AMSER Case of the Month
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53-year-old female presenting with neck mass, dysphagia, and dyspnea

Allen Shieh, MS3
Deividas Gustainis, MD
Uma Prasad, MD
Virginia Commonwealth University School of Medicine

VCU Health
VCU Medical Center

AMSER

Patient Presentation

- 53-year-old female with history of chronic lymphocytic thyroiditis on levothyroxine presents with 5-month history of neck mass with progressive dysphagia and dyspnea.
- Patient noted progressive difficulty swallowing solids.
- Patient noticed increasing difficulty breathing while lying down which she attributed to a developing neck mass.

Physical Exam

- Physical exam revealed a midline, submandibular, nontender 1-cm mass with smooth borders.
- There was no associated erythema or lymphadenopathy.

Pertinent Labs

- **TSH**: 0.05 (normal range: 0.35 – 4.94)
- **Free T4**: 1.6 (normal range: 0.7 – 1.5)
- **T3**: 73 (normal range: 35 – 193)

What Imaging Should We Order?

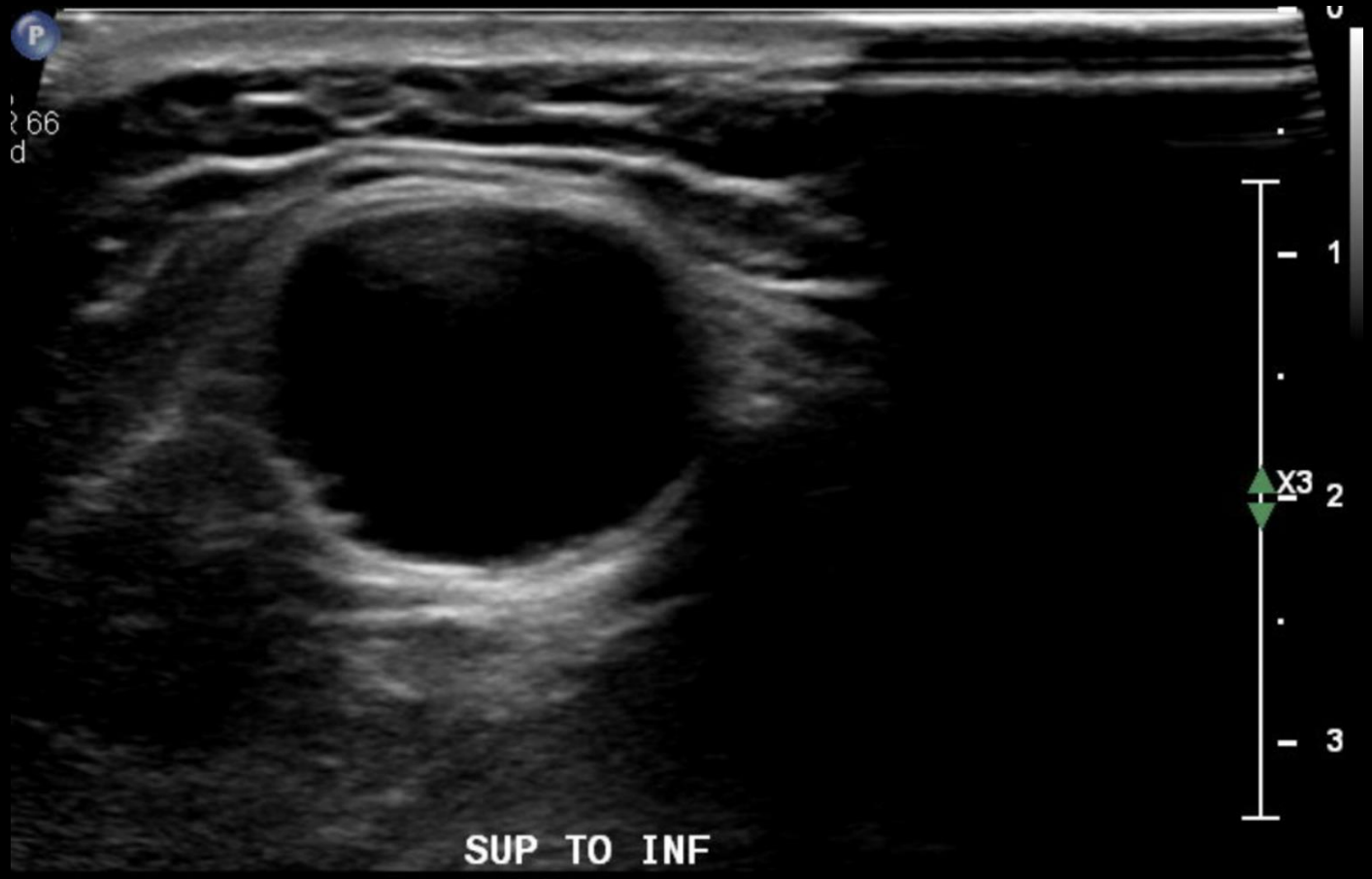
ACR Appropriateness Criteria

Variant 1: **Nonpulsatile neck mass(es). Not parotid region or thyroid. Initial imaging.**

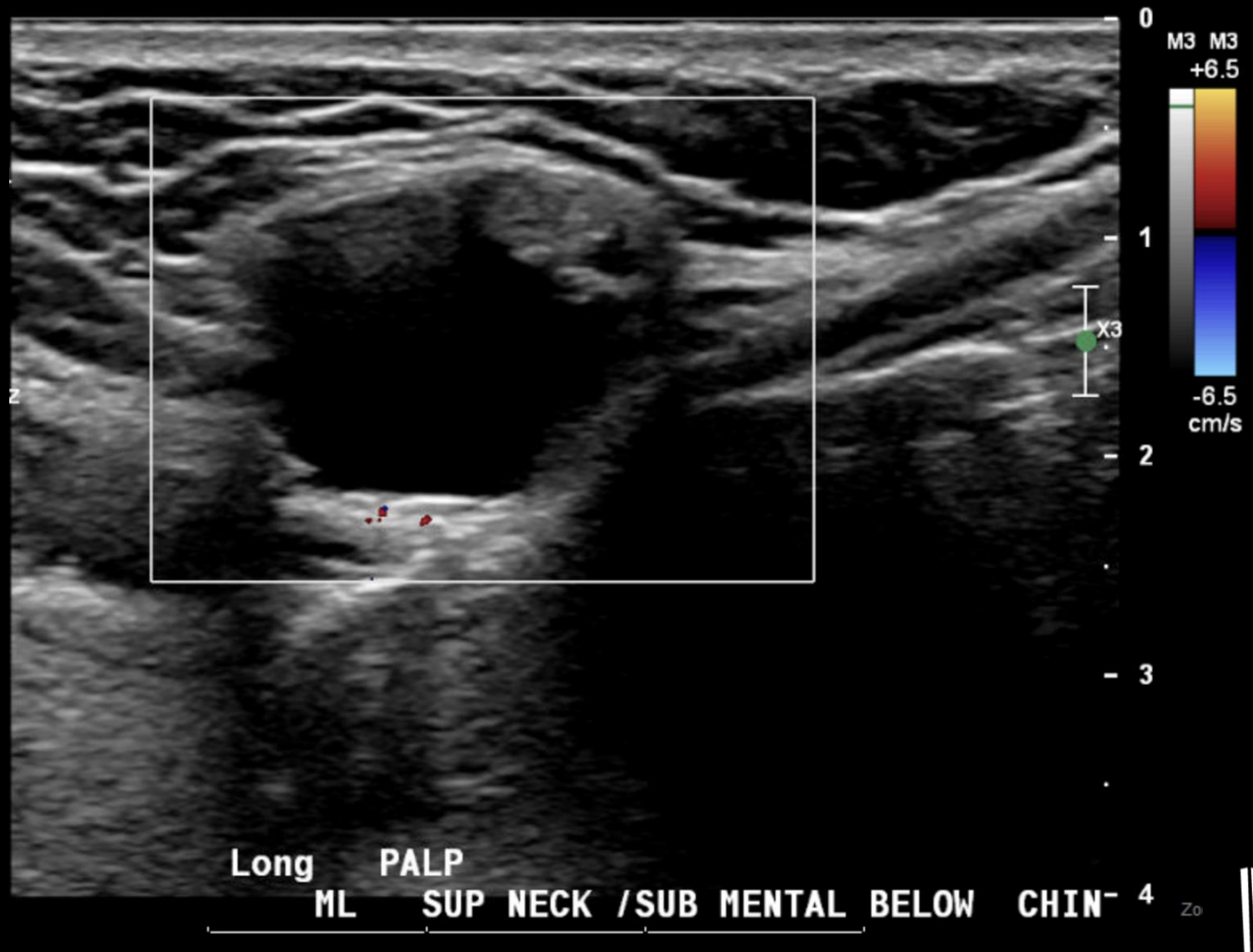
Procedure	Appropriateness Category	Relative Radiation Level
CT neck with IV contrast	Usually Appropriate	☢☢☢
MRI neck without and with IV contrast	Usually Appropriate	O
MRI neck without IV contrast	May Be Appropriate	O
US neck	May Be Appropriate	O
CT neck without IV contrast	May Be Appropriate	☢☢☢
CT neck without and with IV contrast	Usually Not Appropriate	☢☢☢
CTA neck with IV contrast	Usually Not Appropriate	☢☢☢
FDG-PET/CT skull base to mid-thigh	Usually Not Appropriate	☢☢☢☢
FDG-PET/MRI skull base to mid-thigh	Usually Not Appropriate	☢☢☢
MRA neck without and with IV contrast	Usually Not Appropriate	O
Arteriography cervicocerebral	Usually Not Appropriate	☢☢☢
MRA neck without IV contrast	Usually Not Appropriate	O

