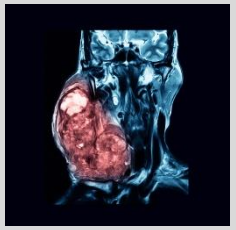
BMUS

Matt Bull-
Consultant
Radiologist

Wexham Park
Hospital- Frimley
Health

NECK LUMPS: WHEN TO BIOPSY, WHAT TO USE AND WHEN TO THEM LEAVE ALONE



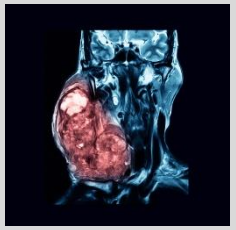
TYPES OF BIOPSY

LUMPS

SETTINGS

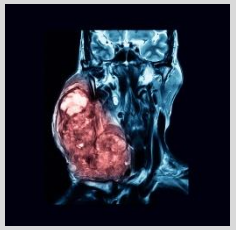
COMPLICATIONS

BIR
The British Institute of Radiology



TYPES OF BIOPSY

BIR
The British Institute of Radiology



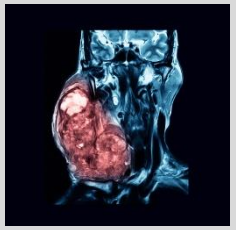
TYPES OF BIOPSY

FNA

CORE

LIQUID

BIR
The British Institute of Radiology



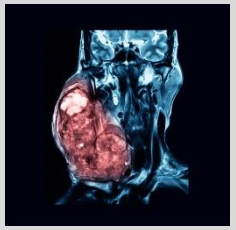
TYPES OF BIOPSY

FNA

CORE

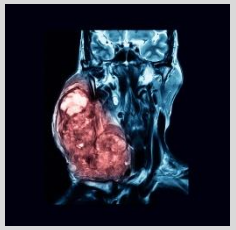
LIQUID

BIR
The British Institute of Radiology



FINE NEEDLE ASPIRATION (CYTOLOGY)

FNA(C)



Various sizes

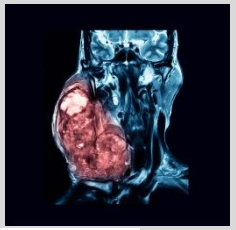
21g

23g

25g

White hub, grey markings on packet

BIR
The British Institute of Radiology



Endocr J. 2019 Feb 28;66(2):143-147. doi: 10.1507/endocrj.EJ18-0422. Epub 2018 Nov 21.

Optimal needle size for thyroid fine needle aspiration cytology

Aki Tanaka [1], Mitsuyoshi Hirokawa [2], Miyoko Higuchi [1], Risa Kanematsu [1], Ayana Suzuki [1], Seiji Kuma [2], Toshitetsu Hayashi [2], Takumi Kudo [3], Akira Miyauchi [4]

Affiliations + expand

PMID: 30464152 DOI: 10.1507/endocrj.EJ18-0422

Free article

Abstract

Concerning the needle size for thyroid fine needle aspiration cytology (FNAC), 25-27-gauge needles are generally used in Western countries. However, in Japan, the use of larger needles (21-22-gauge needles) is common. The aim of our study was to determine the optimal needle size for thyroid FNAC. We performed ultrasound-guided FNAC for 200 thyroid nodules in 200 patients using two different-sized needles (22 and 25 gauge). For each nodule, two passes with the different-sized needles were performed. The order of needle sizes was reversed for the second group of 100 nodules. The second aspiration was more painful than the first, regardless of the needle size. An association with more severe blood contamination was more frequently observed with the use of 22-gauge needles (32.0%) [illegible] les (17.5%) and in the second aspiration (37.5%) than in the initial

Endocrine. 2021 Dec;74(3):625-631. doi: 10.1007/s12020-021-02797-9. Epub 2021 Jun 19.

Effect of needle gauge on thyroid FNA diagnostic rate

Sivan Saraph [1], Hector Cohen [2], Ohad Ronen [3 4]

Affiliations + expand

PMID: 34146249 DOI: 10.1007/s12020-021-02797-9

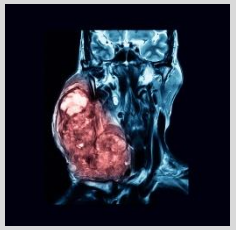
Abstract

Purpose: Thyroid Bethesda classification system provides 6 diagnostic categories, the first being a sample deemed non-diagnostic or insufficient and requiring a subsequent second biopsy. Our objective was to evaluate differences in non-diagnostic fine needle aspiration (FNA) of thyroid nodules conducted with a 23-gauge(G) needle vs. those conducted with a 25 G needle.

Methods: Data from 298 aspiration procedures using either 23 G or 25 G needles were collected, including cytological findings, ultrasound characteristics and patient demographics. The samples were classified as diagnostic or non-diagnostic according to final cytology.

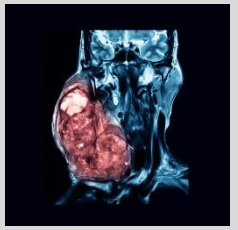
Results: There was no statistically significant difference between the 25 G and 23 G needles in terms of non-diagnostic rates (35.7%, 31.9%; $p = 0.494$). Nodules defined as cystic had higher non-diagnostic rates ($p < 0.05$). Older patients as well as cystic nodules were associated with a higher non-diagnostic rate (OR = 1.018, $p = 0.047$, OR = 13.533, $p = 0.0001$, respectively), while nodule size was associated with lower non-diagnostic rates (OR = 0.747, $p = 0.017$).

Conclusions: The use of 25 G needle did not produce a lower non-diagnostic rate when compared to 23 G needle. Larger nodules might increase diagnostic rates, while older patients and cystic nodules are prone to inadequate samples. Patients and caregivers should be aware that FNA of small or cystic

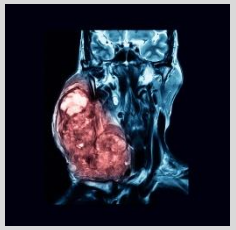


- My preference:
  - No local
  - Verbal consent
  - Thyroid- 27g first
  - Non thyroid- 23g first

- My cytologists:
- 4 –6 slides
- Wet and Dry prep
  - Cytofixx spray
- No routine washings
  - No cytospin
  - Can use saline



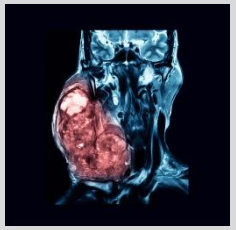
BIR
The British Institute of Radiology



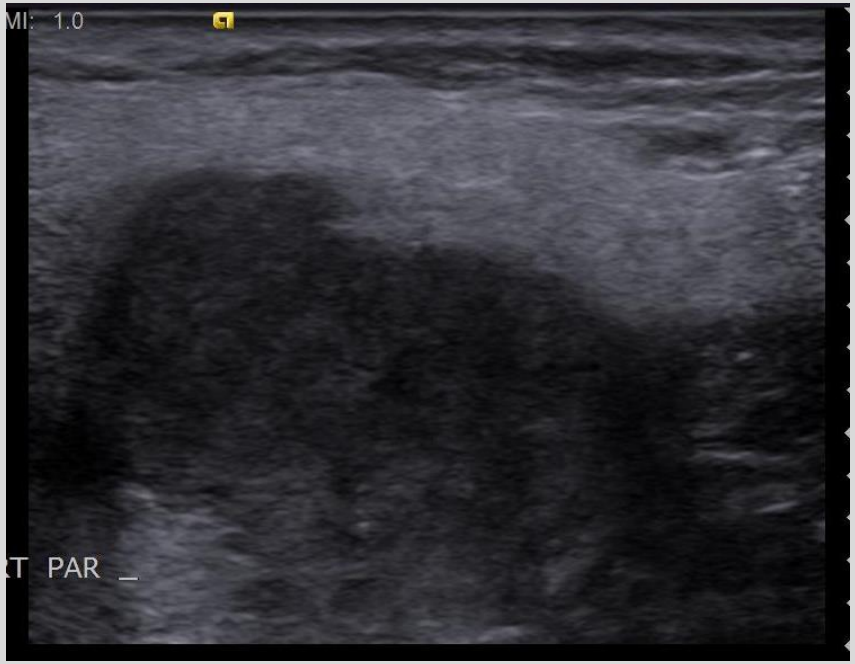
When to FNA (1st line)?

THYROID

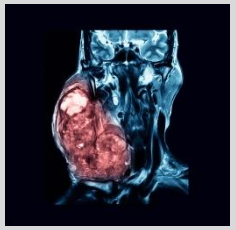
BIR
The British Institute of Radiology



When to FNA (1st line)?



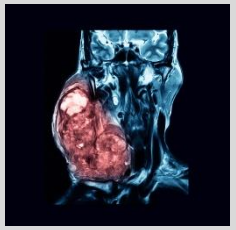
SALIVARY TUMOUR



When to FNA (1st line)?

NODES??

BIR
The British Institute of Radiology



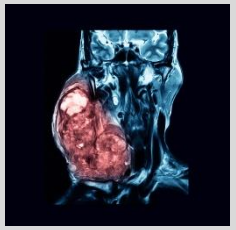
TYPES OF BIOPSY

FNA

CORE

LIQUID

BIR
The British Institute of Radiology



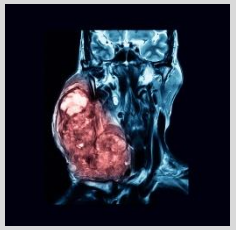
TYPES OF BIOPSY

FNA

CORE

LIQUID

BIR
The British Institute of Radiology

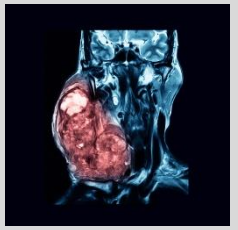


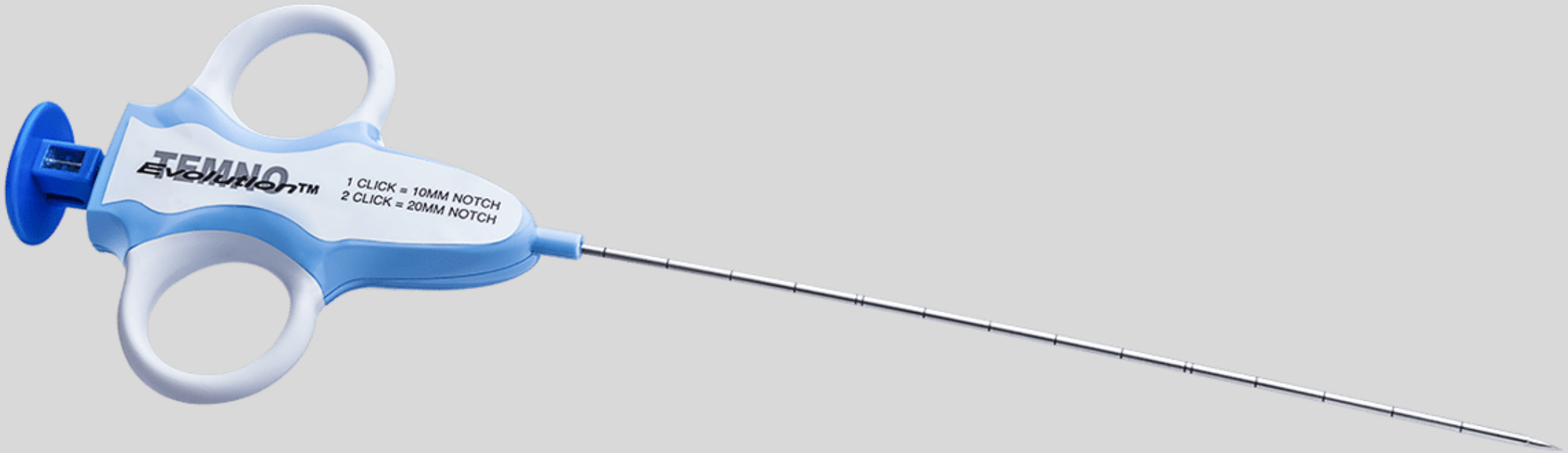
CORE BIOPSY (HISTOLOGY)

Tissue biopsy

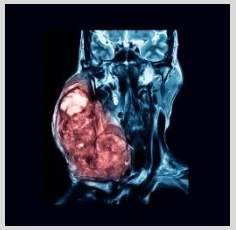
TruCut

BIR
The British Institute of Radiology





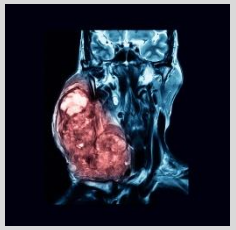
BIR
The British Institute of Radiology



- My preference:
  - 1% lidocaine
  - Written consent
  - 20mm 18g 6cm
  - 10mm if small

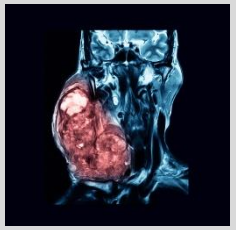
- Formalin pot
- Saline for micro/ TB
- Aim for 3 samples min
- DO NOT CRUSH

BIR
The British Institute of Radiology



- Patient factors:
- Consent
- Bloods
  - Thyroid/ high risk
  - Anticoagulants
- Observation period?

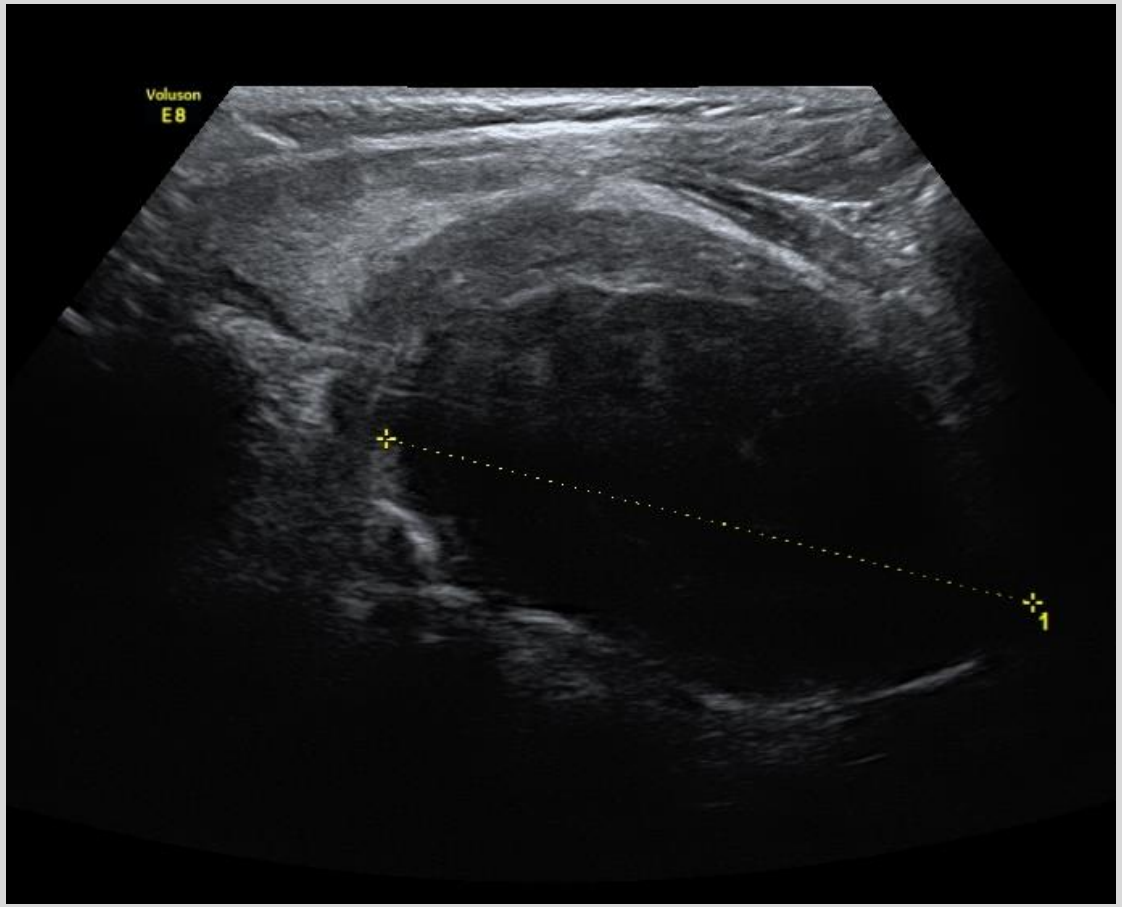
BIR
The British Institute of Radiology



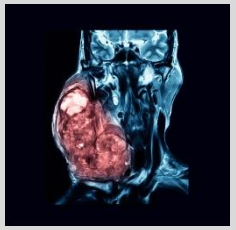
When to CORE ?

THYROID

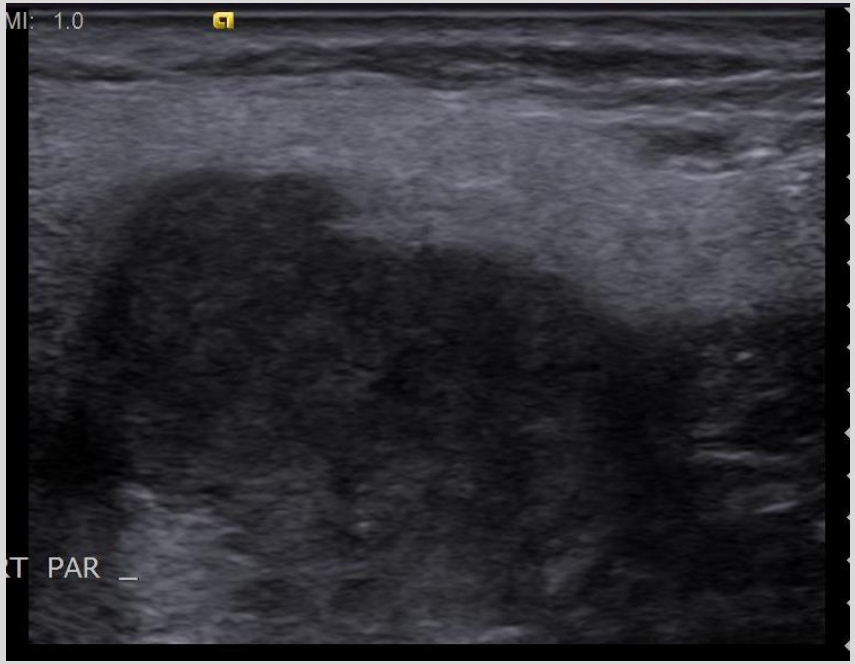
SUSPECTED LYMPHOMA#
MEDULLARY (usually 2nd line)
REIDEL'S THYROIDITIS
METASTASIS??
FNA FAILURE??



BIR
The British Institute of Radiology



When to CORE?



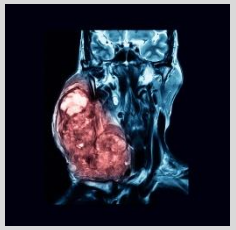
SALIVARY TUMOUR

MDT PRACTICE

SUSPECTED LYMPHOMA

FNA FAILURE/PATH REQ

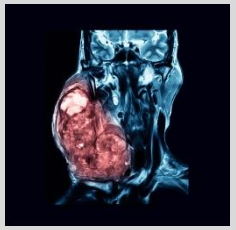
BIR
The British Institute of Radiology



When to CORE?

NODES??

BIR
The British Institute of Radiology

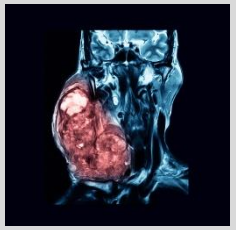


When to CORE?

NODES

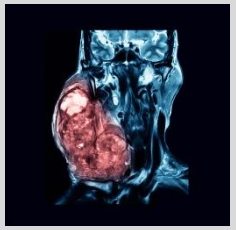
EVERYTHING!

BIR
The British Institute of Radiology



- High adequacy rate (high 90s)
- Well tolerated
- More accurate diagnosis
- p16
- PD-L1 CPS
- Lung
- Breast
- lymphoma

- Can avoid biopsy of the primary
  - Speed to diagnosis
  - Risks of GA
  - Risk of tracheostomy



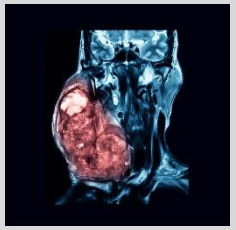
TYPES OF BIOPSY

FNA

CORE

LIQUID

BIR
The British Institute of Radiology



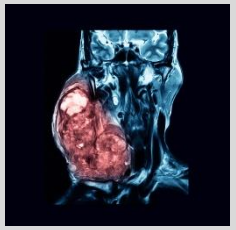
TYPES OF BIOPSY

FNA

CORE

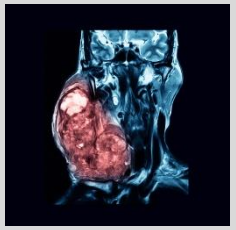
LIQUID

BIR
The British Institute of Radiology



- LIQUID MEDIUM
  - Needle washings from FNA
  - Additional cytology yield
  - Cell block ⟹ histology
  - Flow cytometry (Leukaemia/ lymphoma)

  - Microbiology (AFB)- DO NOT USE FORMALIN!



