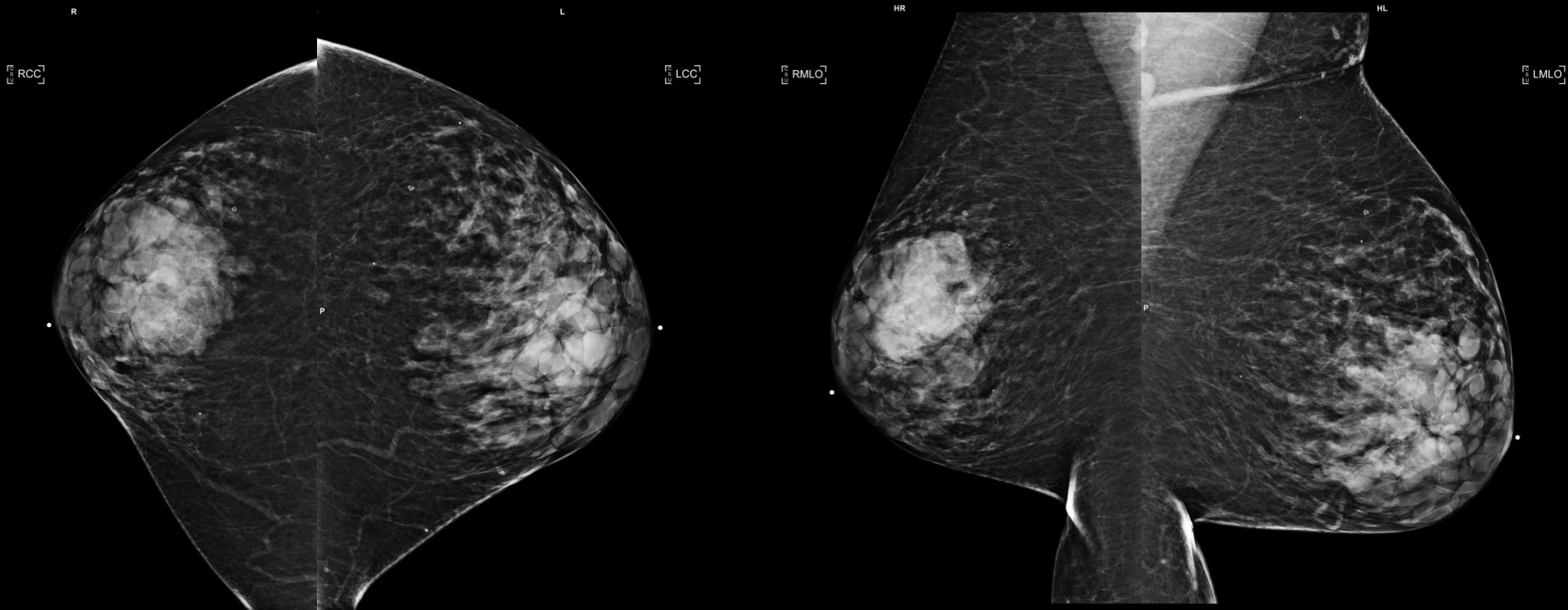
These imaging examinations were obtained

Variant 4: Male 25 years of age or older with indeterminate palpable breast mass. Mammography or digital breast tomosynthesis indeterminate or suspicious.