Ultrasound was ordered by provider due high clinical suspicion, availability, low cost, and lack of radiation.

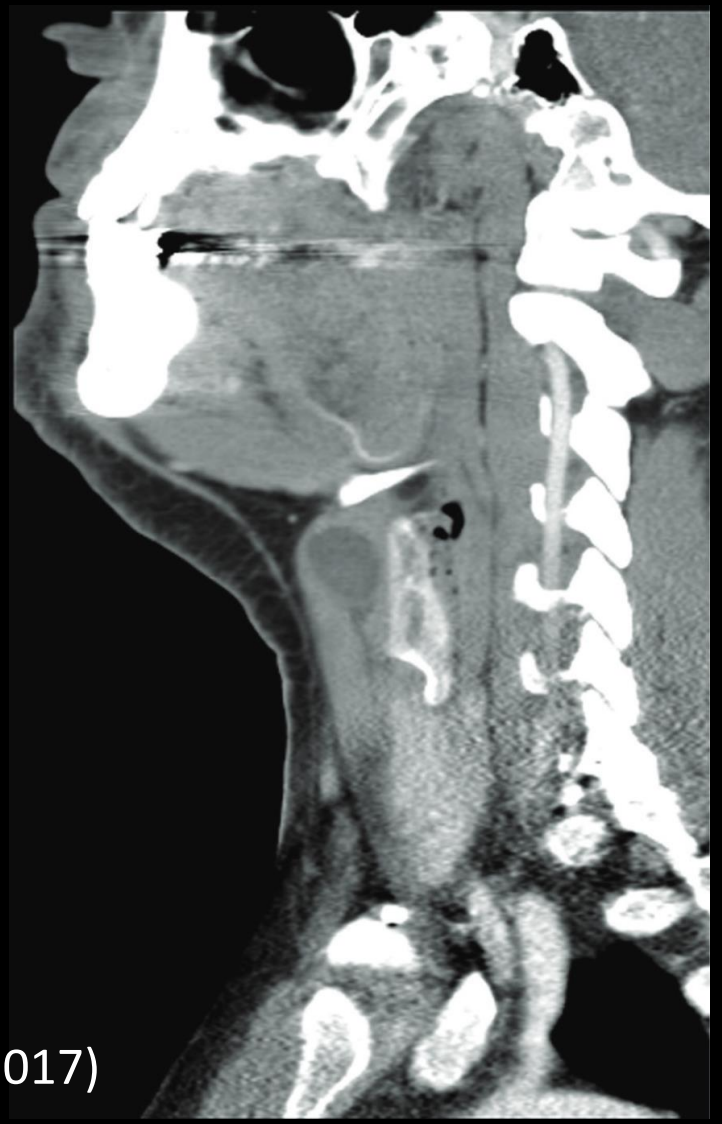
Findings (Unlabeled)



Findings (Unlabeled)



CT Findings (Unlabeled)