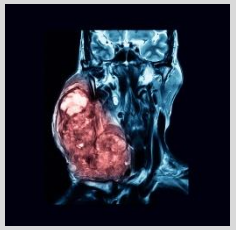
TYPES OF BIOPSY

LUMPS

SETTINGS

COMPLICATIONS

BIR
The British Institute of Radiology



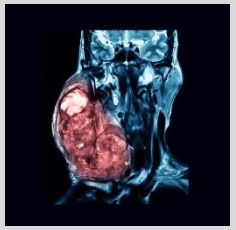
TYPES OF BIOPSY

LUMPS

SETTINGS

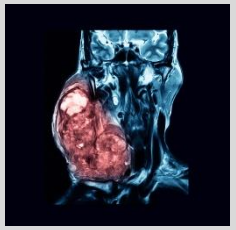
COMPLICATIONS

BIR
The British Institute of Radiology



- OUTPATIENT vs INPATIENT
- ENT CLOSE BY
- LOCAL POLICY
  - No nurse, no core (local policy)
- DO PATIENTS GET TIME TO CONSENT PROPERLY?

BIR
The British Institute of Radiology



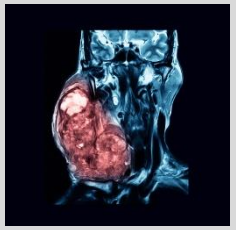
TYPES OF BIOPSY

LUMPS

SETTINGS

COMPLICATIONS

BIR
The British Institute of Radiology



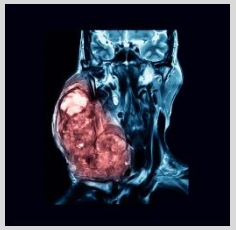
TYPES OF BIOPSY

LUMPS

SETTINGS

COMPLICATIONS

BIR
The British Institute of Radiology



- Bleeding
  - Press on it
  - Thyroid- throat irritation
  - SMG- blood in mouth
- Infection
  - Rare!

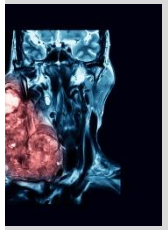
- Pain
  - Local
  - Referred- ear ache
- Nerve damage
  - Parotid- Facial
  - SMG/ Ib- lingual/ mylohyoid

  SCM- Greater auricular nerve

BIR The British Institute of Radiology

REVIEWS AND COMMENTARY • IMAGES IN *RADIOLOGY*

Radiology



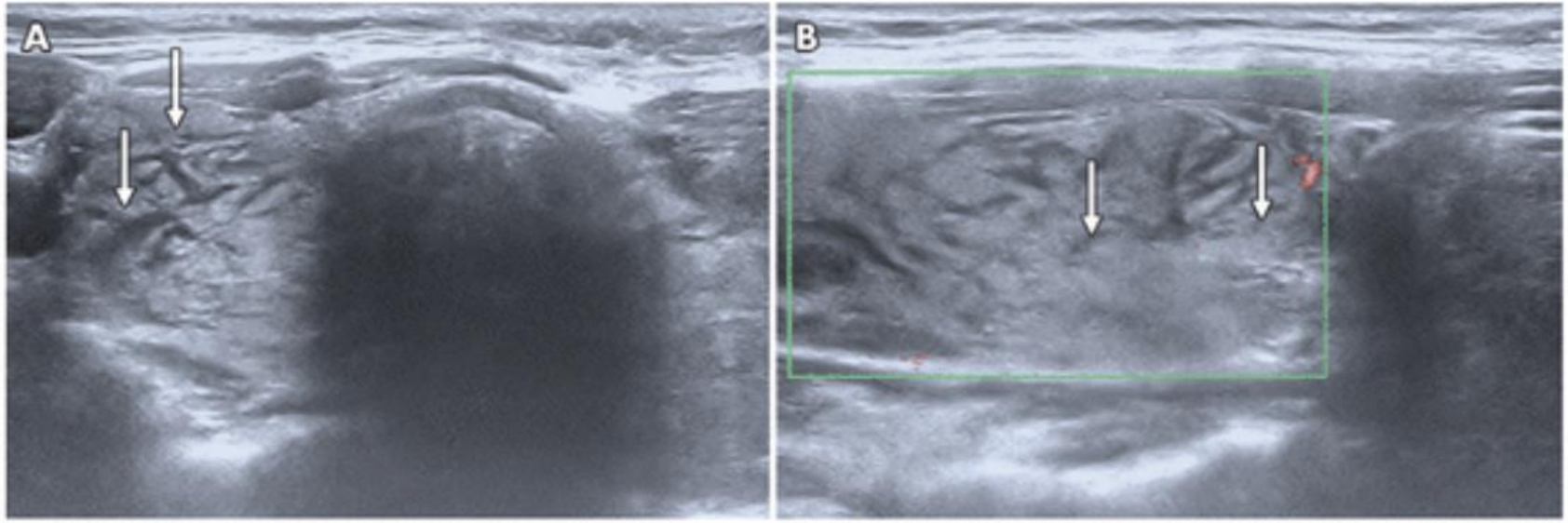
The Cracking Thyroid

Luis Fernando Serrano, MD • *Sergio Valencia, MD*

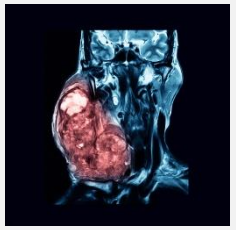
From the Department of Radiology, Fundación Santa Fe de Bogotá, Carrera 116 No. 9-02, Bogotá, Colombia 110111. Received November 2, 2018; revision requested December 11; final revision received December 21; accepted January 2, 2019. **Address correspondence to** L.F.S. (e-mail: *monoserrano@gmail.com*).

Conflicts of interest are listed at the end of this article.

Radiology 2019; 291:14 • https://doi.org/10.1148/radiol.2019182540 •



Images demonstrate cracking thyroid occurrence after needle biopsy. *A*, US scan of thyroid in transverse plane shows hypoechoic septations ("cracking") (arrows) throughout right lobe. *B*, Sagittal color Doppler US scan of right lobe shows loss of flow from the acute swelling that is seen as hypoechoic septations (arrows).



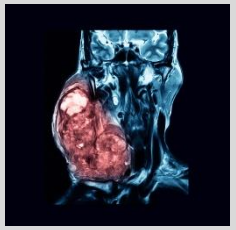
TYPES OF BIOPSY

LUMPS

SETTINGS

COMPLICATIONS

BIR
The British Institute of Radiology



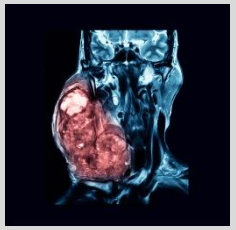
TYPES OF BIOPSY

LUMPS

SETTINGS

COMPLICATIONS

BIR
The British Institute of Radiology



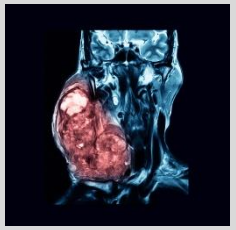
LUMPS

BIOPSY

MAYBE BIOPSY

DON'T TOUCH

BIR
The British Institute of Radiology



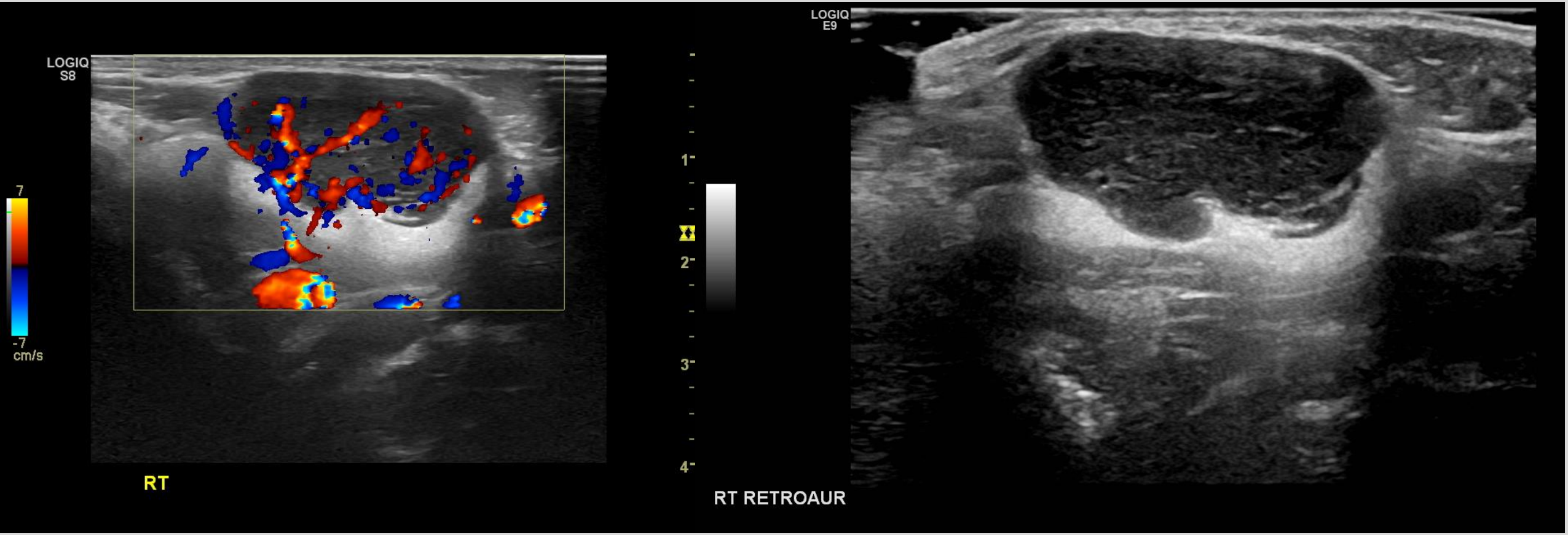
WHEN TO BIOPSY

When you want to know what the lump is and can't tell from the imaging.

When you know, but need to prove it (contralateral nodes on MR etc)

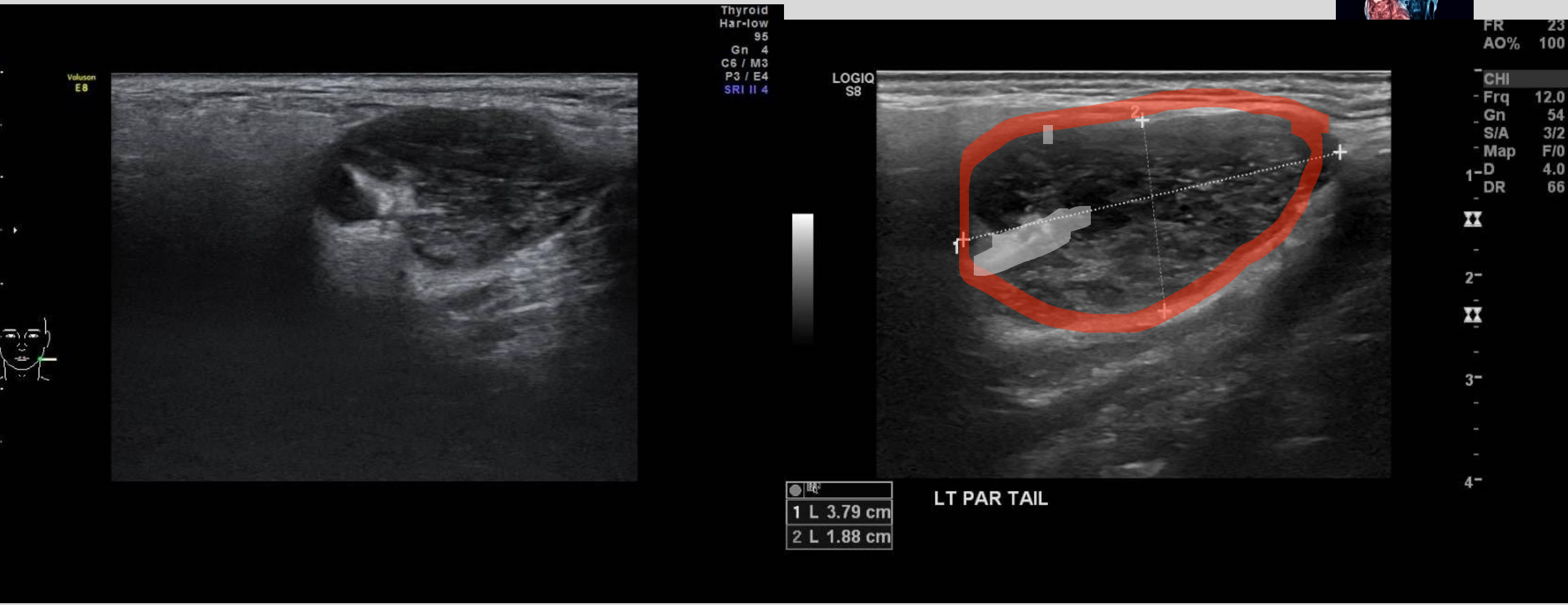
Sometimes we need the clever stuff (p16, PDL1 etc)

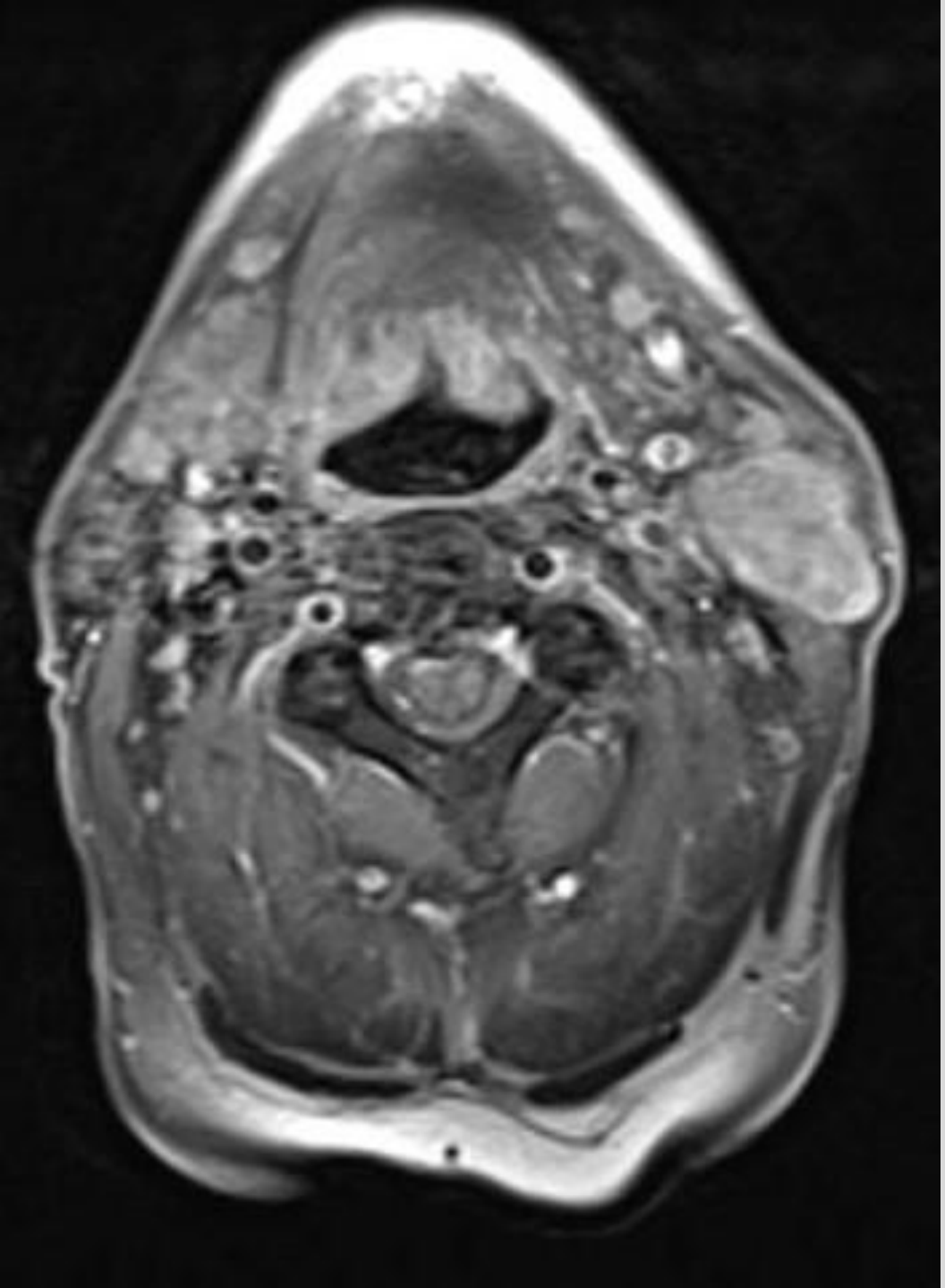
BIR
The British Institute of Radiology

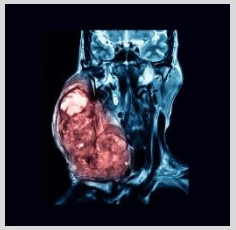


CASTLEMAN'S DISEASE

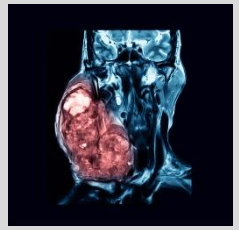
BIR
The British Institute of Radiology

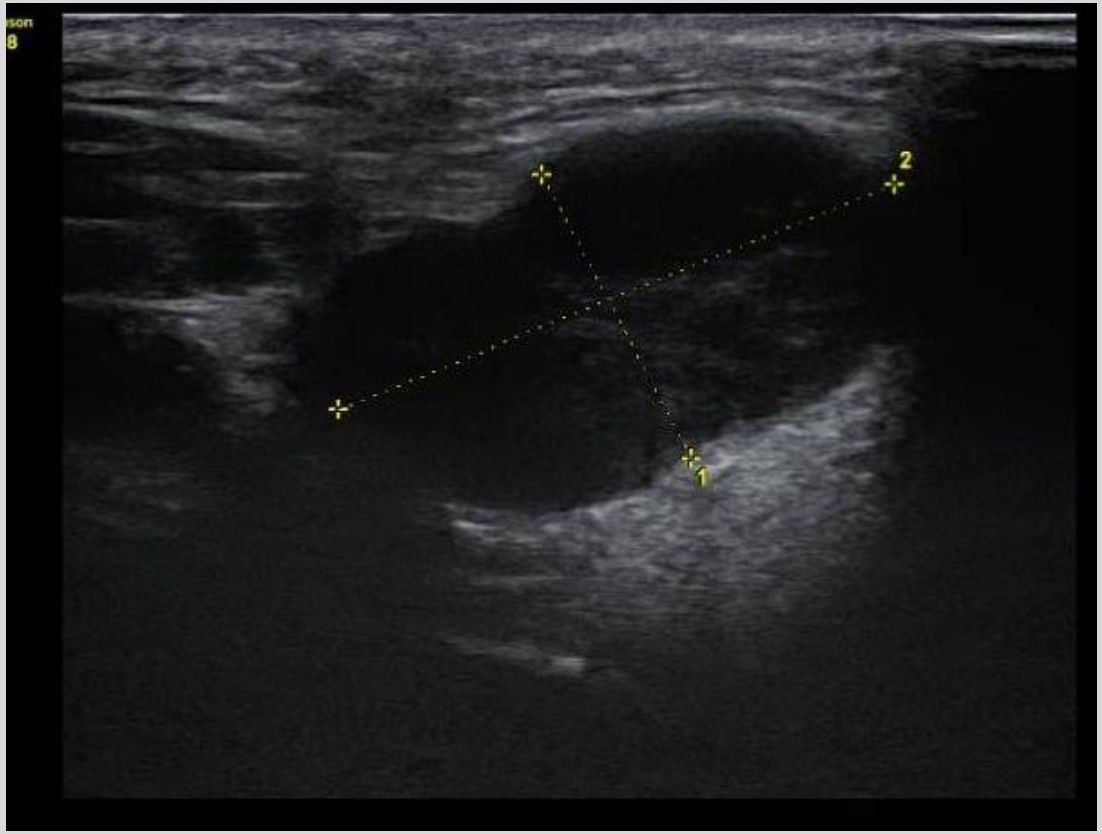

Thyroid
Har-low
95
Gn 4
C6 / M3
P3 / E4
SRI II 4
Voluson
E8
LOGIQ
S8
FR 23
AO% 100
CHI
Frq 12.0
Gn 54
S/A 3/2
Map F/0
D 4.0
DR 66
1 L 3.79 cm
2 L 1.88 cm
LT PAR TAIL