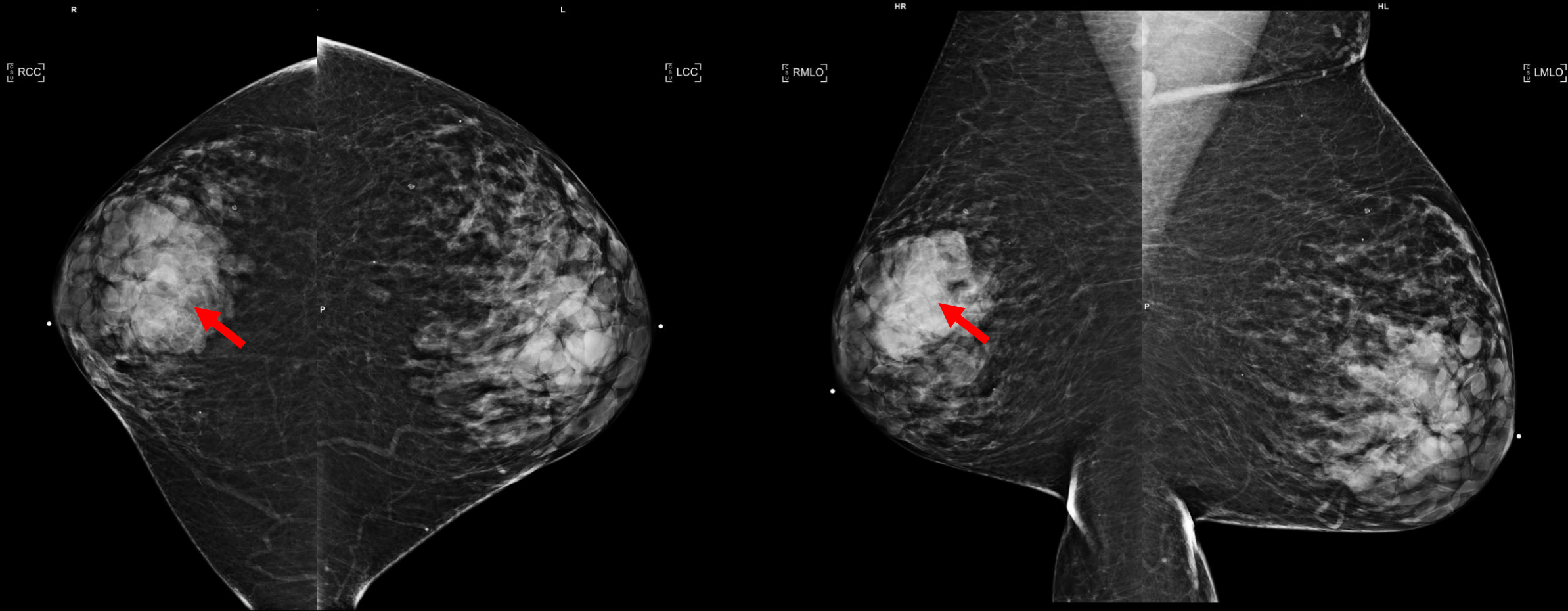
Procedure	Appropriateness Category	Relative Radiation Level
US breast	Usually Appropriate	○
MRI breast without and with IV contrast	Usually Not Appropriate	○
MRI breast without IV contrast	Usually Not Appropriate	○



Findings (unlabeled)

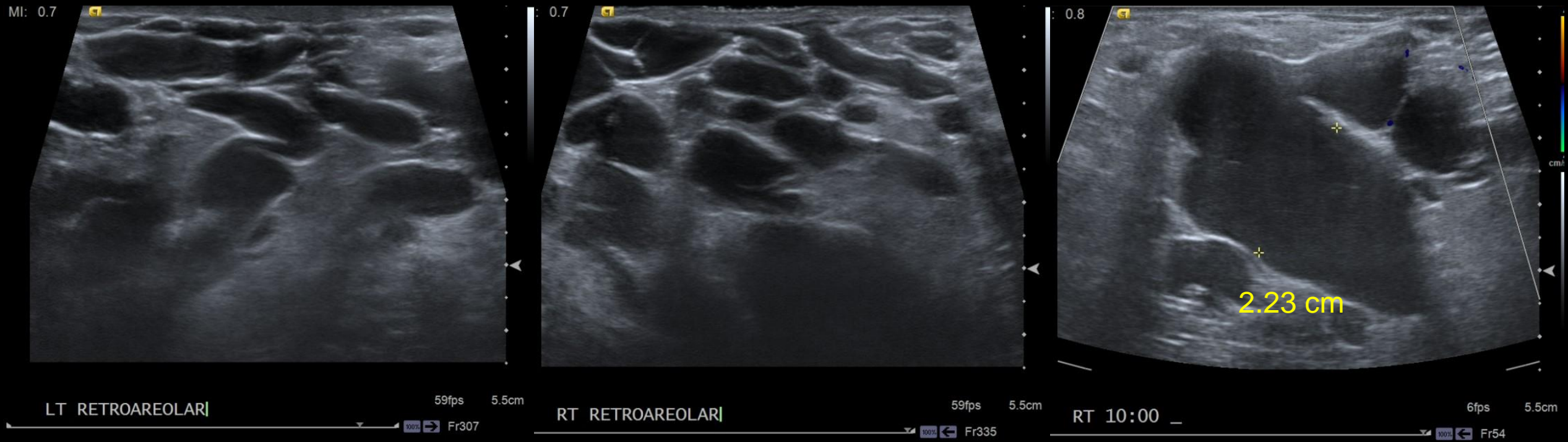


Findings: (labeled)