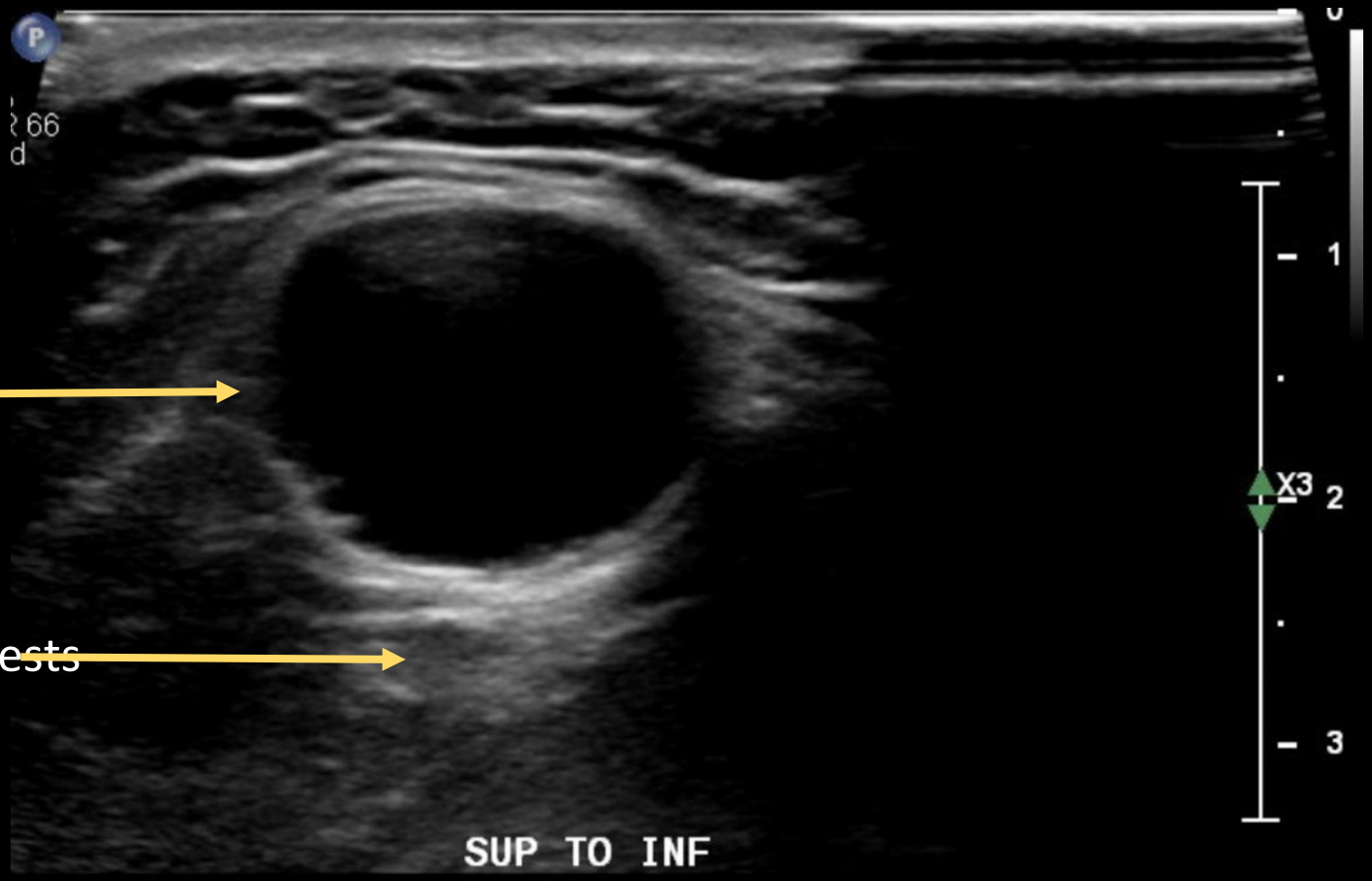


[1] Thompson LD (2017)

Findings (Labeled)