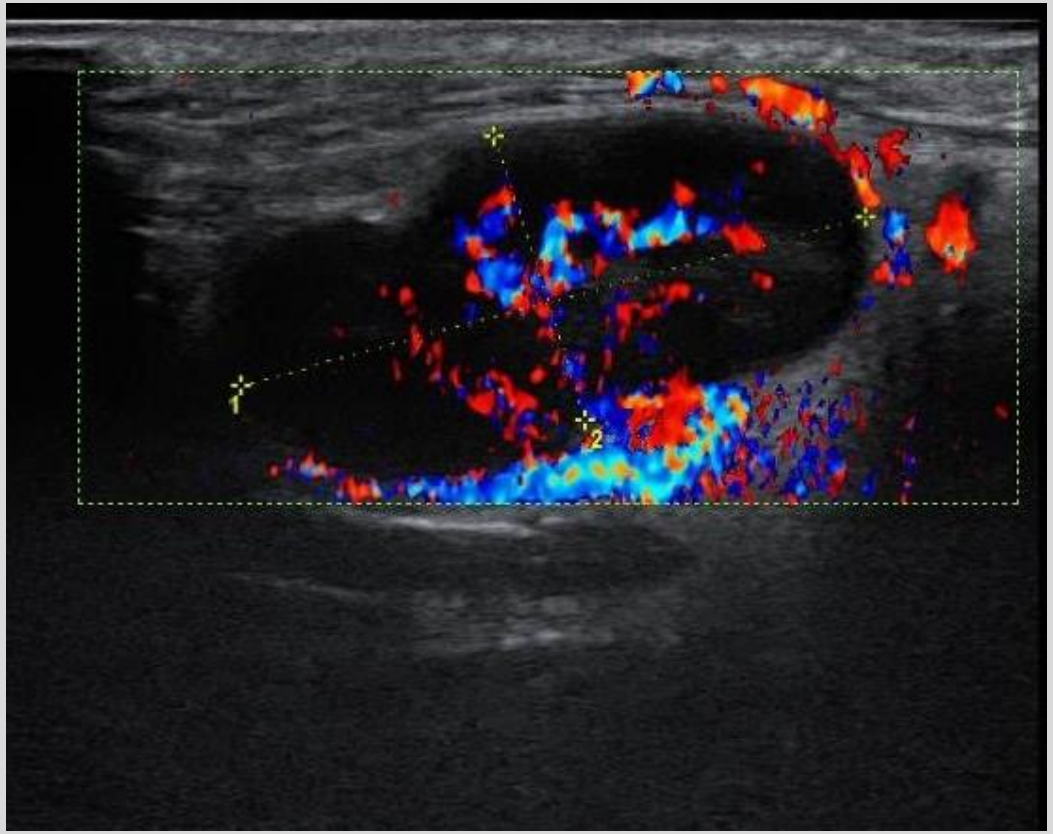




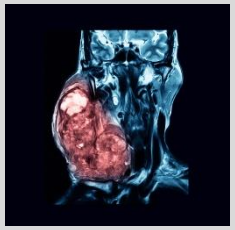
- Warthin's tumour
  - Arising from lymphoid tissue
  - Can look VERY like a node



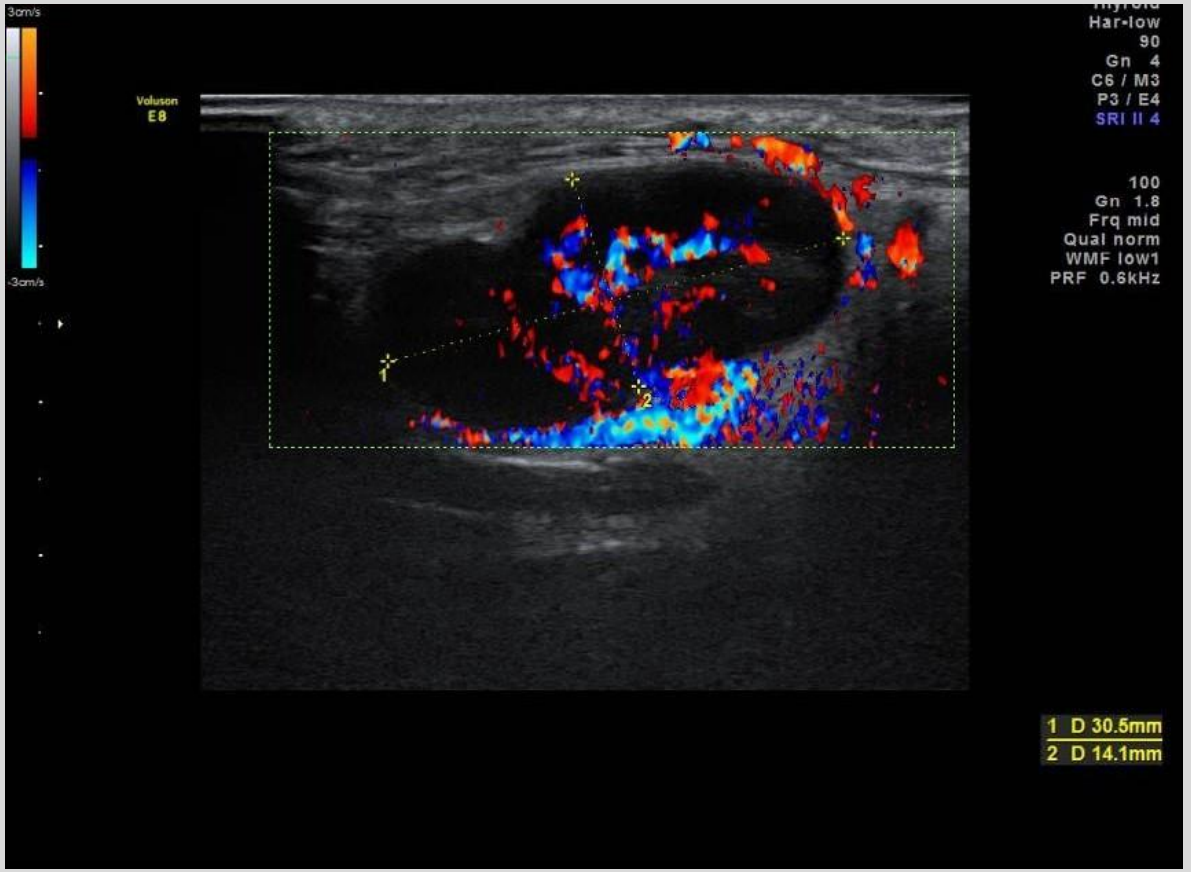




BIR
The British Institute of Radiology

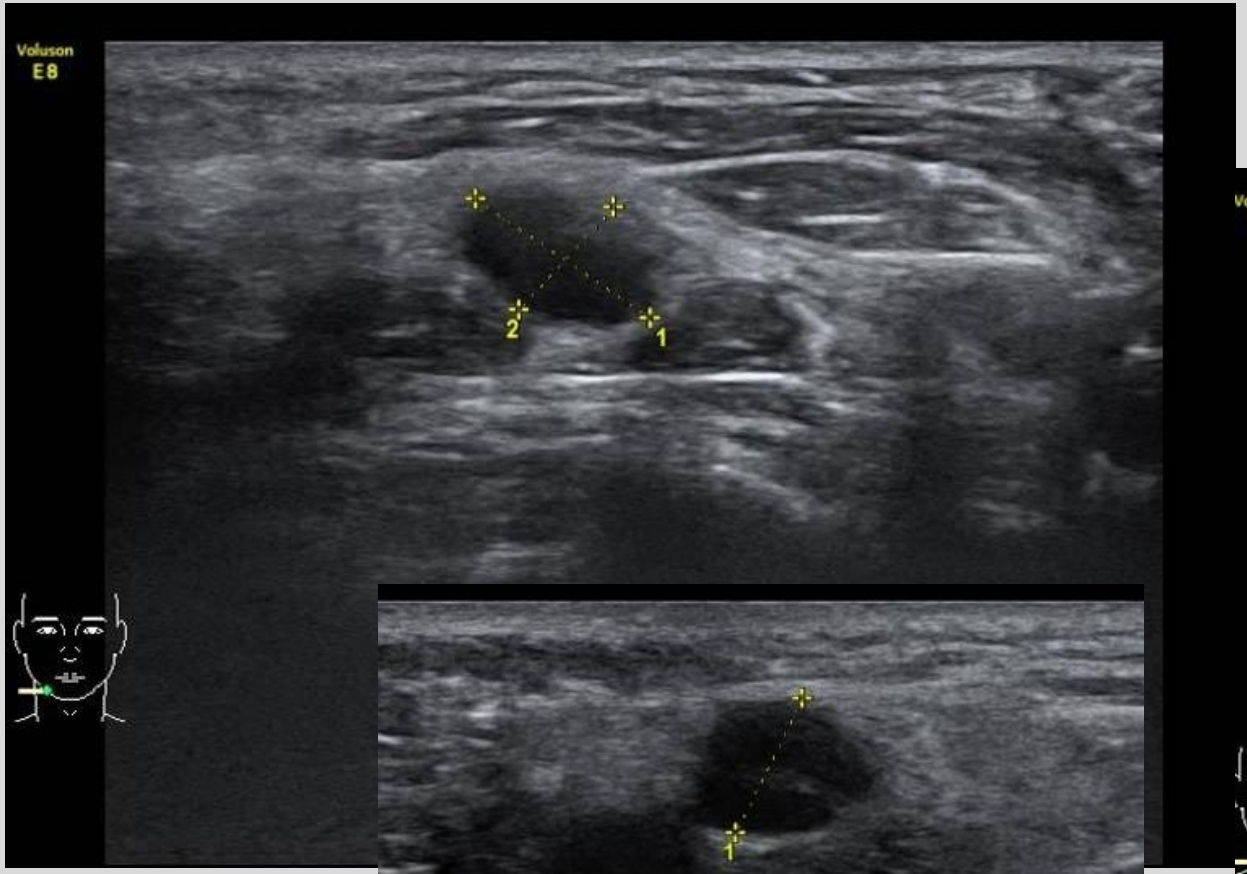


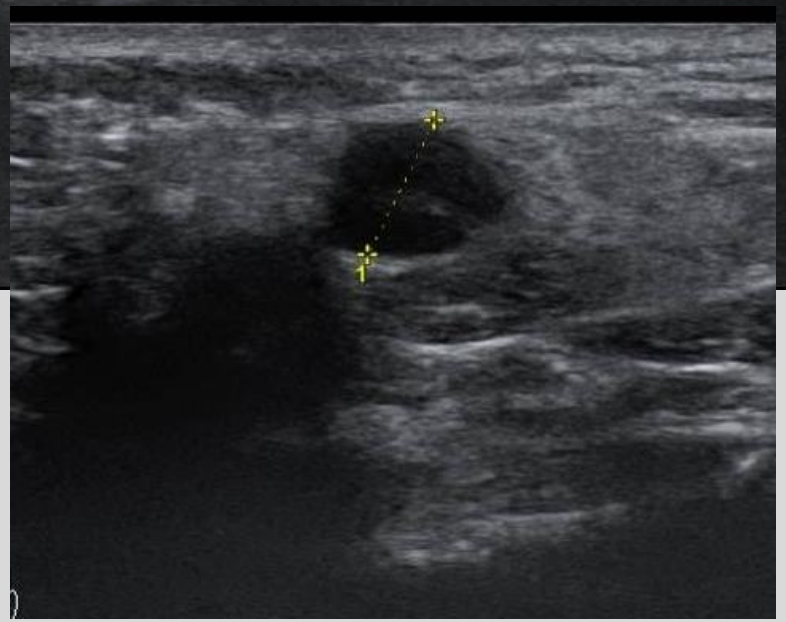
- Few months history
- Not improving

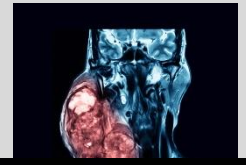


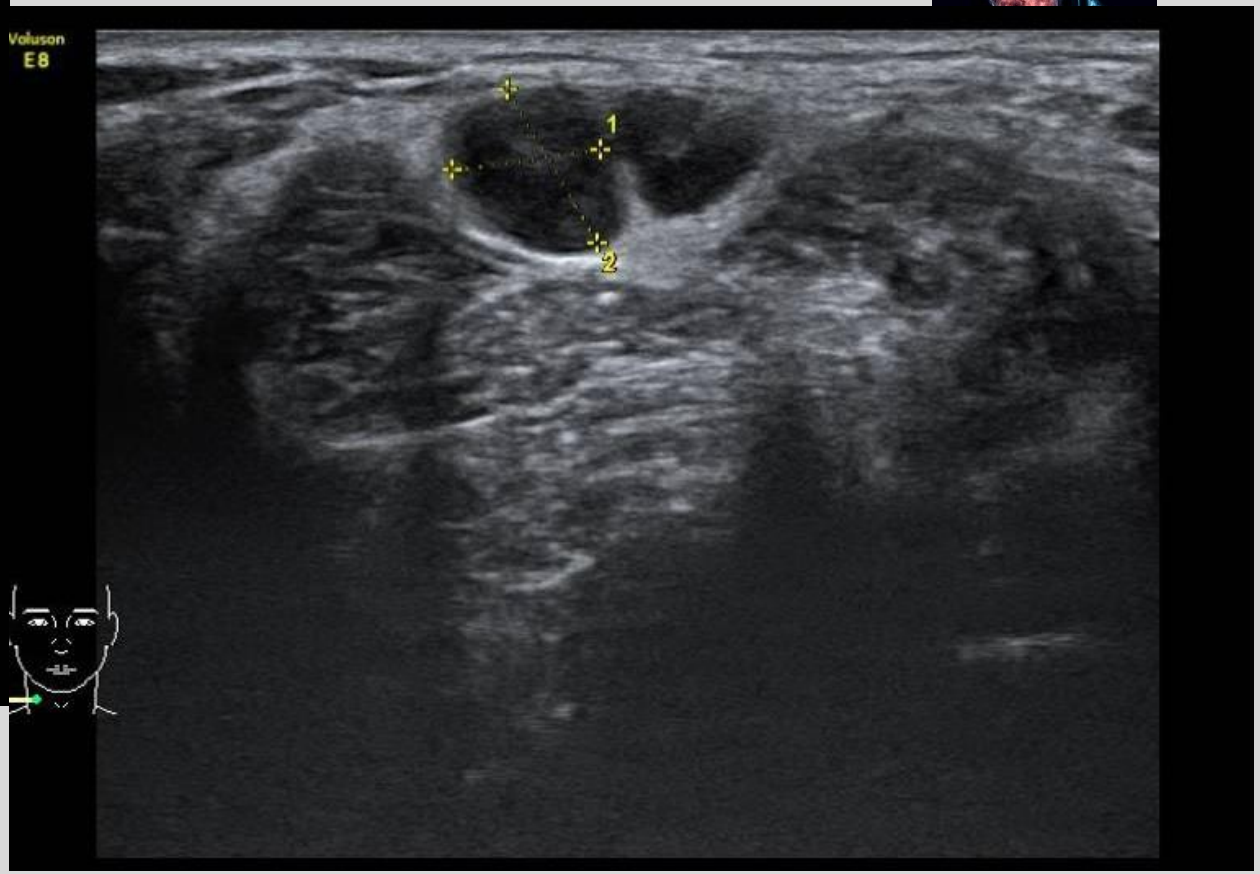
- Toxoplasmosis

BIR
The British Institute of Radiology

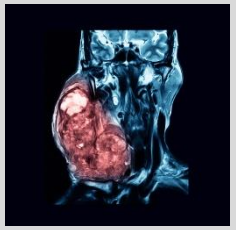








BIR
The British Institute of Radiology



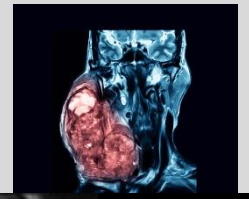
- Not very big but persistent
- Not responding to antibiotics
- Well (can be sore)

- Punjabi…

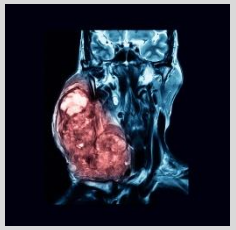
- or could be Japanese

KIKUCHI SYNDROME

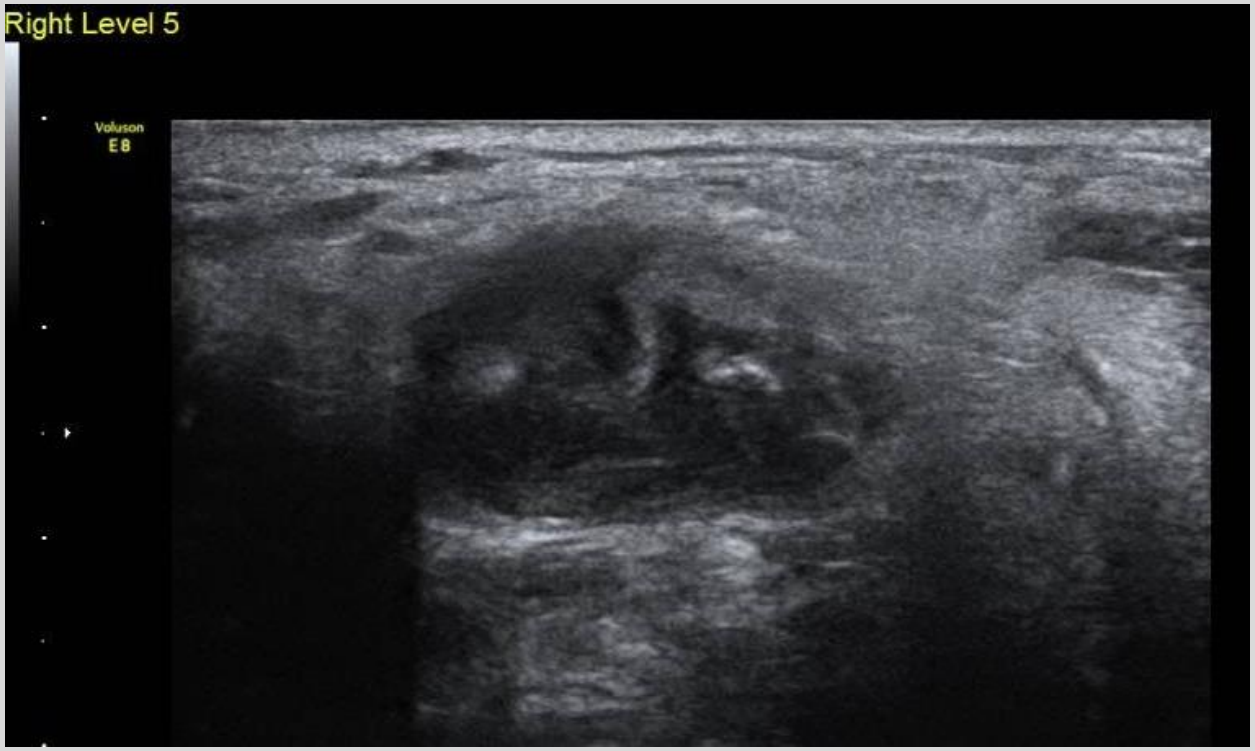
Autoimmune
Self-limiting



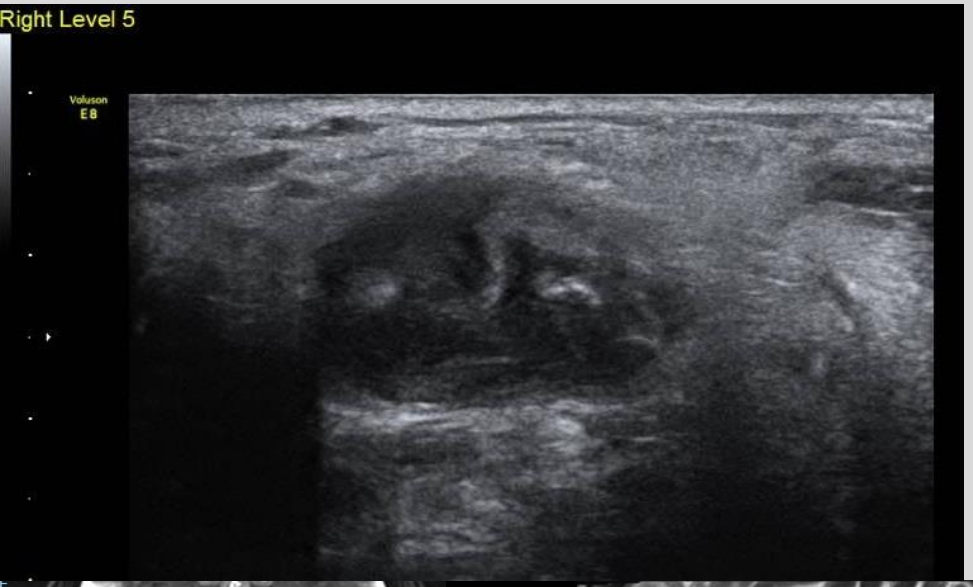
BIR
The British Institute of Radiology

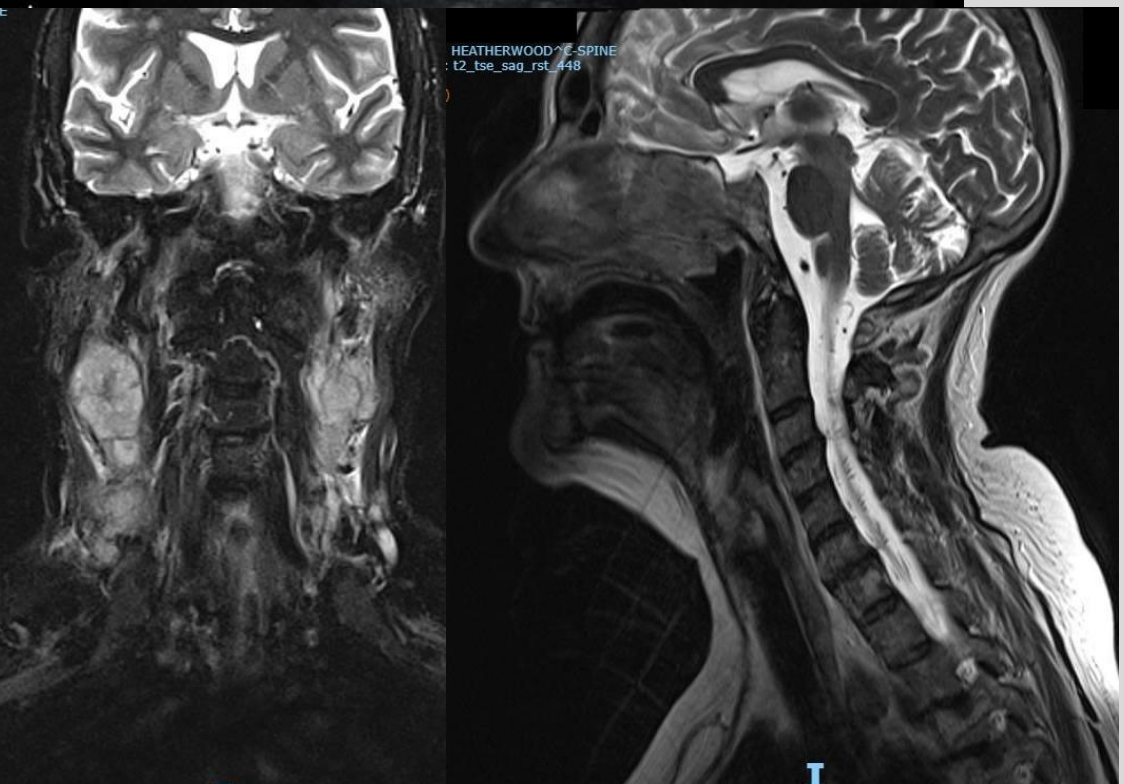


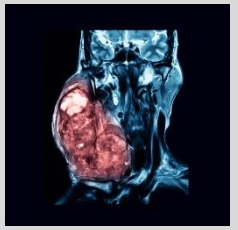
- Nasty looking nodes
- FNA or core?
- 2012, I did FNA.
- Histiocytes