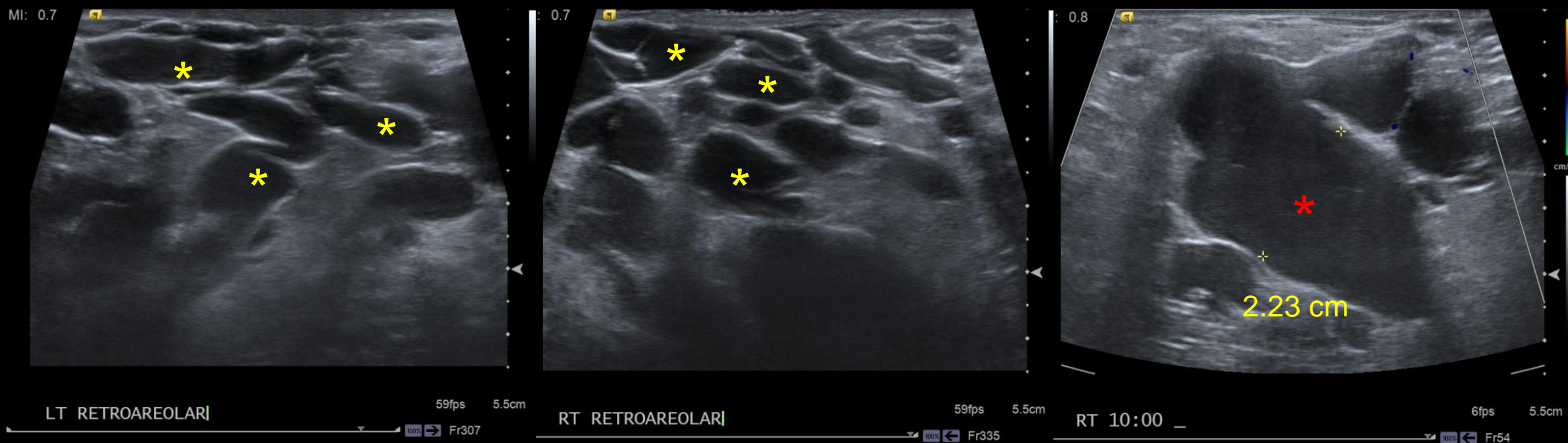


- Mammogram shows large tubular retroareolar structures in both breasts
- Focal asymmetry in the left upper central breast ()

Findings (unlabeled)



Findings (labeled)



- Ultrasound shows bilateral dilated mammary ducts (*) with anechoic contents
- Significantly dilated right upper mammary duct (*) corresponding to focal asymmetry
- No solid mass identified