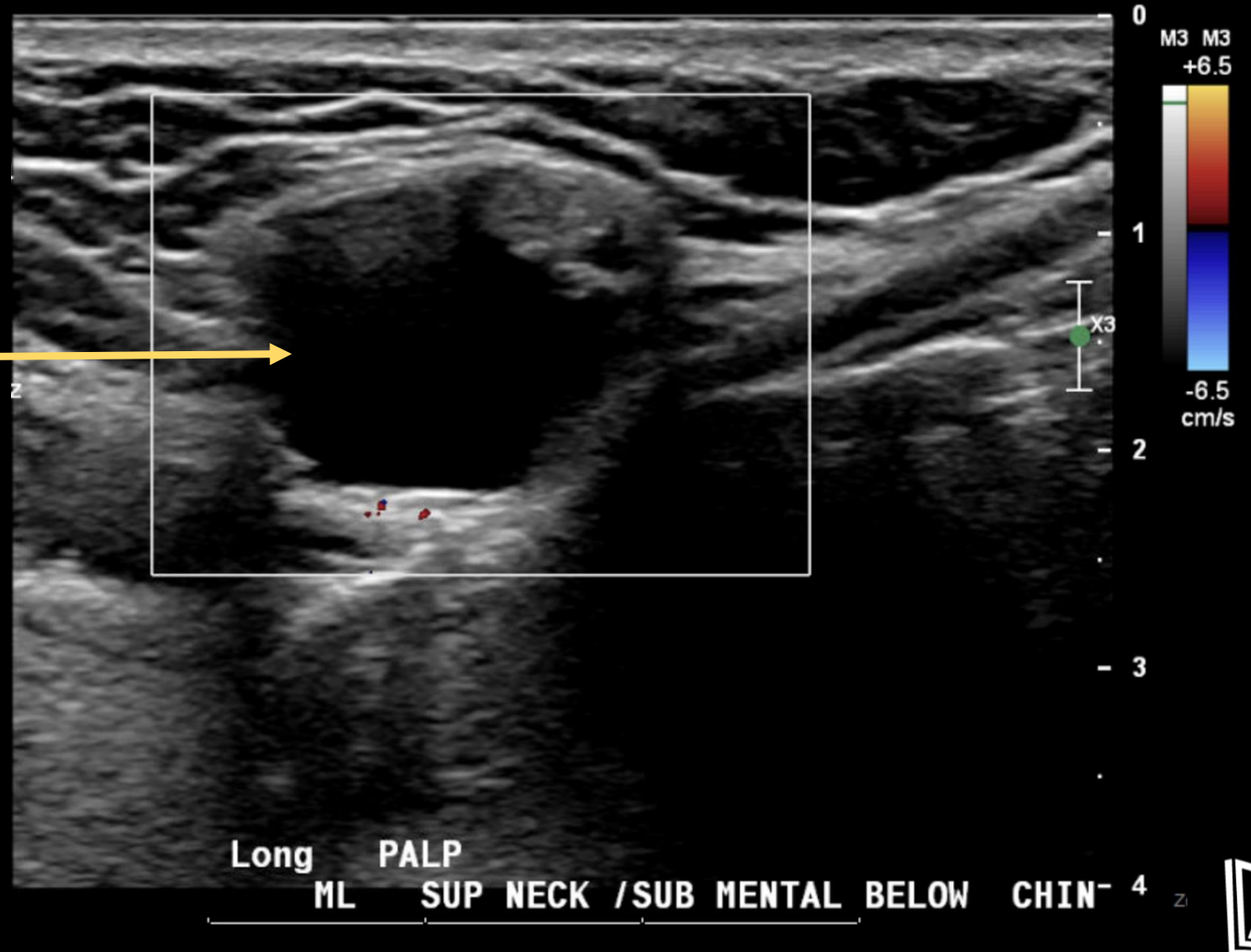
2.1 x 1.8 x 1.5 cm anechoic, cystic soft tissue lesion at midline within the superior neck

Posterior enhancement suggests cystic composition[2]