BIR
The British Institute of Radiology

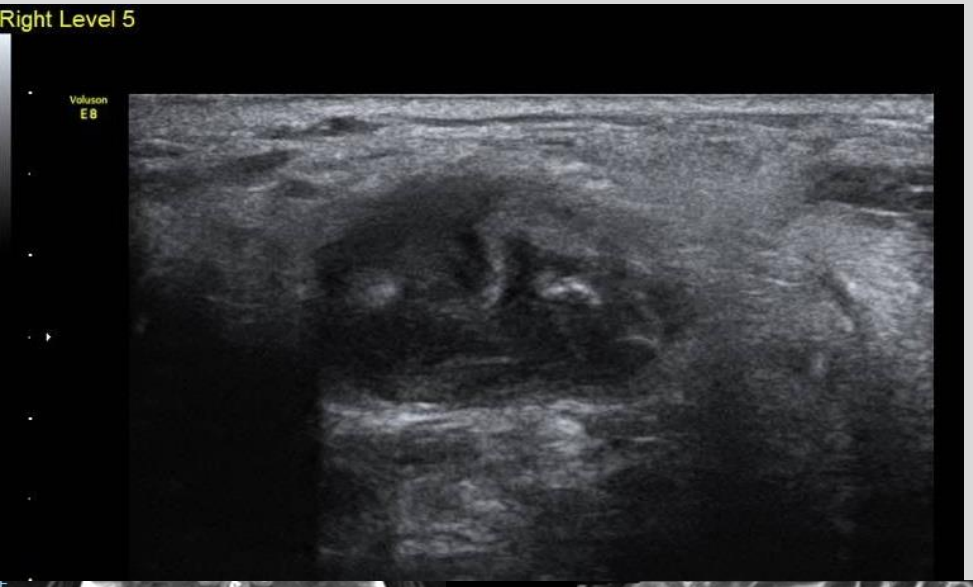


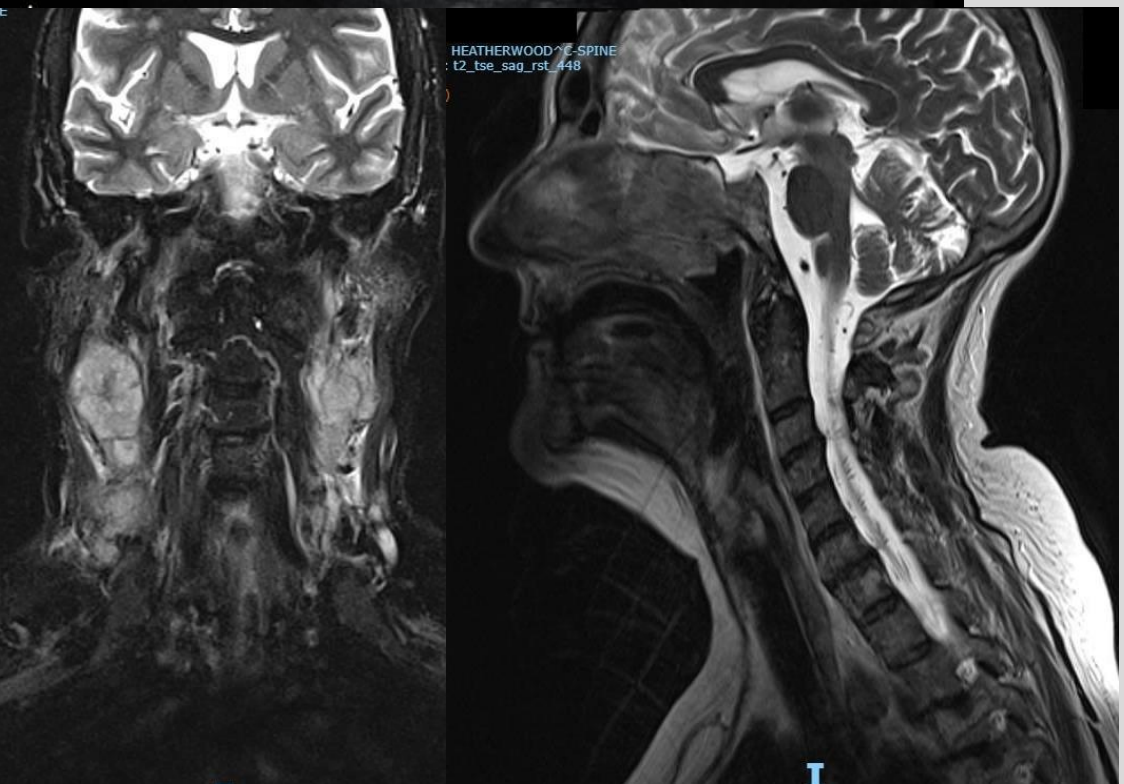


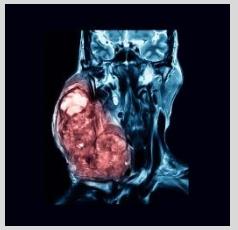


Massive LN
Sinus/NP mass
Histiocytes

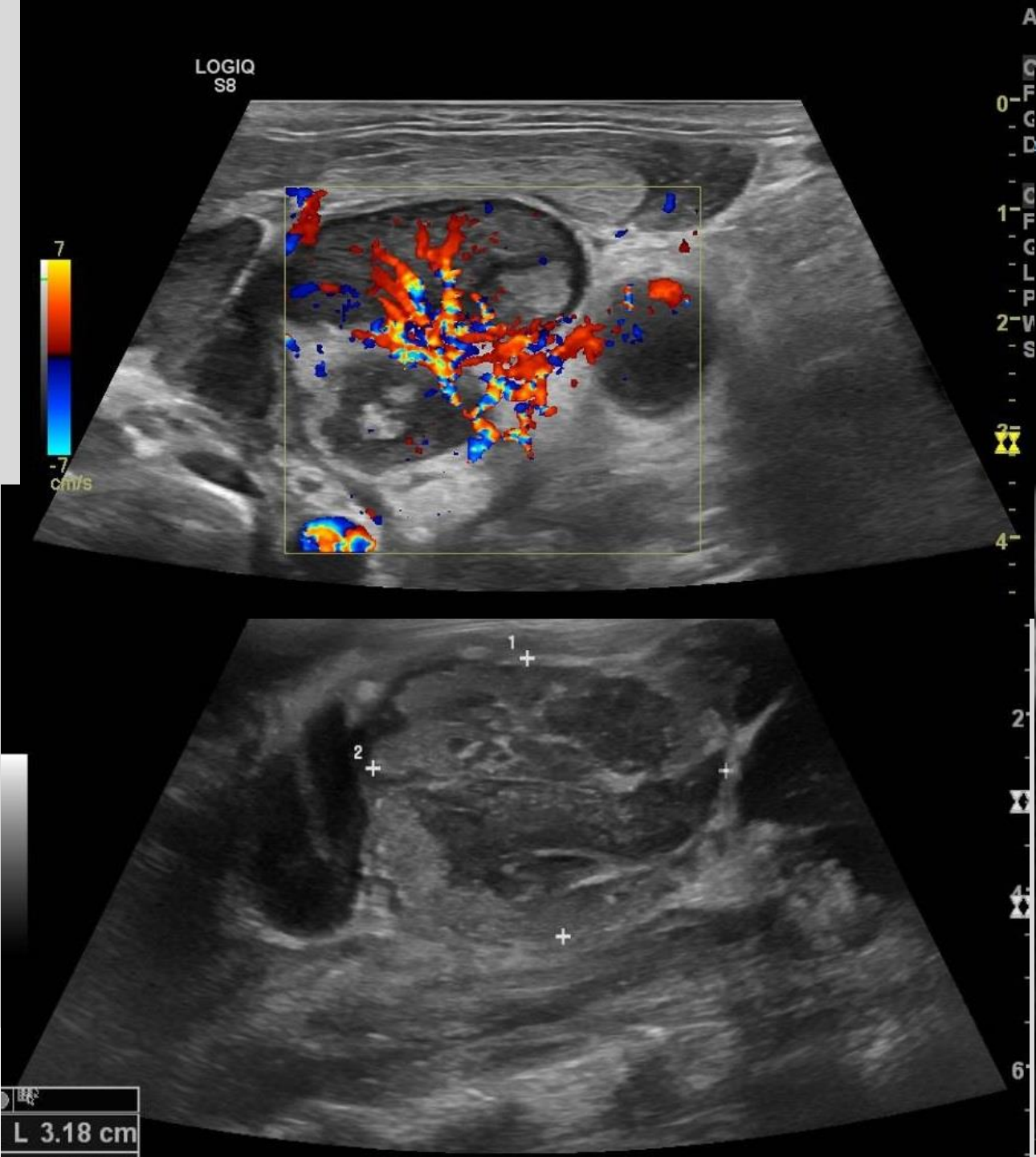
ROSAI-DORFMAN DISEASE!

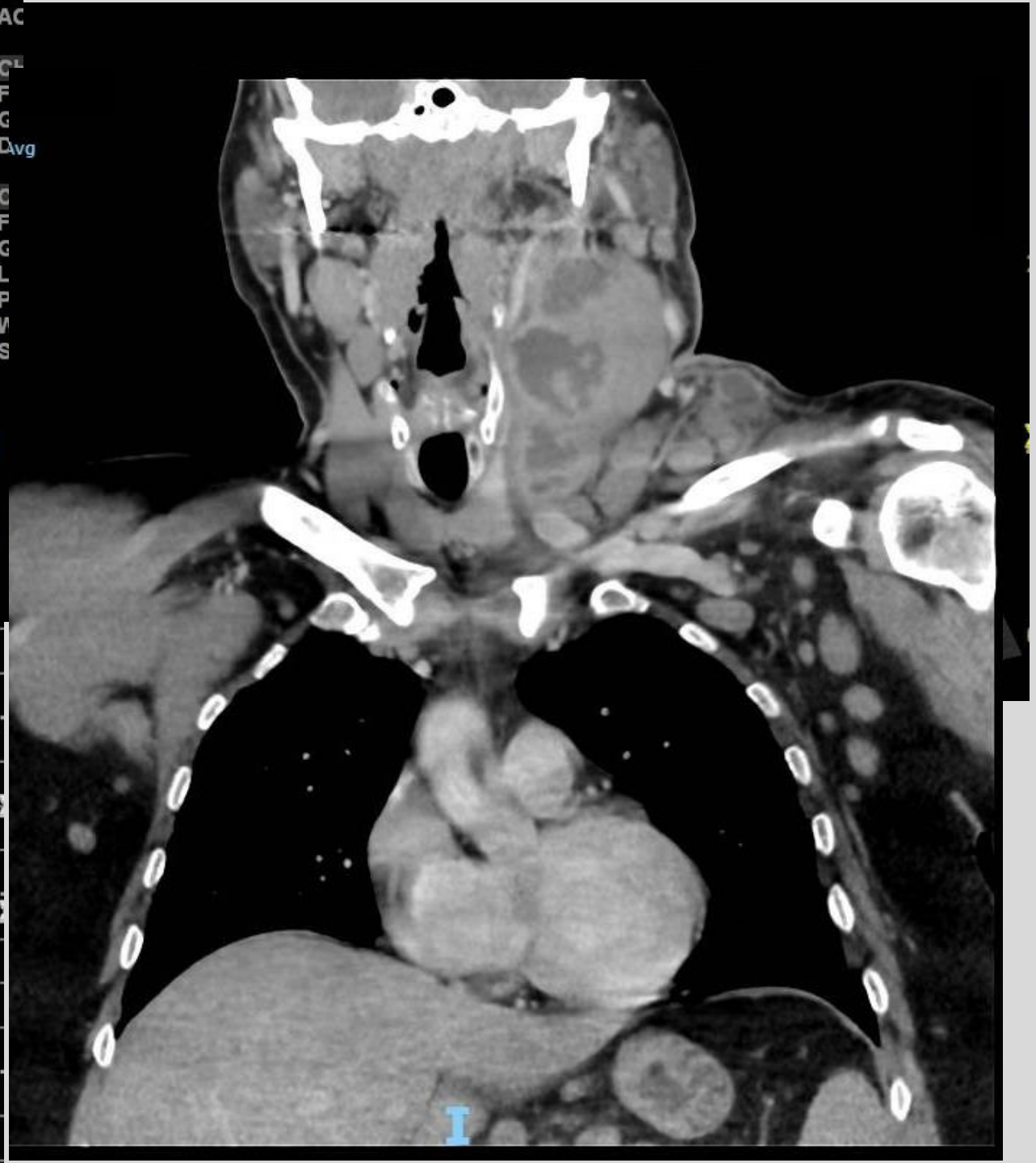






LYMPHOHISTIOCYTIC LYMPHOMA\ LANGERHANS CELL SARCOMA

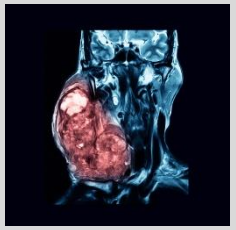

LOGIQ
S8
7
-7
cm/s
1
2
L 3.18 cm



Looks like TB. Acts like TB
Good story
Not responding to
empirical treatment

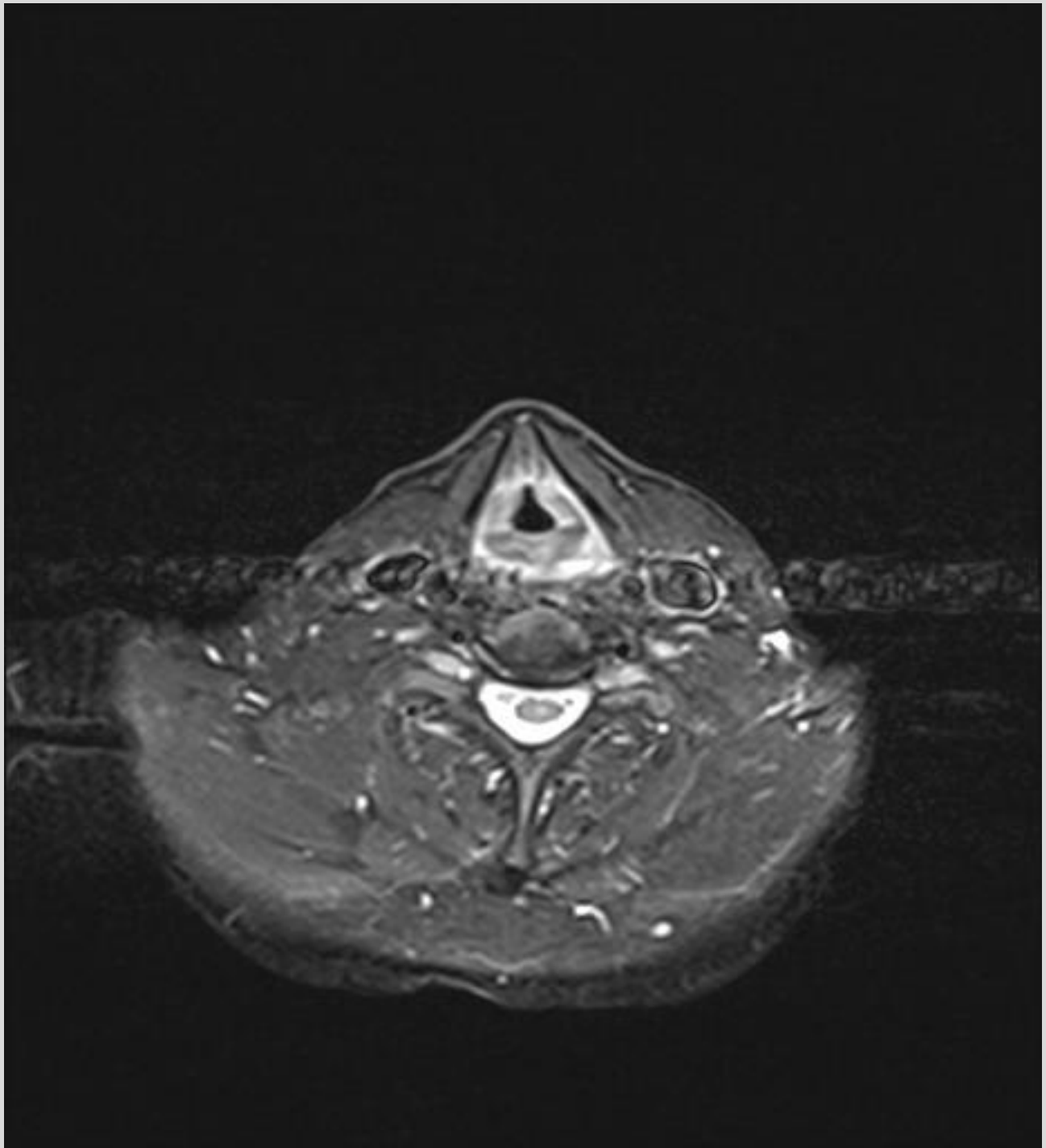
CORE
Small lymphocytic /
chronic lymphocytic lymphoma

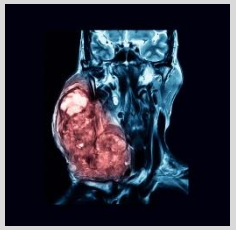
BIR
The British
Institute of
Radiology



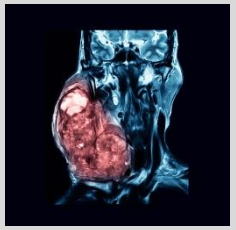
BIOPSY TO SAVE THE PATIENT TIME/ HELP STAGING

BIR
The British Institute of Radiology

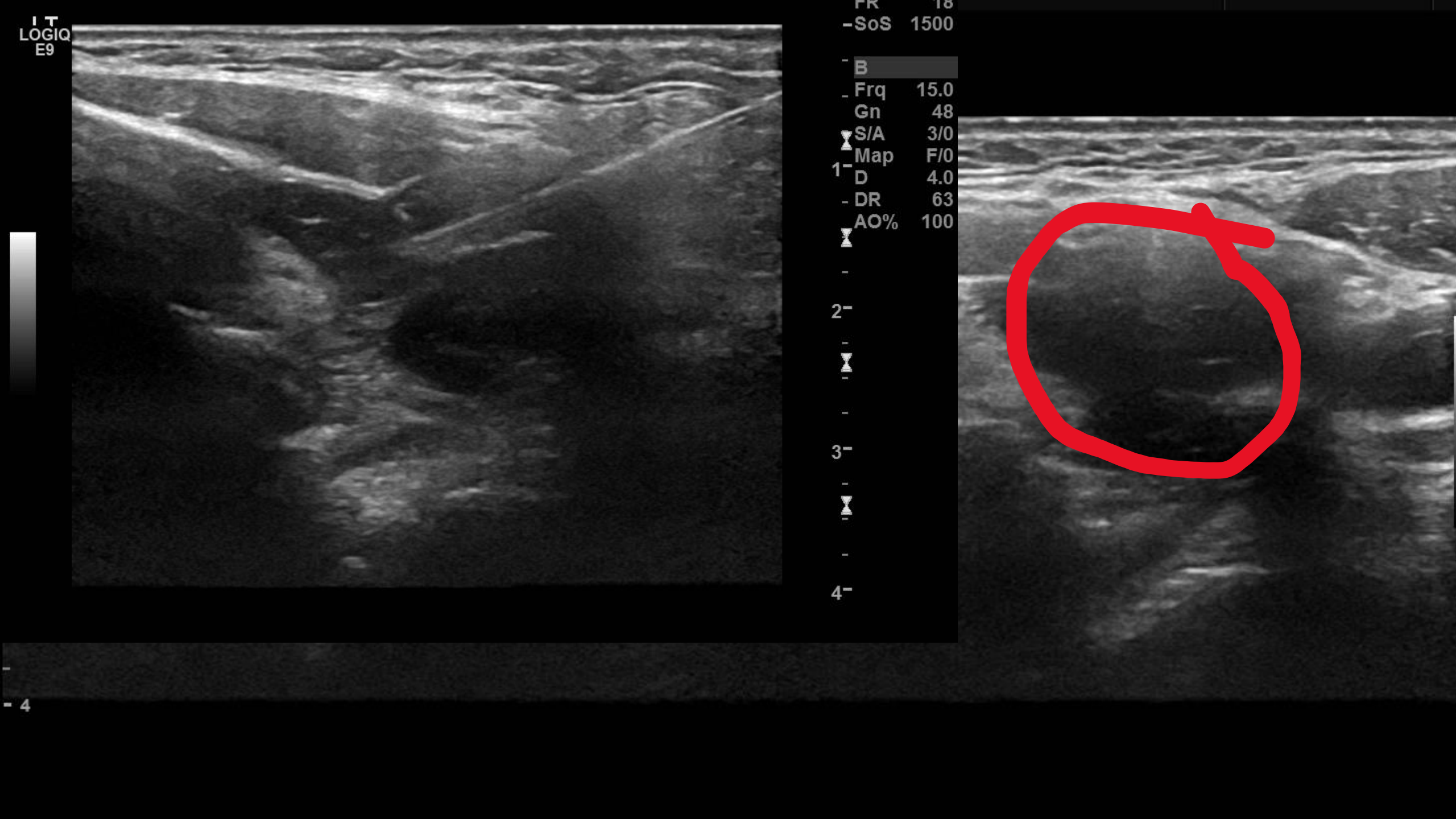




BIR
The British Institute of Radiology



- Left hypopharyngeal mass
- Looks T4
- Prove it and save a GA biopsy


LOGIQ
E9
FR 18
SoS 1500
B
Frq 15.0
Gn 48
S/A 3/0
Map F/0
D 4.0
DR 63
AO% 100
1
2
3
4
4