Hyperprolactinemia- ACR Appropriateness Criteria

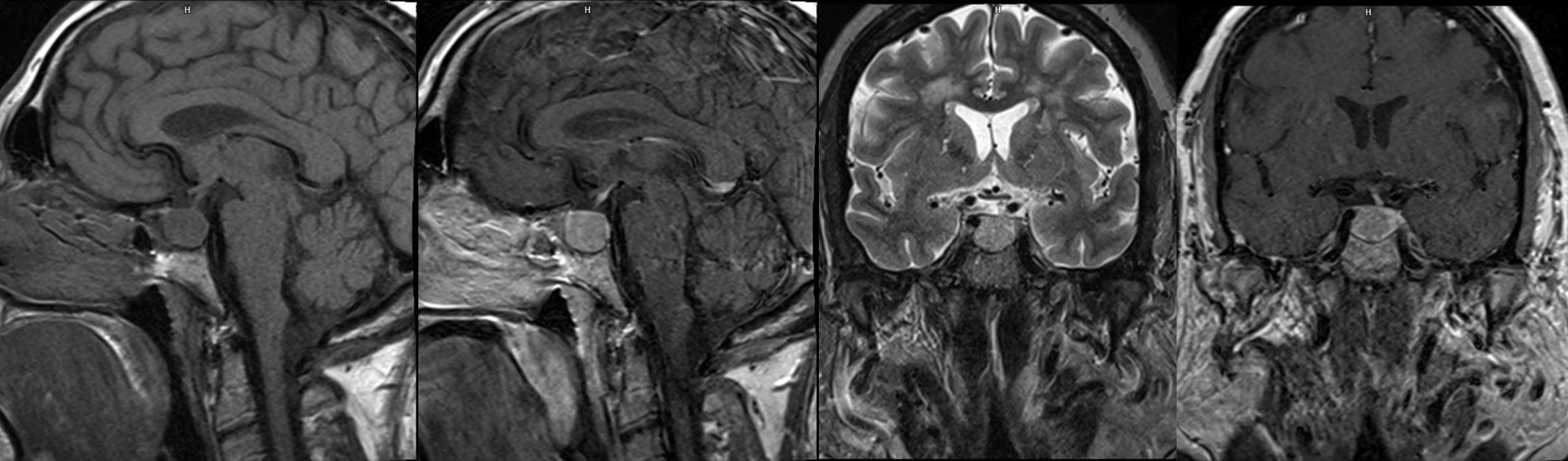
Variant 2: Adult. Suspected or known hyperfunctioning pituitary adenoma (hyperthyroidism [high thyroid-stimulating hormone], Cushing syndrome [high adrenal corticotrophic hormone], hyperprolactinemia, acromegaly, or gigantism). Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
MRI sella without and with IV contrast	Usually Appropriate	○
MRI sella without IV contrast	Usually Appropriate	○
CT sella with IV contrast	May Be Appropriate	☼☼☼
CT sella without IV contrast	May Be Appropriate	☼☼☼
MRI sella with IV contrast	May Be Appropriate	○
CTA head with IV contrast	Usually Not Appropriate	☼☼☼
MRA head with IV contrast	Usually Not Appropriate	○
MRA head without IV contrast	Usually Not Appropriate	○
Venous sampling petrosal sinus	Usually Not Appropriate	Varies
CT sella without and with contrast	Usually Not Appropriate	☼☼☼
MRA head without and with IV contrast	Usually Not Appropriate	○
Radiography sella	Usually Not Appropriate	☼

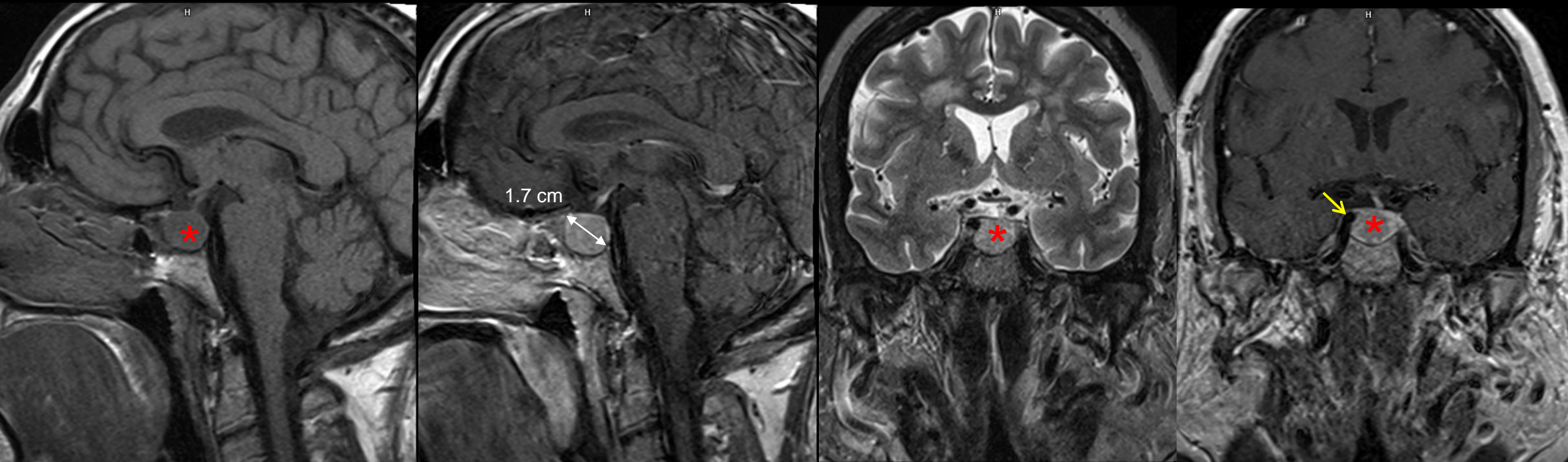
This imaging examination was obtained



Findings (unlabeled)