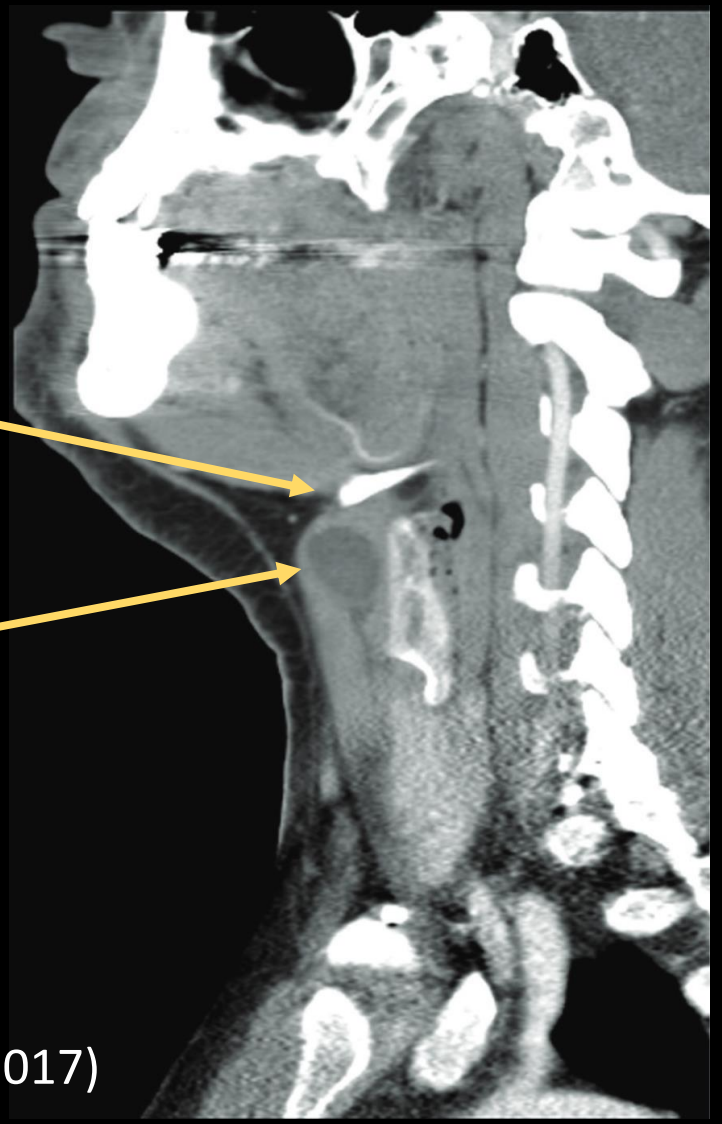


Findings (Labeled)

Absent intralesional vascularity on color Doppler ultrasound, typically a reassuring finding consistent with TDCs or other benign masses[5]



CT Findings (Labeled)



Hyoid bone

Midline, homogenous, hypodense structure and an inferiorly trailing duct consistent with a fluid-filled cyst

[1] Thompson LD (2017)

Final Diagnosis:

Thyroglossal Duct Cyst (TDC)

Case Discussion

Background

- One of the most common neck lesions
- Embryologic remnant of thyroglossal duct, which spans from foramen cecum of the tongue to pretracheal inferior midline neck

Epidemiology

- Global prevalence of ~7%
- **Although males predominate in pediatric cases and females predominate in adult cases**[1]
- Bimodal age distribution: affects 1st and 5th decades of life

Case Discussion

Important Considerations

- Risk for infection = 10%[1]
- Risk for malignancy = 1-3%[1,3]
  - Papillary thyroid carcinoma is most common malignancy (75-99% of TDCs)[1,3]

Radiologic Pearls

- US: TDC tend to be adjacent to hyoid bone, however, TDC's can develop anywhere along the embryologic tract
- CT: intracystic soft tissue is nonspecific, presence of calcification suggests malignancy

Case Discussion

Radiologic Pearls: Appearances on CT

- TDC is commonly detected on CT, especially in adults
- The typical appearance of TDC on CT is described as a well-circumscribed, hypodense structure with surrounding rim enhancement[1,6]
- A majority of TDC's are located inferior to the hyoid bone
- Inflammation (in the setting of an infected cyst) can increase the density of the cyst, making it harder to distinguish from normal adjacent soft tissue[6]

Case Discussion

Differential diagnosis of midline neck masses

- Epidermoid cyst
- Thyroid neoplasm
- Ranula cyst
- Delphian node lymphadenopathy

Management

- Fine needle aspiration (FNA) based on ACR TI-RADS size criteria
- Sistrunk procedure vs simple excision
  - Sistrunk is gold-standard treatment and offers lower rates of recurrence[1,4]

Case Outcomes

- Patient is still symptomatic and is scheduled for either FNA or excision.
  - ENT referral for second opinion
  - Possible surgical referral in the future

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5. Choi HI, Choi YH, Cheon JE, Kim WS, Kim IO. Ultrasonographic features differentiating thyroglossal duct cysts from dermoid cysts. Ultrasonography. 2018;37(1):71-77. doi:10.14366/usg.17027
6. Reede DL, Bergeron RT, Som PM. CT of thyroglossal duct cysts. Radiology. 1985;1 doi:10.1148/radiology.157.1.4034956