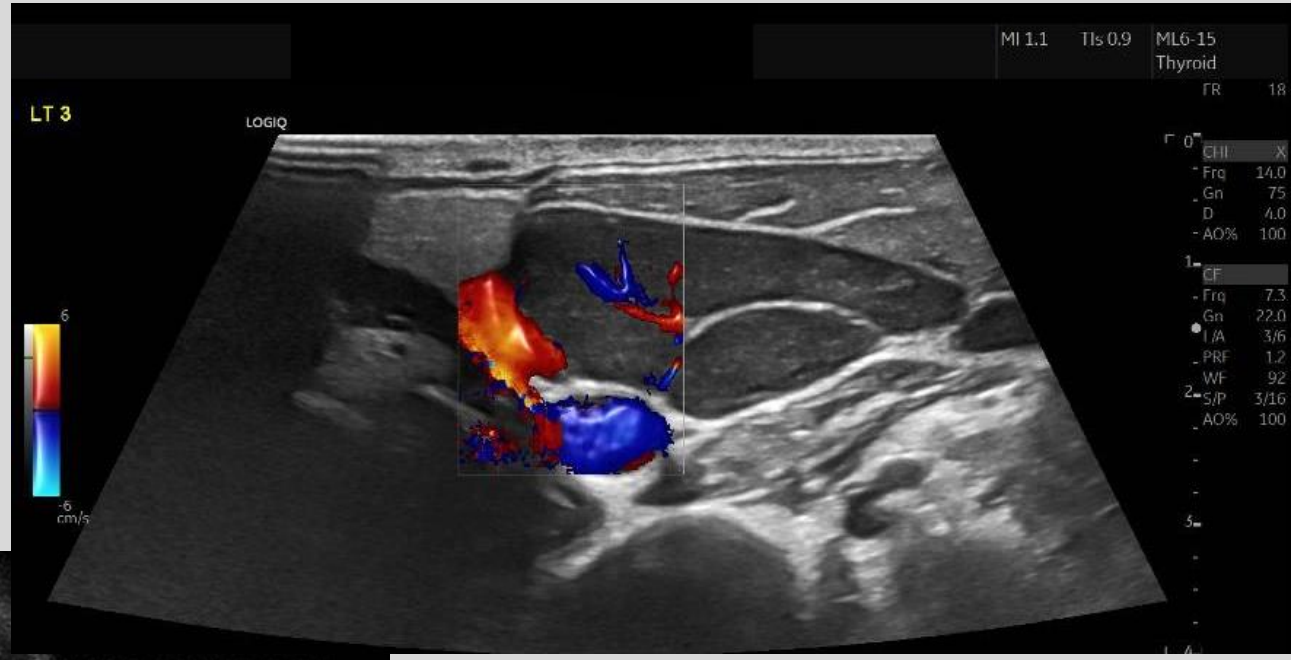
Known orbital sarcoid

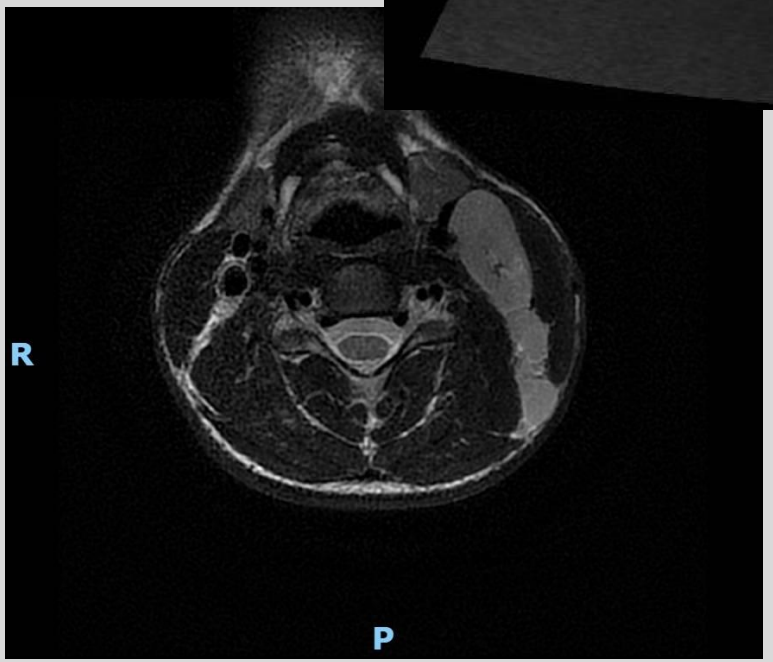
Palpable lymph nodes

MR confirms

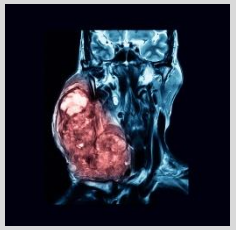
`Do we need to biopsy?

If so, what test?





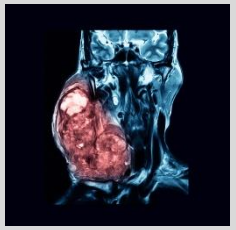
BIR
The British Institute of Radiology

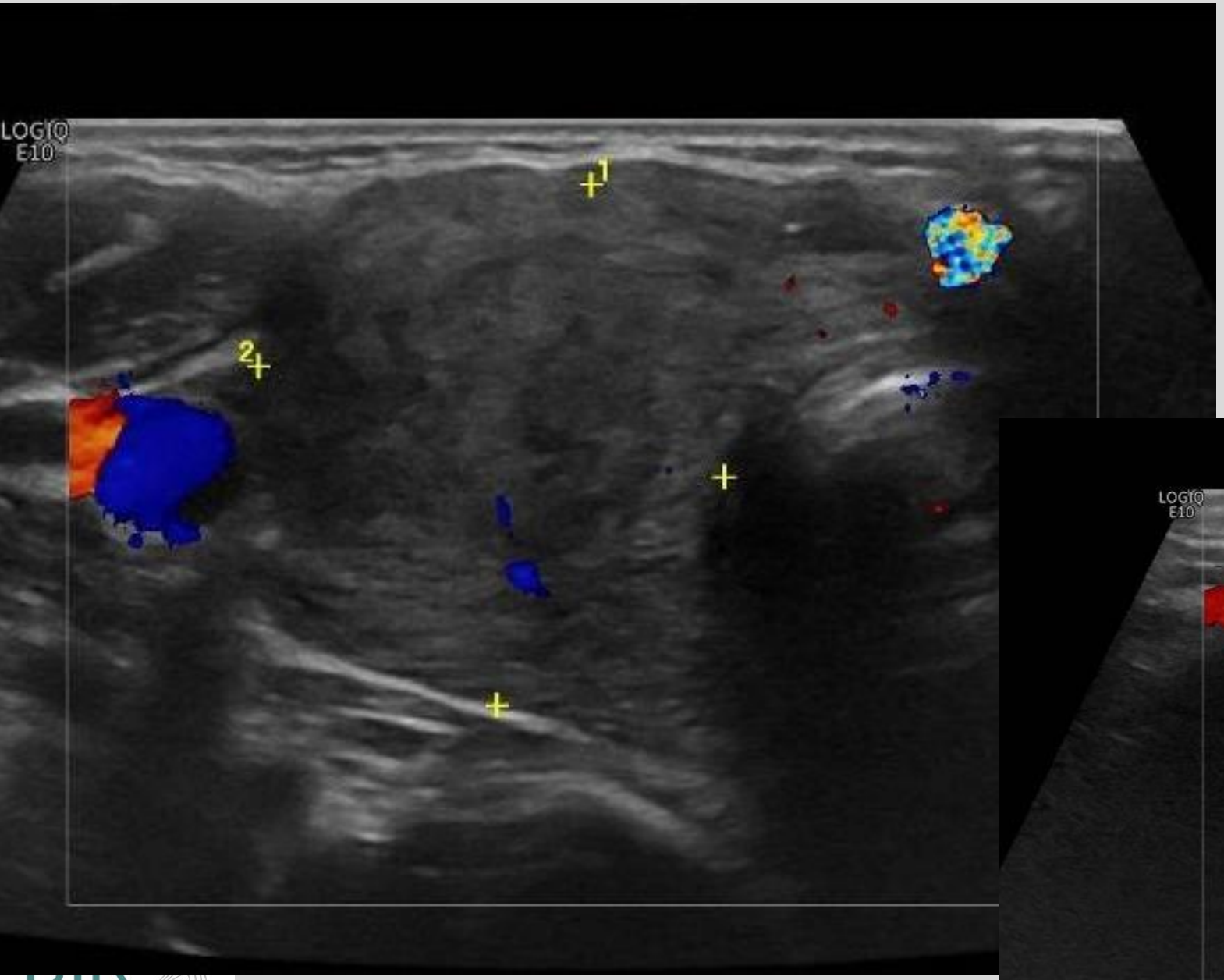


- HODGKINS LYMPHOMA

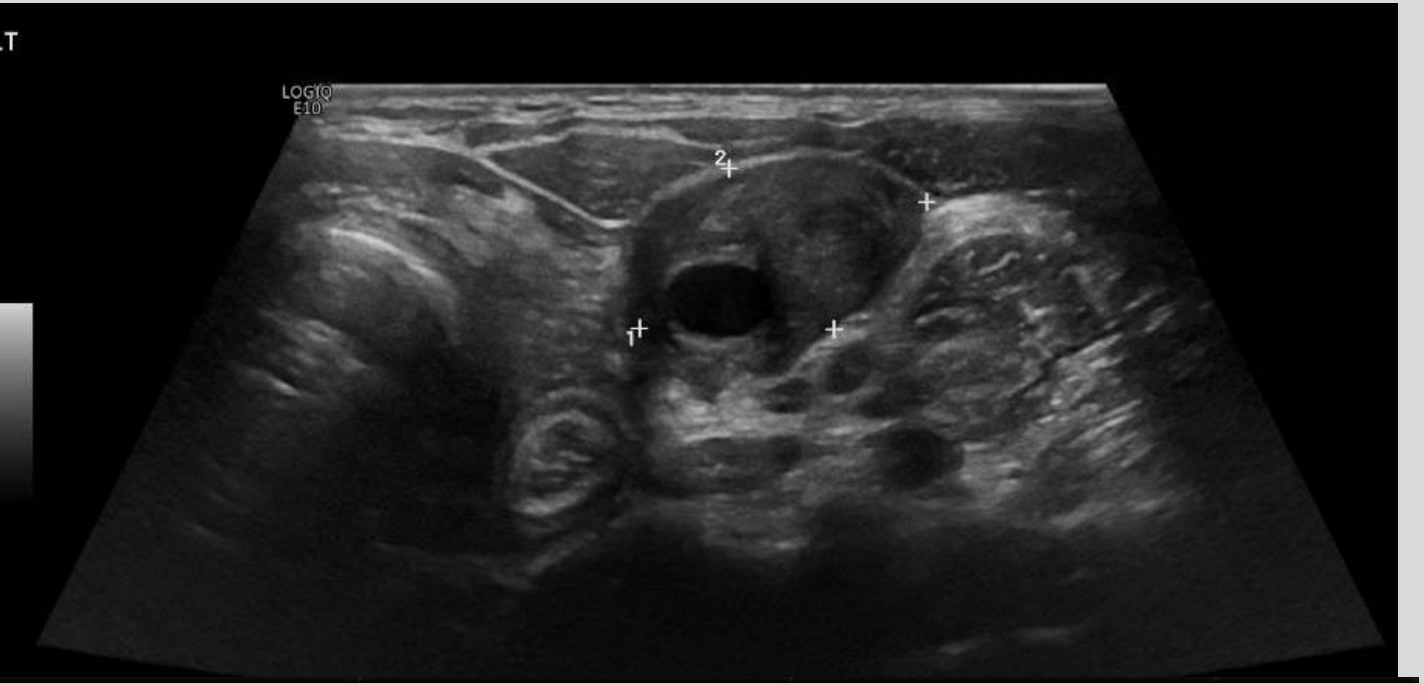
- Never assume
- If it doesn't feel right then check.

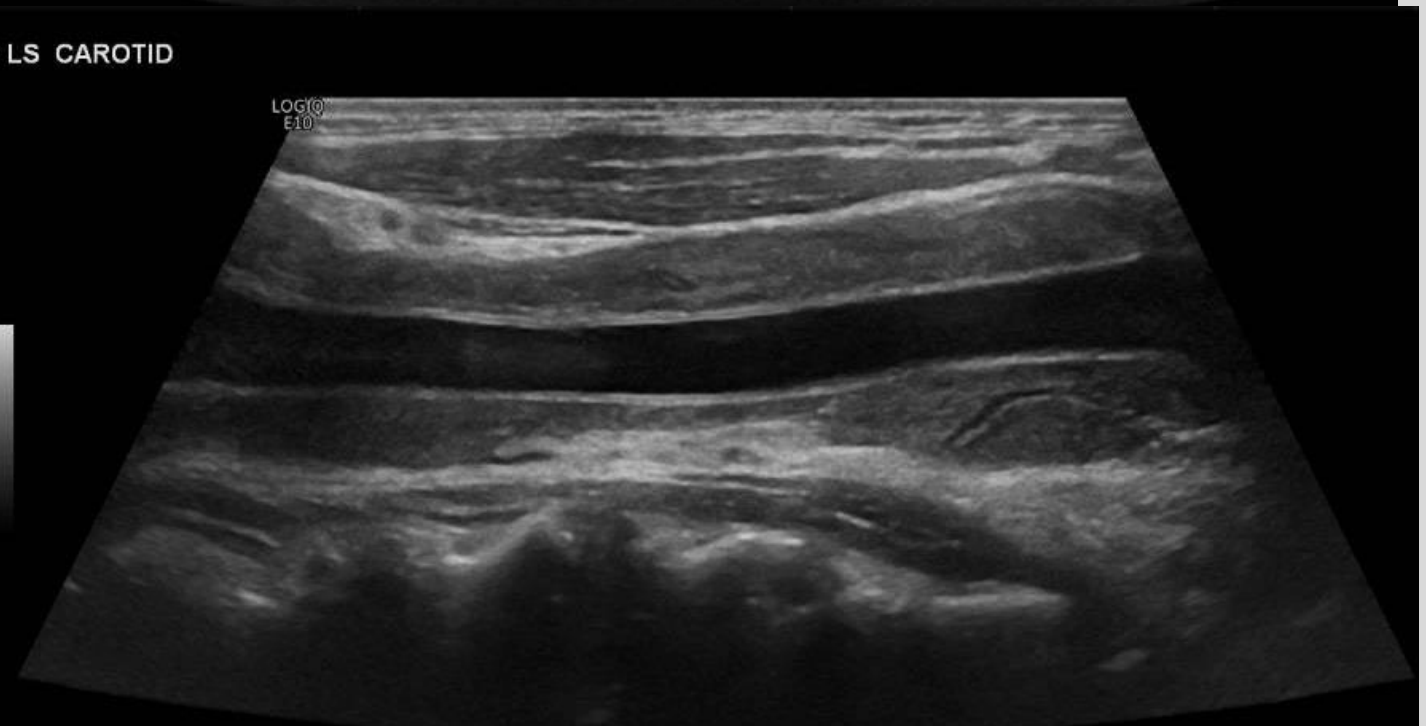
BIR
The British Institute of Radiology

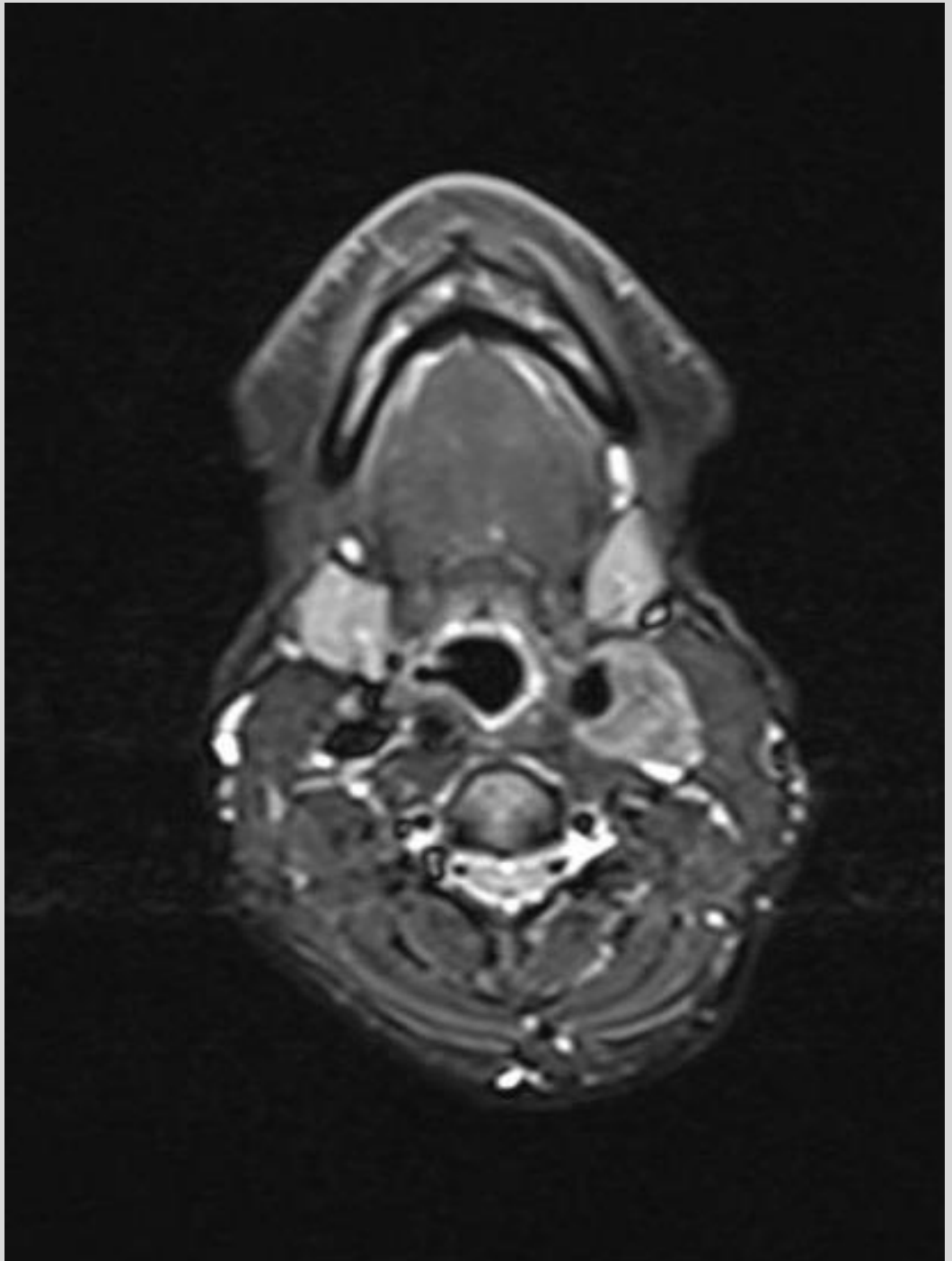


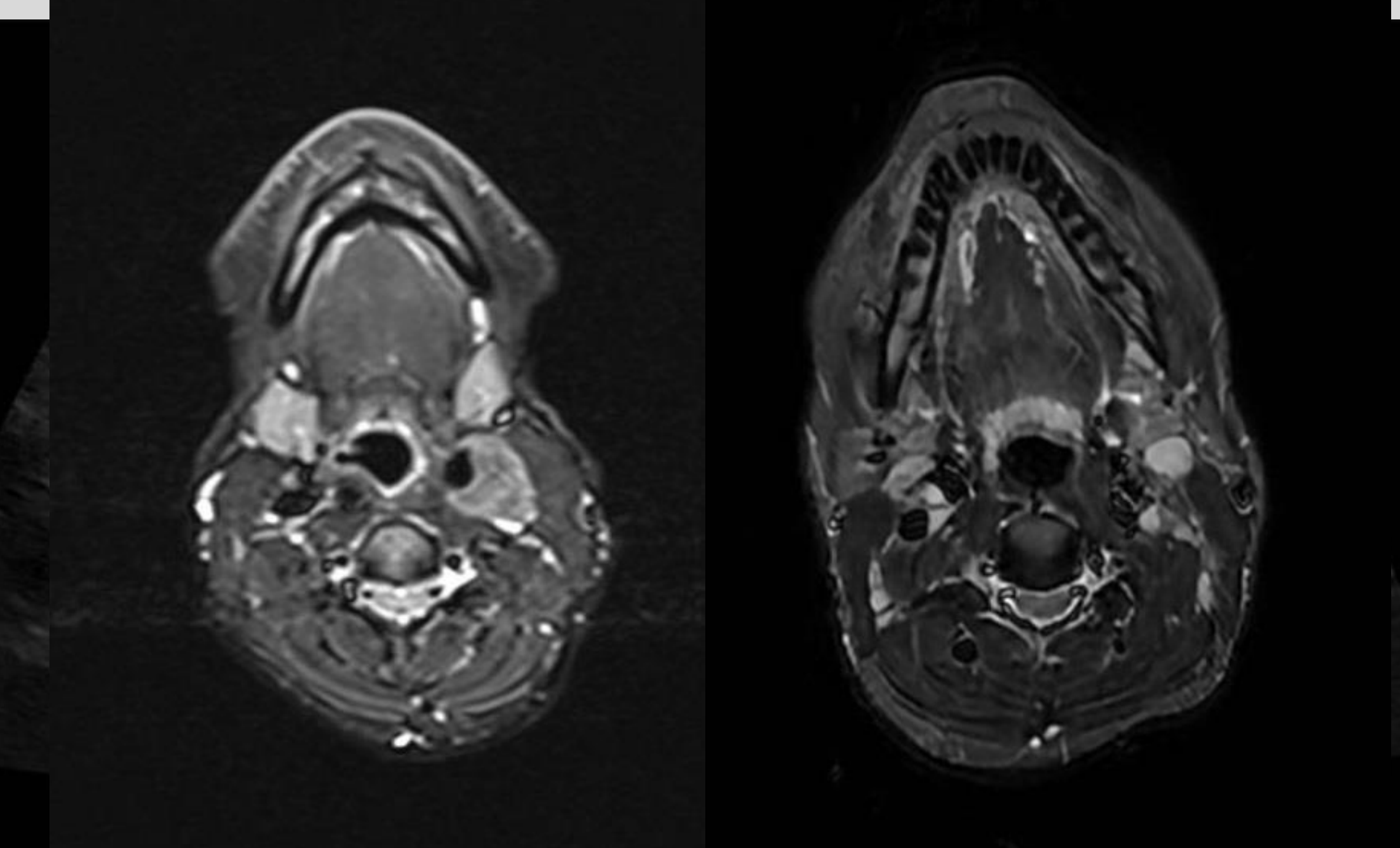


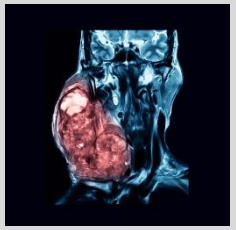
The British Institute of Radiology


LOGIQ
E10
2
1


LS CAROTID
LOGIQ
E10







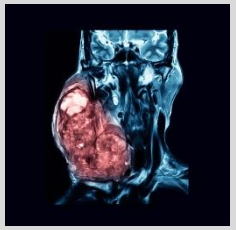
REIDELS THYROIDITIS- Low IgG4 yield

Inflammation of carotid ???IgG4

THEY DID NOT TEST FOR IgG4!