Findings (labeled)



- Sagittal T1, Sagittal T1 post contrast, Coronal T2, Coronal T1 post contrast MRI
- Enhancing mass (*) within the sella, measuring 1.7 cm, compatible with macroadenoma
 - The mass abuts the right cavernous carotid artery (↑) slightly less than 180°

Final Dx:

Mammary Duct Ectasia in a Male Patient Secondary to
Prolactinoma

Case Discussion

- Mammary duct ectasia (MDE) is a benign disorder of dilated and tortuous mammary ducts, which can be filled with fluid, debris, or secretions². MDE may be asymptomatic/incidental, or present as a palpable mass or nipple discharge.
- The exact mechanism of MDE is incompletely understood and may vary based on patient demographics. Involution of periductal fat is proposed as a common cause in perimenopausal females (the typical patient population).
- Atypical patient populations:
 - MDE is a recognized cause of bloody nipple discharge in infants.
 - MDE is very rare in adult men (<20 cases reported) with unconfirmed associations with immune compromise and gynecomastia³.
 - Though MDE is an uncommon feature, hyperprolactinemia is known to stimulate mammary gland development in men and cause galactorrhea⁴. Hyperprolactinemia can also cause loss of libido, testicular atrophy, and erectile dysfunction due to its inhibitory effect on GnRH.

Case Discussion

- ACR Appropriateness Criteria recommend diagnostic mammogram with tomosynthesis and possible breast ultrasound in a man ≥ 25 years old with a palpable breast mass. Both diagnostic mammogram and breast ultrasound are recommended in a man ≥ 25 years old with pathologic nipple discharge.
- Mammography may show dilated tubular structures in the retroareolar region in MDE. Also, mammography may show a retroareolar focal asymmetry or mass.
- Ultrasound is often critical to diagnosis of MDE. Duct ectasia appears as dilated thin-walled retroareolar ducts greater than 2 mm in diameter, usually with anechoic contents and tapering peripherally². Patients with MDE alone should not demonstrate findings concerning for malignancy such as a dilated peripheral duct, duct wall thickening, or hypoechoic tissue/mass².
- Breast MRI is increasingly used in the setting of pathologic nipple discharge with initial negative imaging. MRI may also be used for problem-solving of indeterminate imaging findings or characterization of an intraductal mass.

Case Discussion

- Management of MDE is patient specific. Once malignancy is excluded, reassurance and symptom relief is a common course of action and may include warm compresses, supportive bras, and aspiration of dilated ducts for pain relief².
- Rarely, surgical excision of involved ducts can be performed in severe cases.
- Unique to this case, MDE treatment involved treatment of the underlying pituitary macroadenoma. First line treatment of a prolactin-secreting pituitary adenoma is a dopamine agonist like cabergoline or bromocriptine, which often normalize prolactin levels and reduce the size of the tumor⁴. Surgical removal and radiation treatment are reserved for patients who do not adequately respond to medical management with dopamine agonists.

References:

1. American College of Radiology. ACR Appropriateness Criteria®. Available at <https://acsearch.acr.org/list>. Accessed Jan 26, 2023.
2. Ferris-James DM, Iuanow E, Mehta TS, Shaheen RM, Slanetz PJ. Imaging approaches to diagnosis and management of common ductal abnormalities. Radiographics 2012;32(4):1009-1030. <https://doi.org/10.1148/rg.324115150>
3. Dickerson E, Budway R, Surampudi R, et al. Mammary Duct Ectasia in a Man with Liver Disease, End Stage Renal Failure, and Adjacent Arteriovenous Fistula. J Radiol Case Rep 2010;4(8): 36–41. <https://doi.org/10.3941%2Fjrcr.v4i8.485>
4. Molitch ME. Diagnosis and Treatment of Pituitary Adenomas: A Review. JAMA 2017;317(5):516-524. <https://doi.org/10.1001/jama.2016.19699>