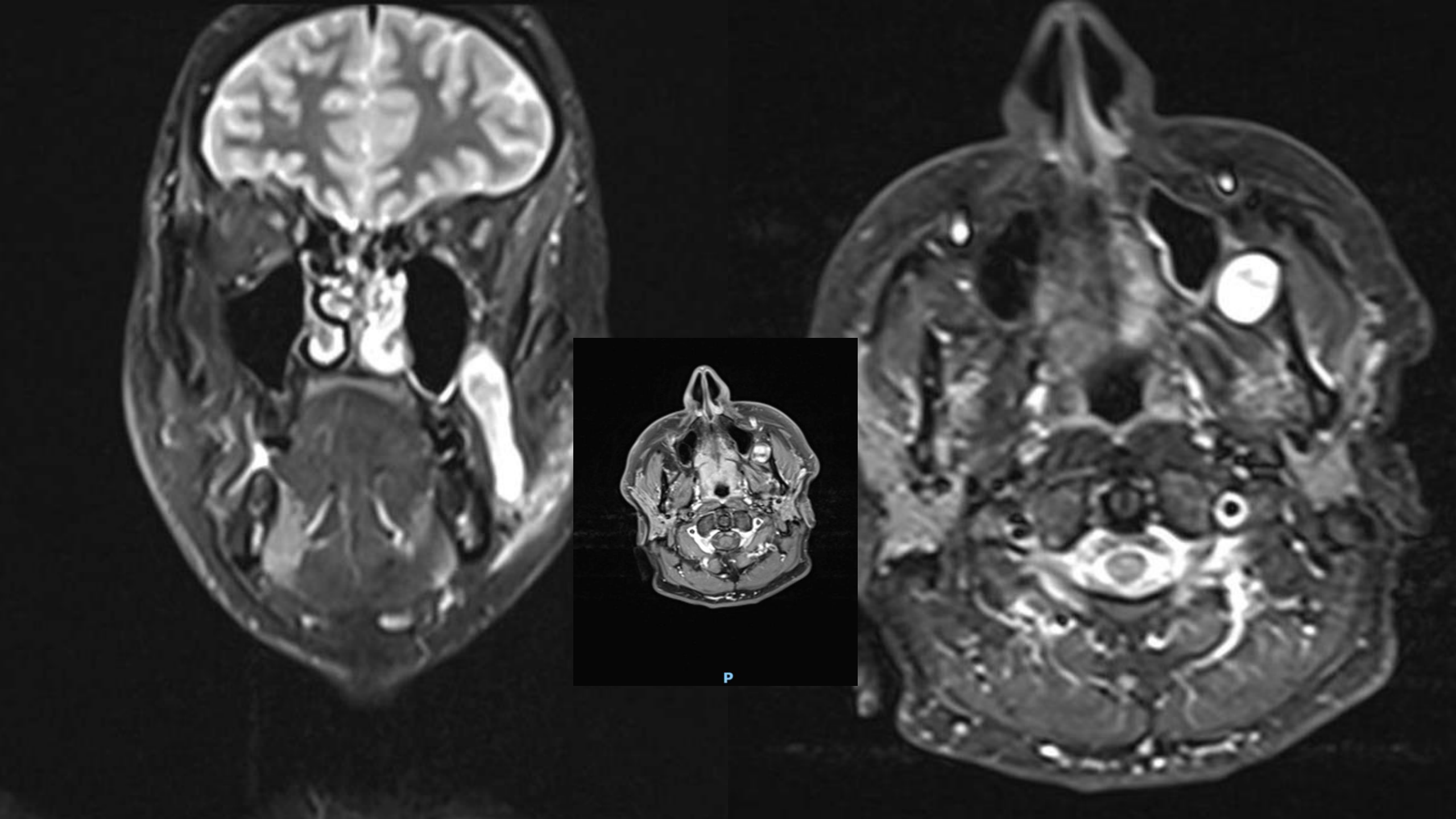
Despite me asking twice

Treated presumptively and got better.



DO NOT BIOPSY …
UNLESS ASKED

BIR
The British Institute of Radiology


P

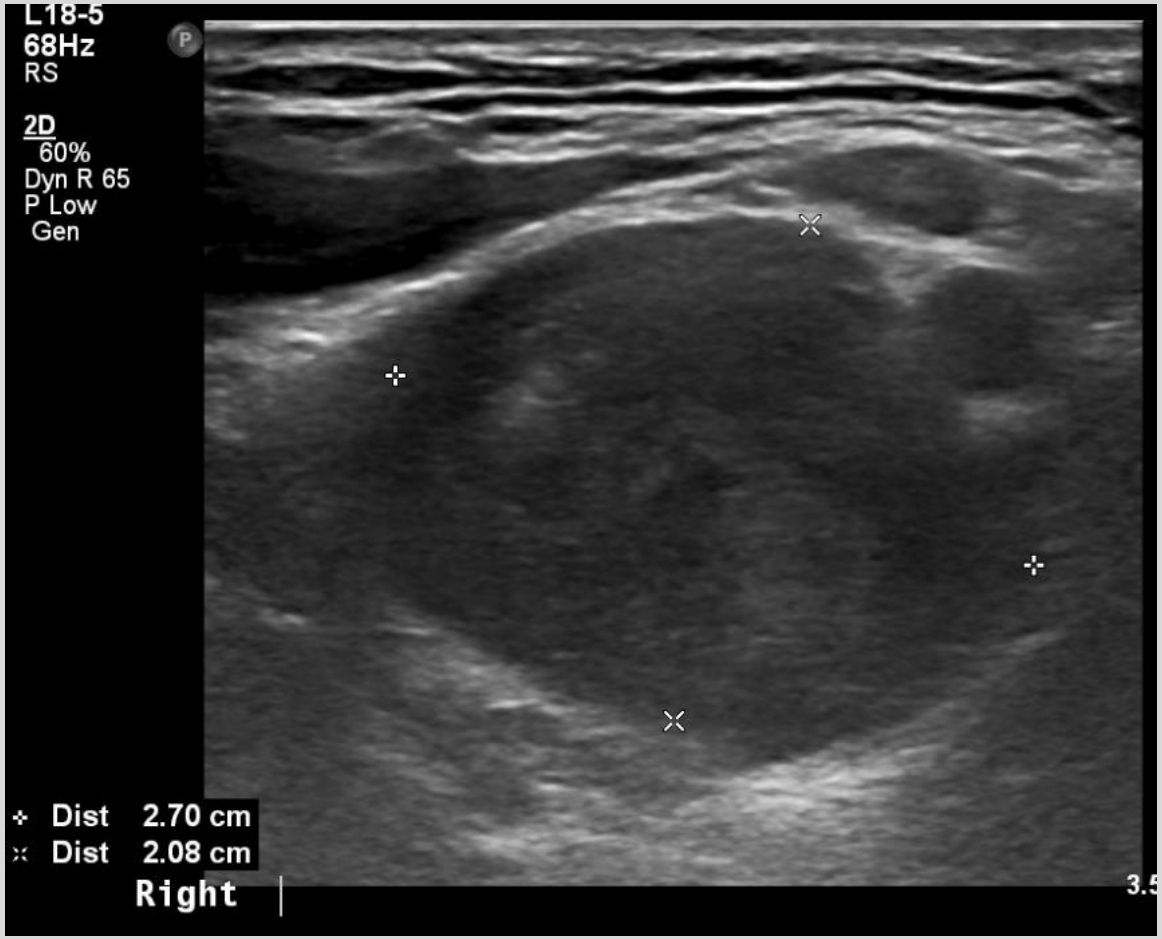
SCHWANNOMA
BX of QUESTIONABLE BENEFIT

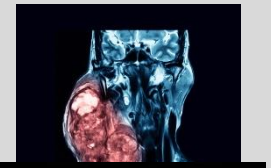
ASKED TO BIOPSY…

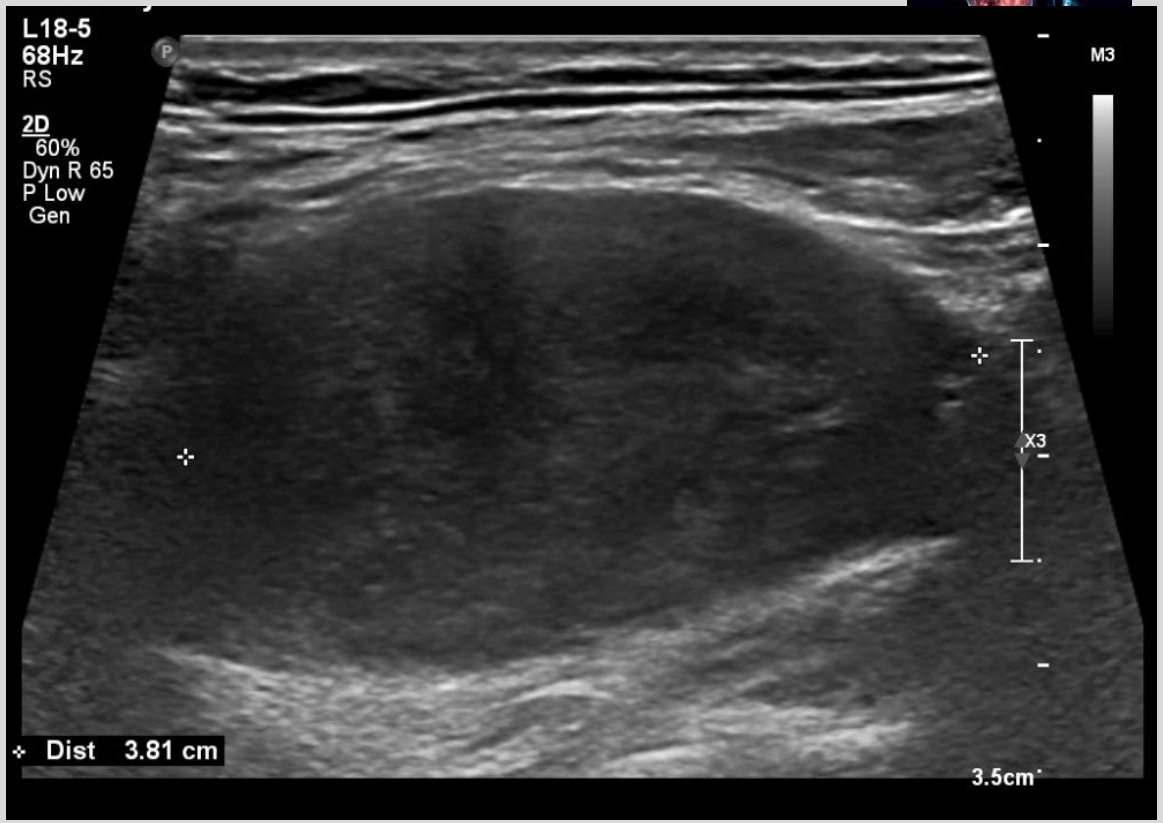
PAINFUL +++

SAMPLE DISSOLVED IN FORMALIN

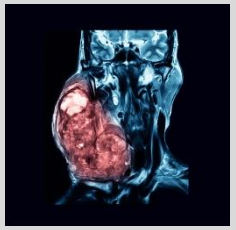
ASKED AGAIN



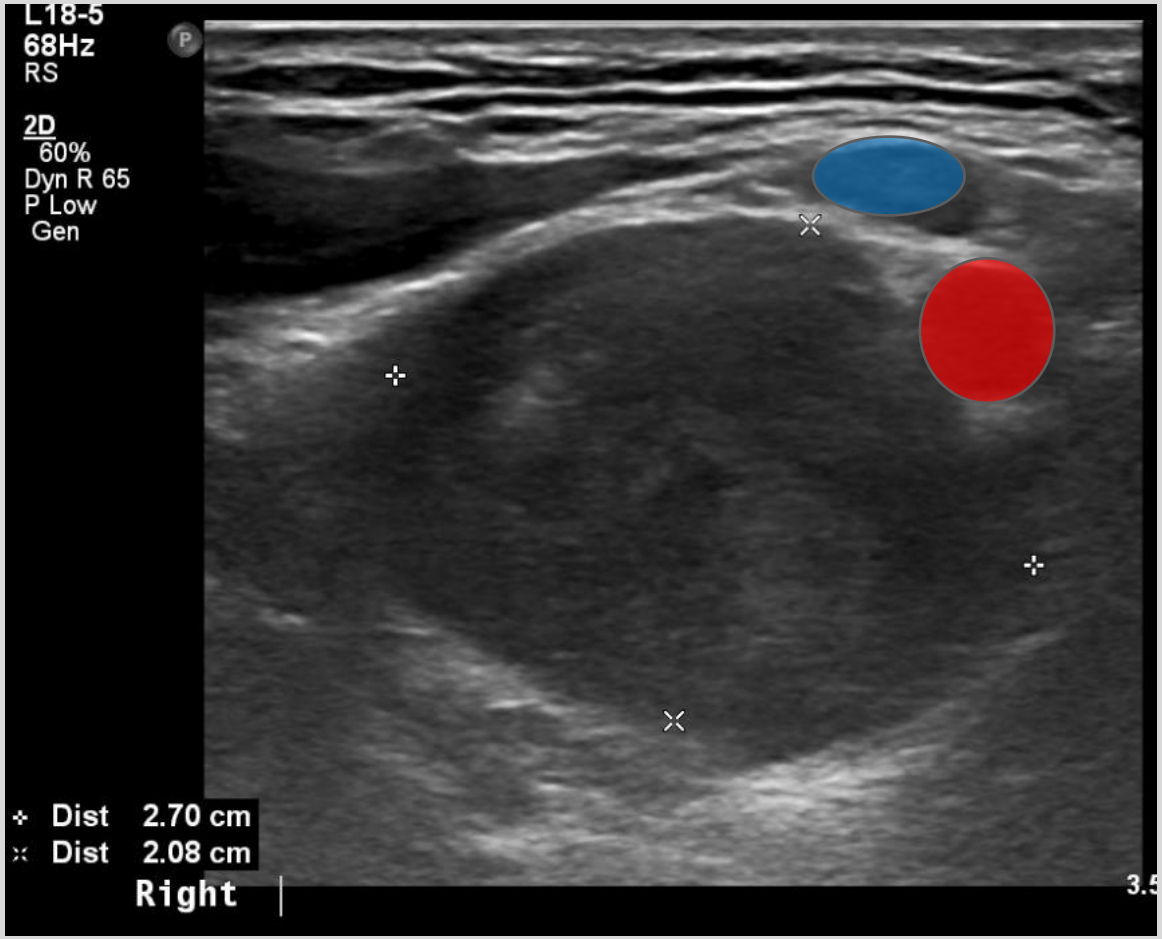


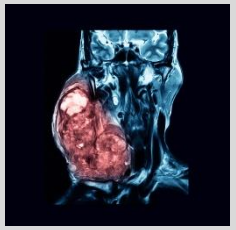


BIR
The British Institute of Radiology



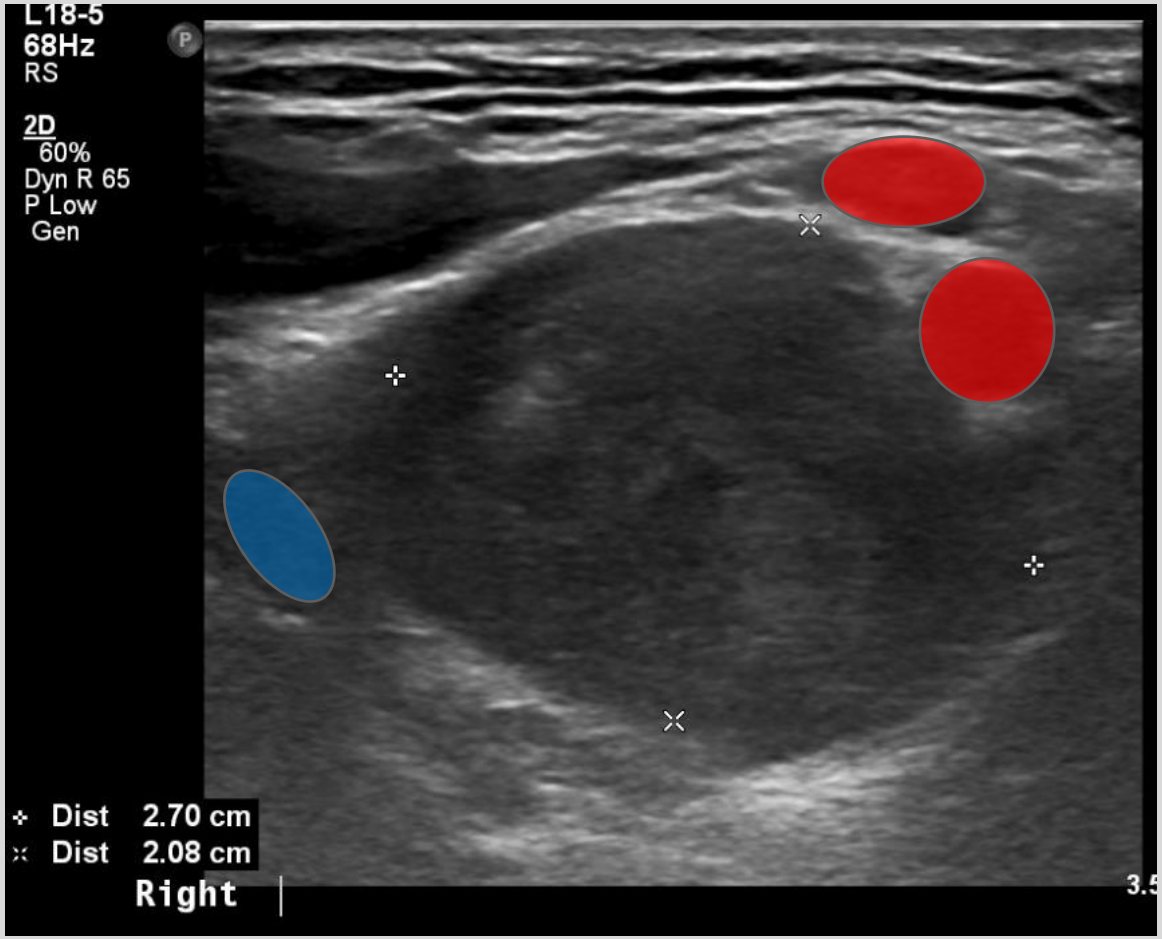
- LARGE NODE ?LYMPHOMA
- FNA or CORE?

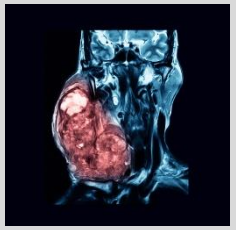


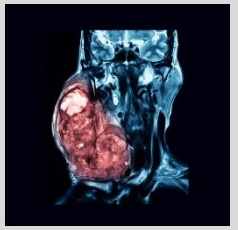


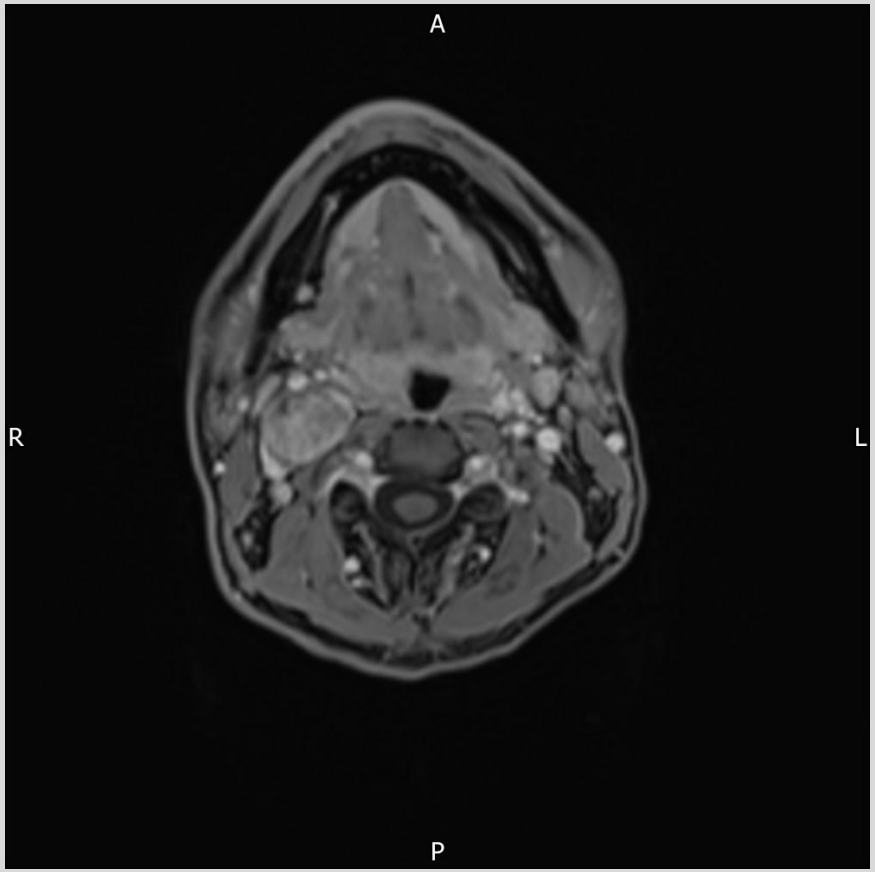
CORE BIOPSY
TAKEN
EASY

COUGHING
FEELING OF LUMP IN THROAT
HOARSE VOICE
FAINT



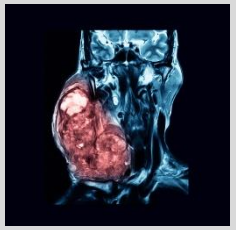




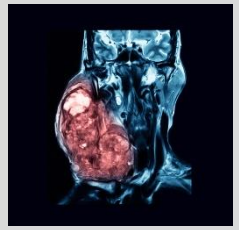


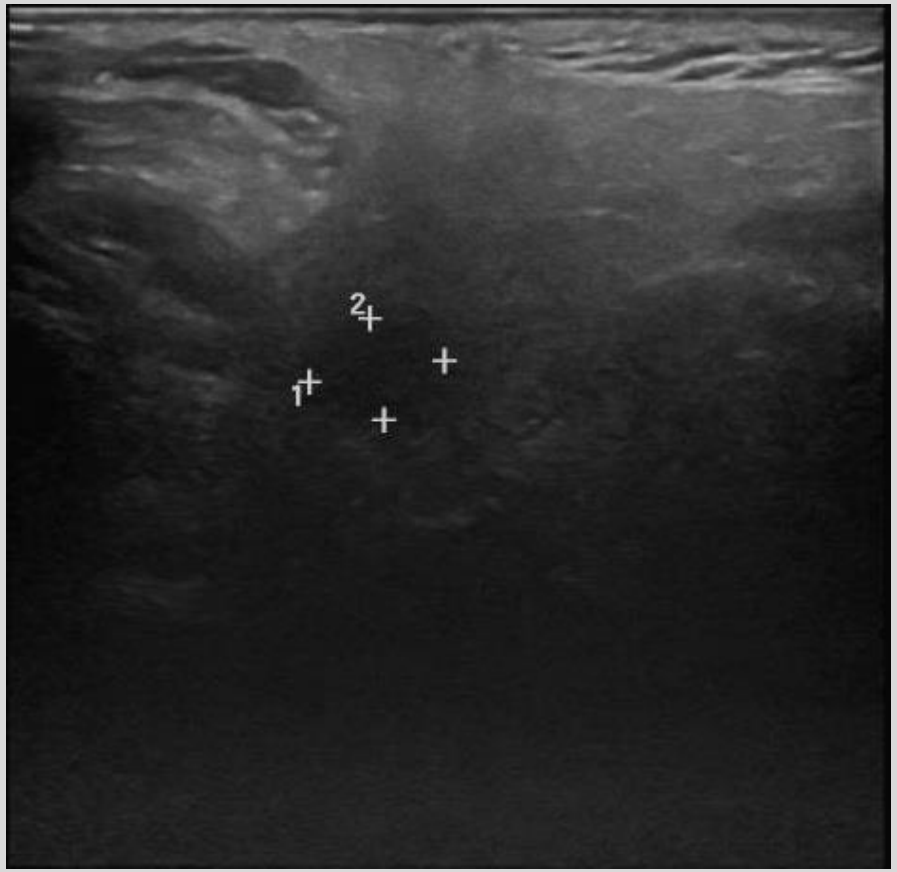
VAGAL SCHWANNOMA

BIR
The British Institute of Radiology

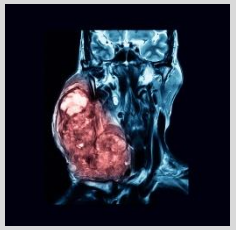


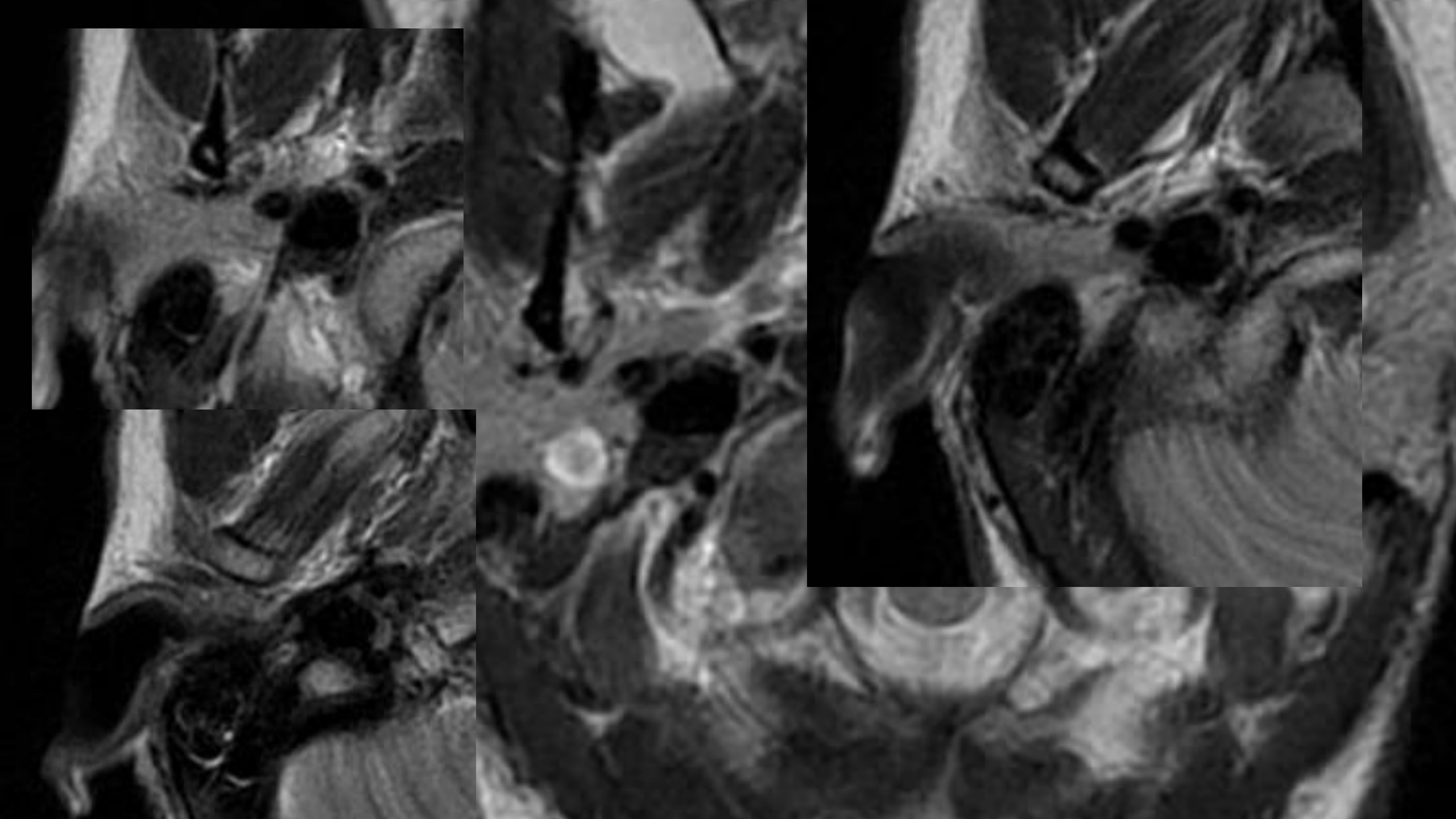
CAROTID BODY TUMOUR/ PARAGANGLIOMA

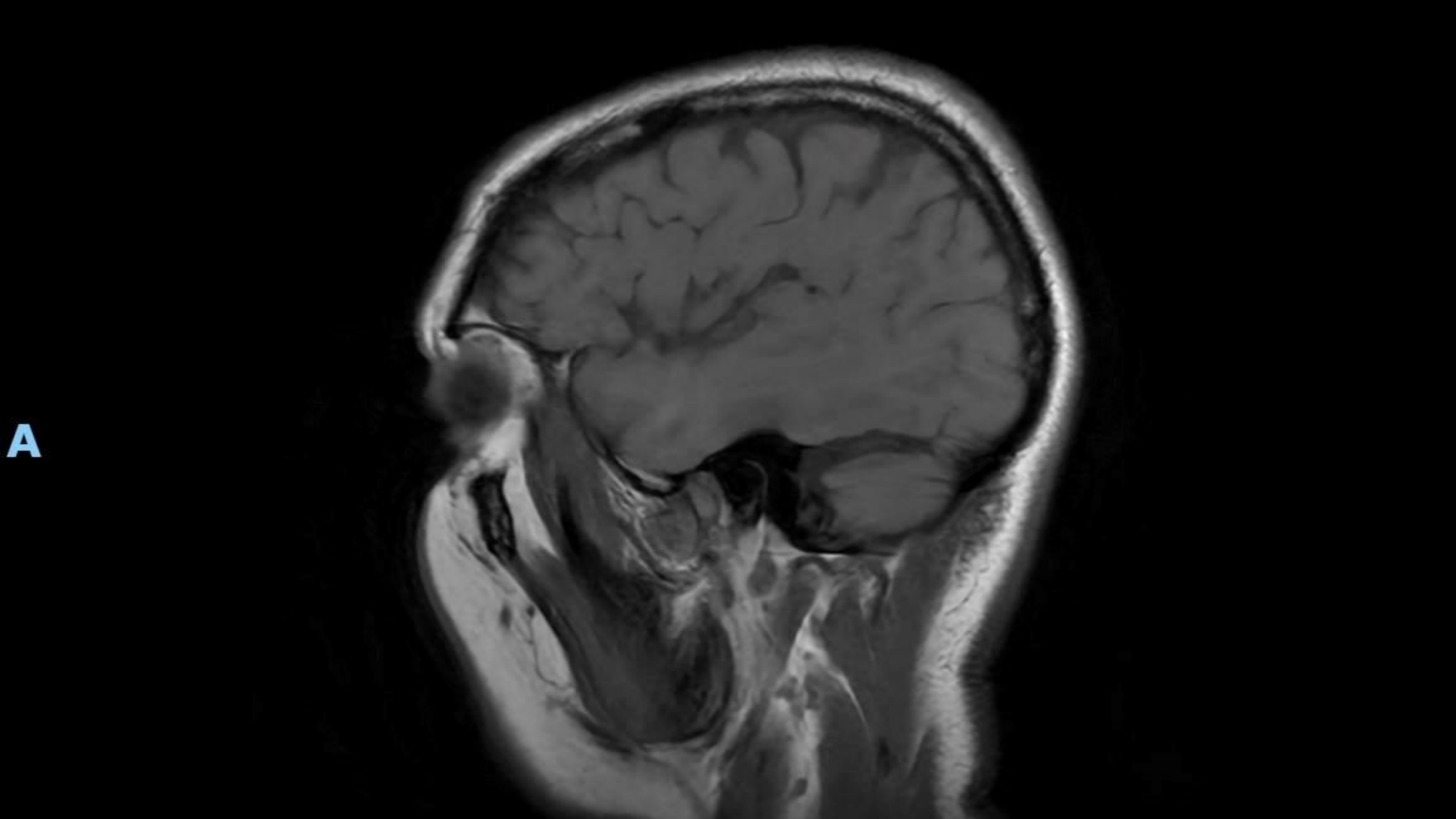


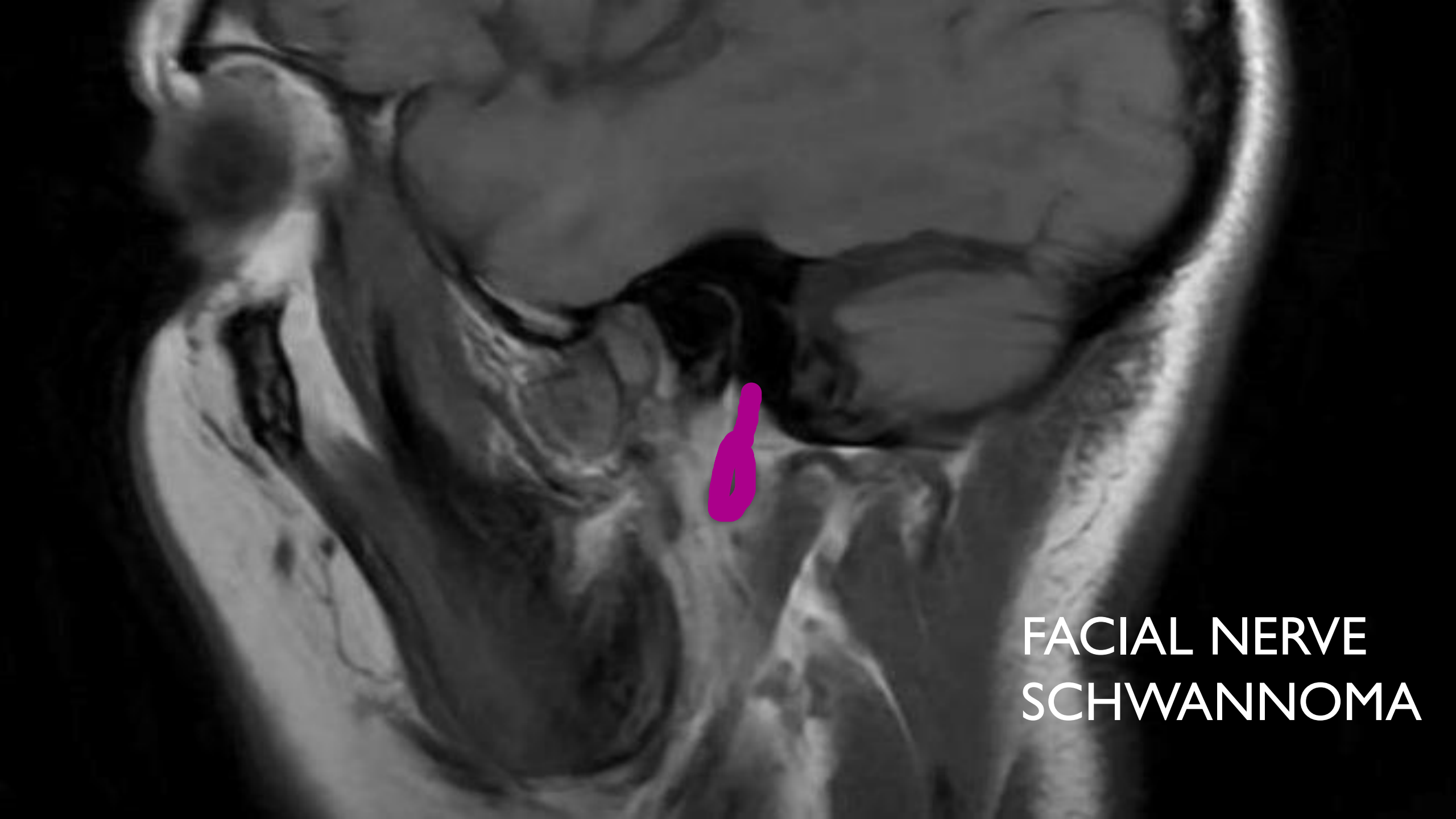


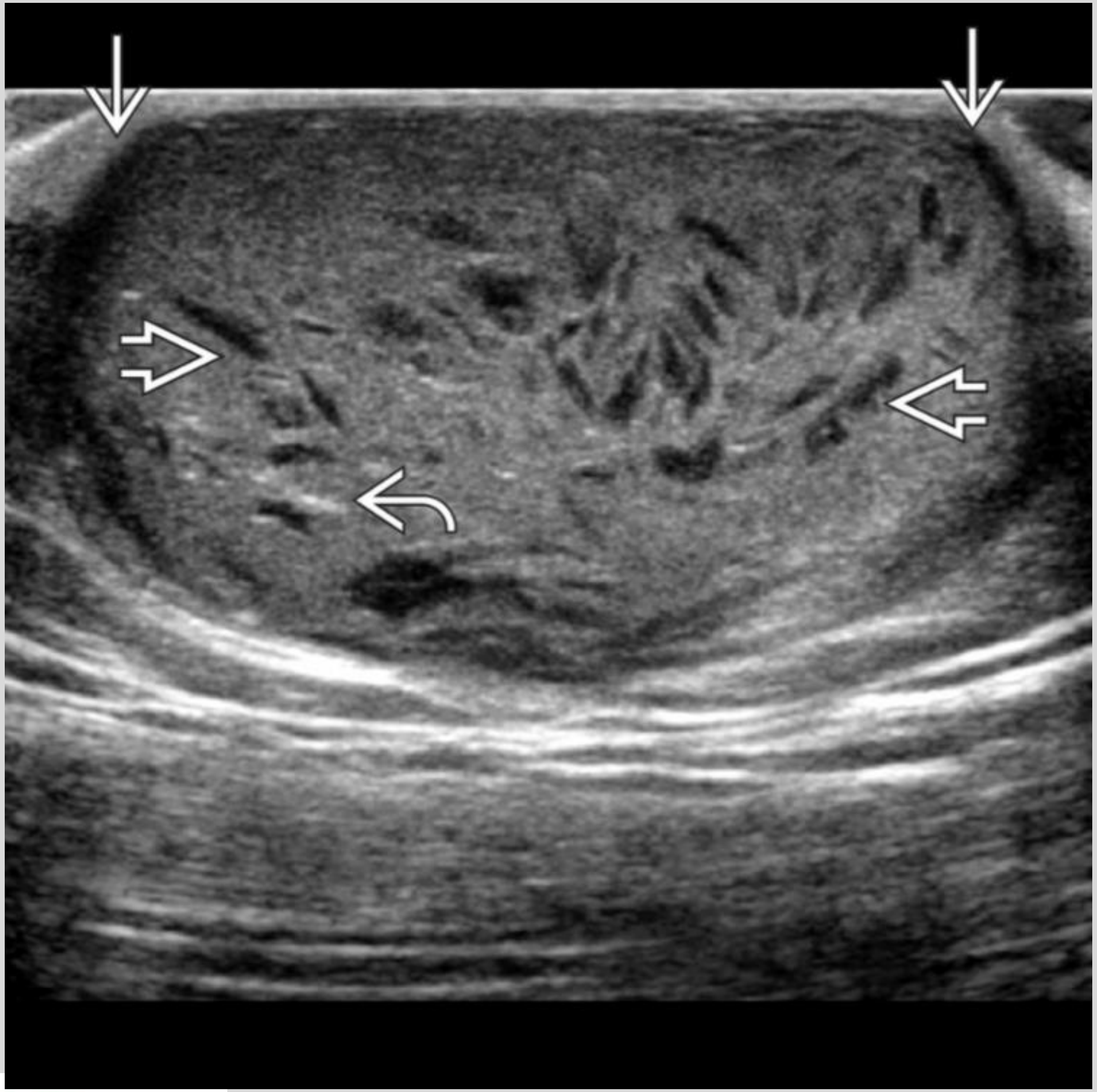
BIR
The British Institute of Radiology

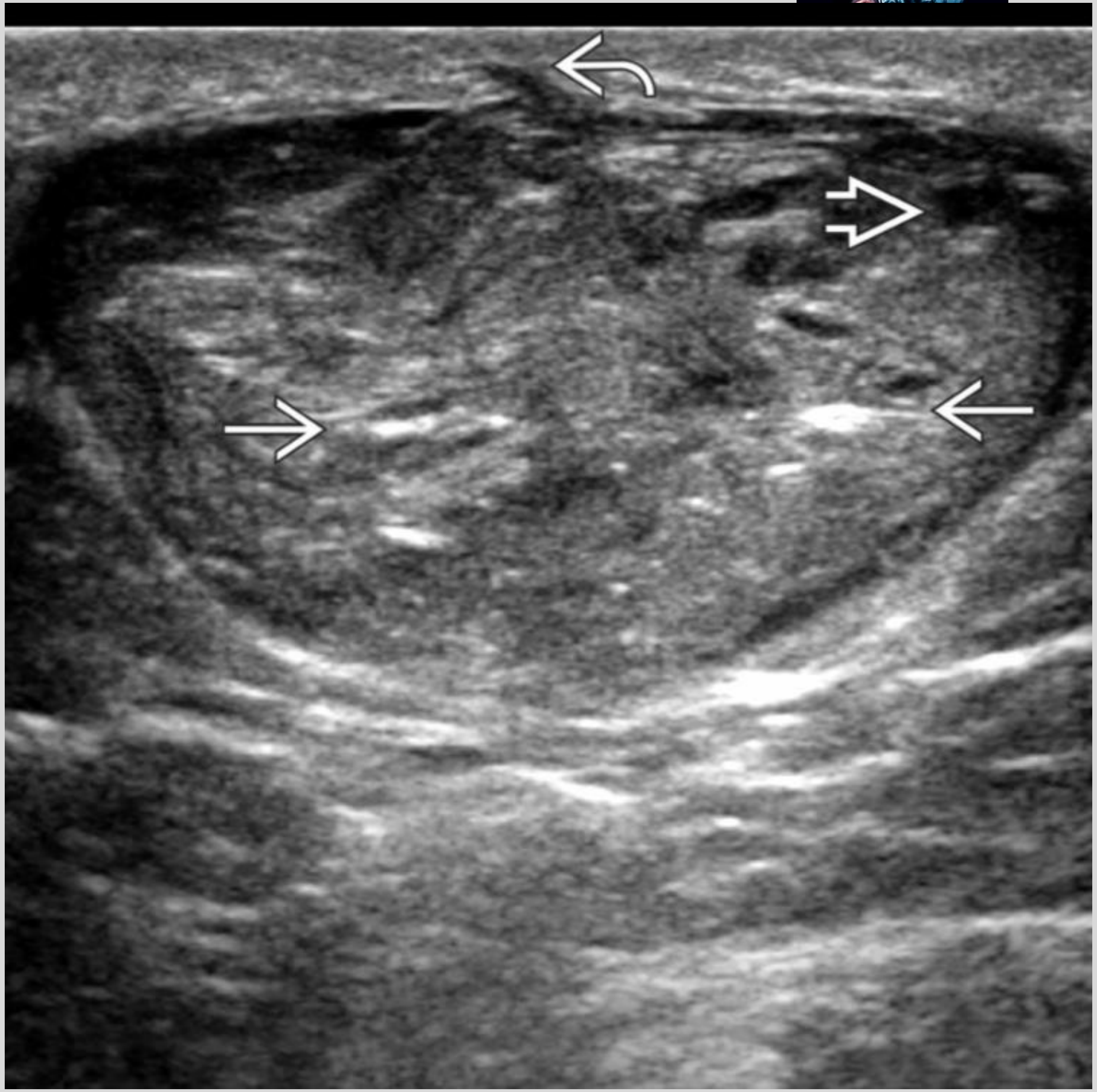


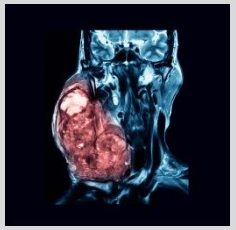



A


FACIAL NERVE
SCHWANNOMA





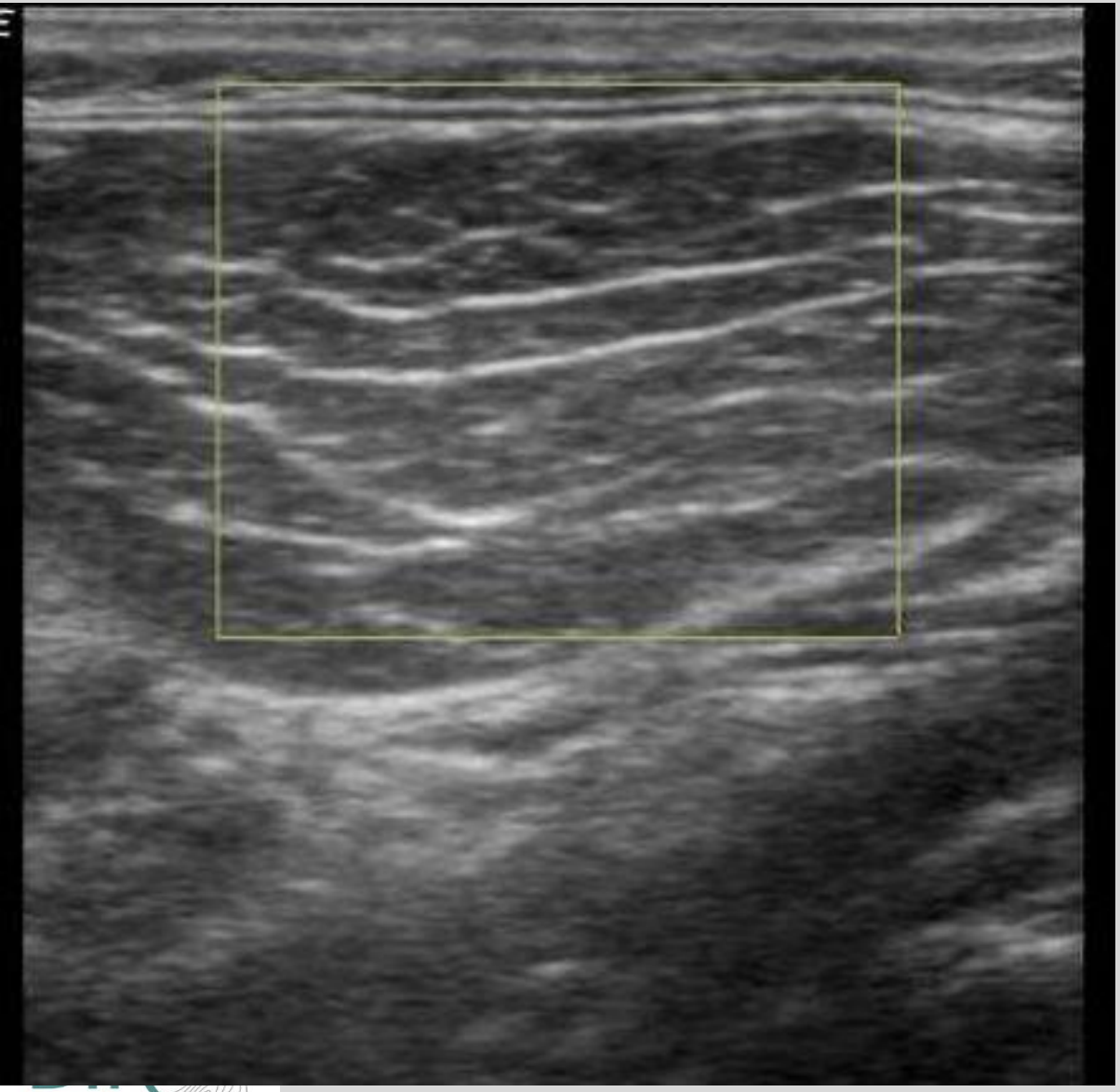


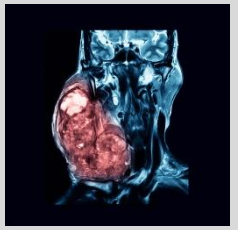
- Epidermal/epidermoid (sebaceous) cyst

- Avascular
- May be heterogeneous
- Posterior acoustic enhancement
- Punctum

- No need to FNA

BIR
The British Institute of Radiology



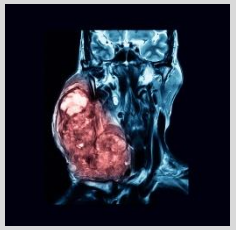


LIPOMA

Well-circumscribed
Horizontal stritations
Soft
Limited vascularity
No fluid
<5cm

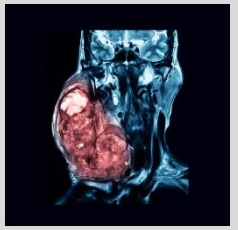
If in doubt-> MRI

Core? Only on instruction of sarcoma MDT

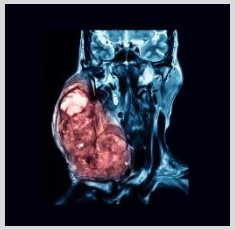


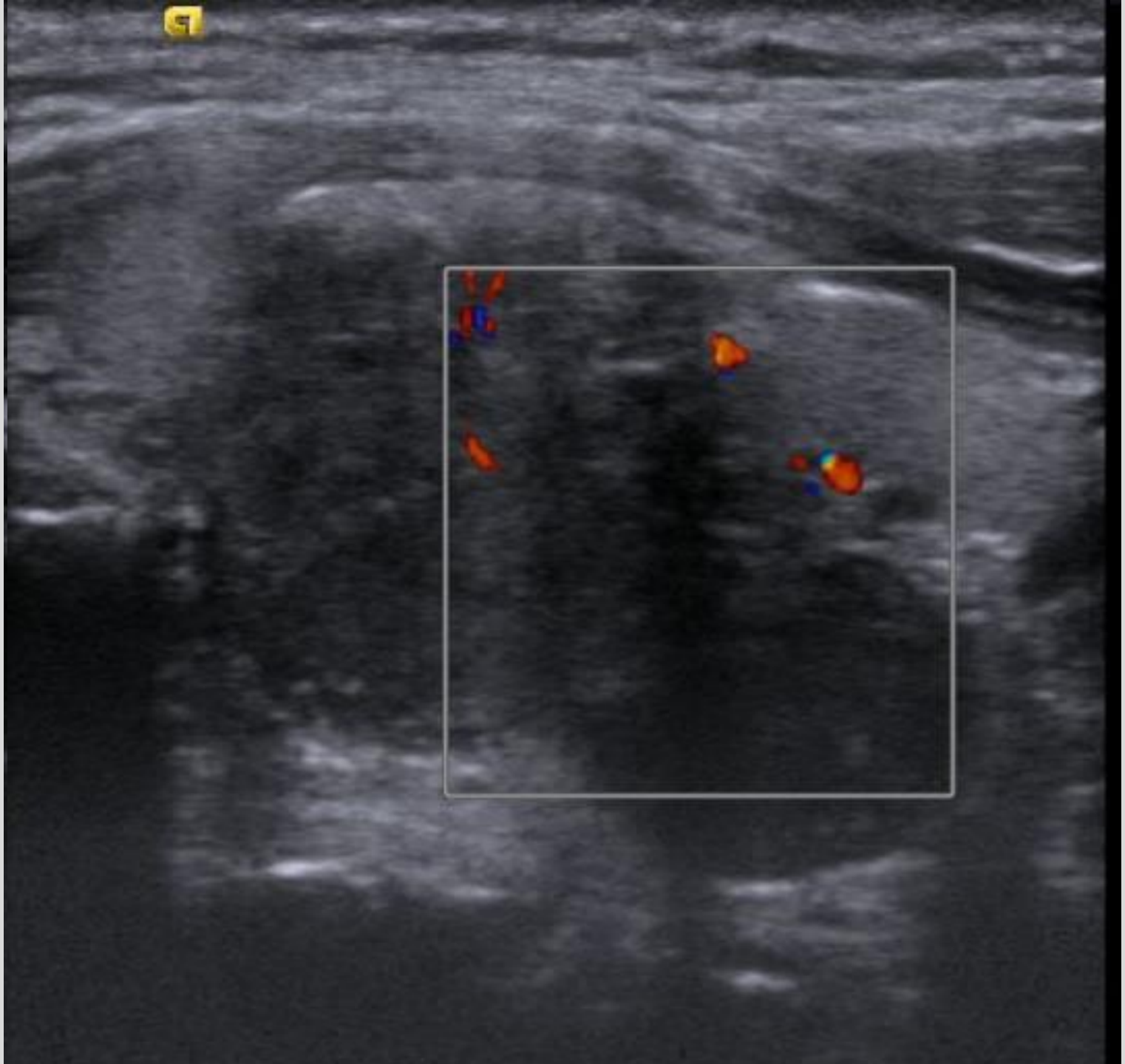
- In summary…

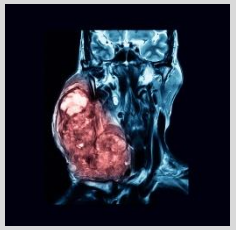
- Core should be 1st line except thyroid (and possibly salivary gland)
- BE SAFE
- You can prevent GA/ tracheostomy/ delay with US guided biopsy
- If the pathology is likely nerve sheath or paraganglioma, discuss with surgeons/MDT before bx.

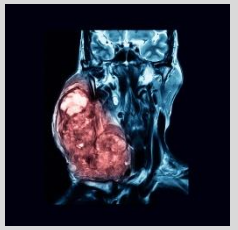


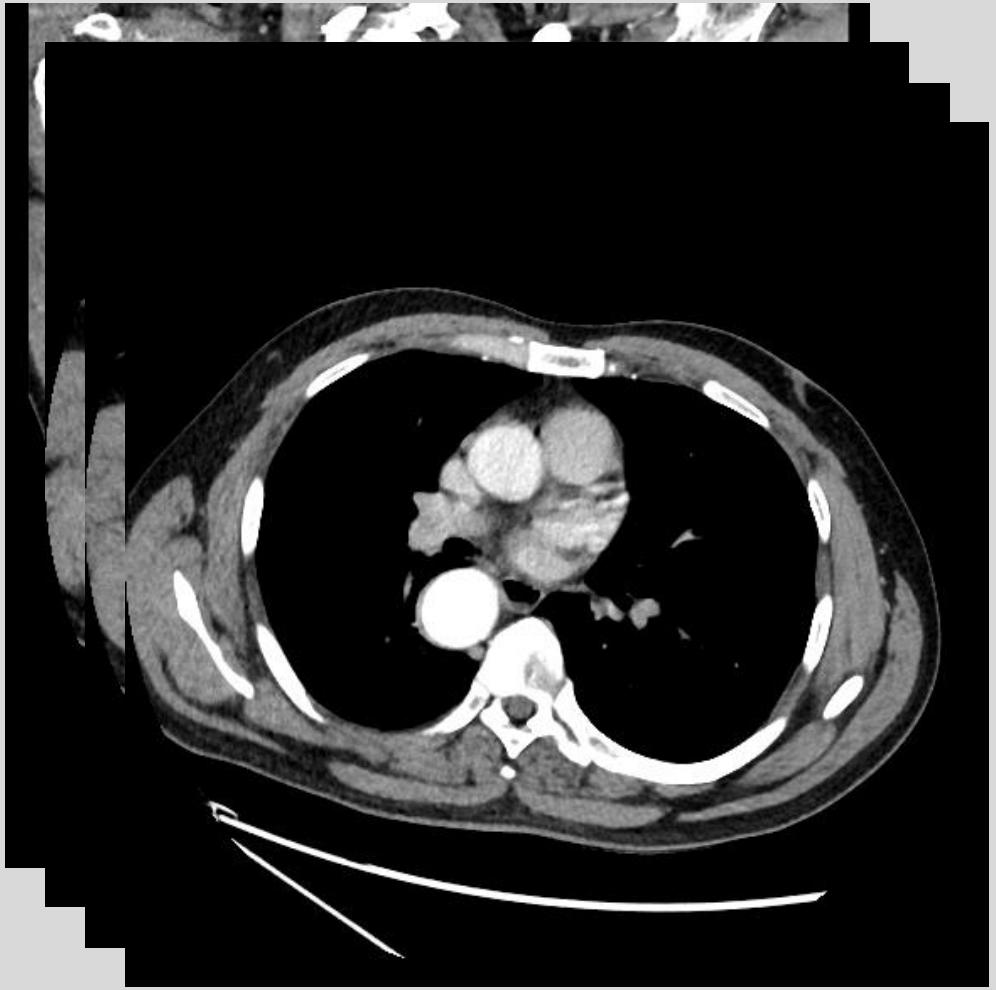
BIR
The British Institute of Radiology

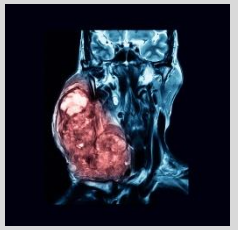


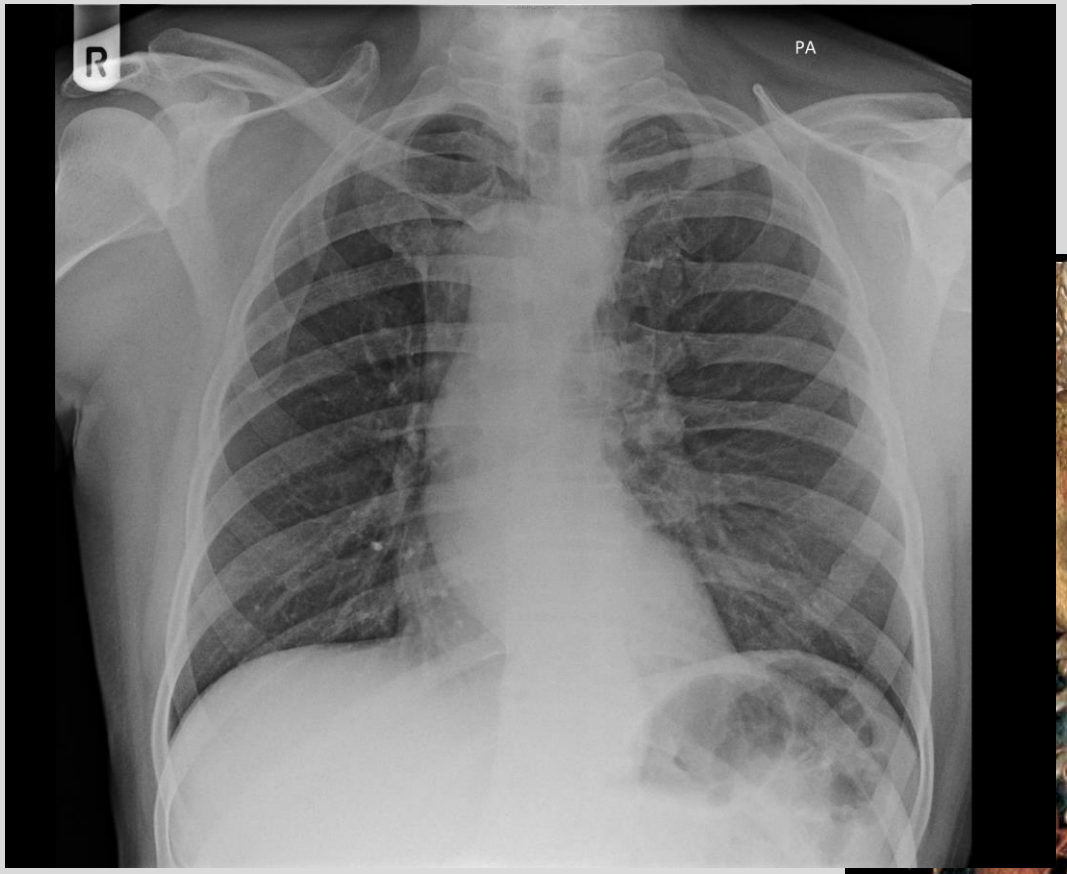


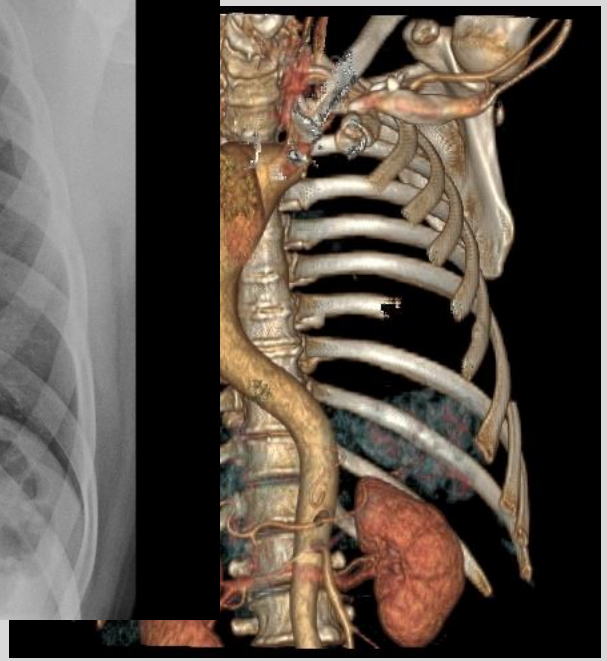




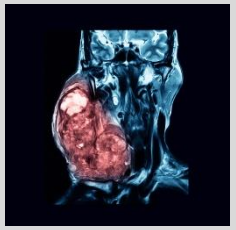




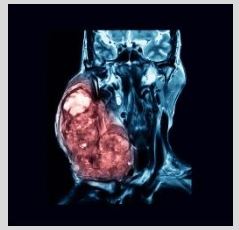


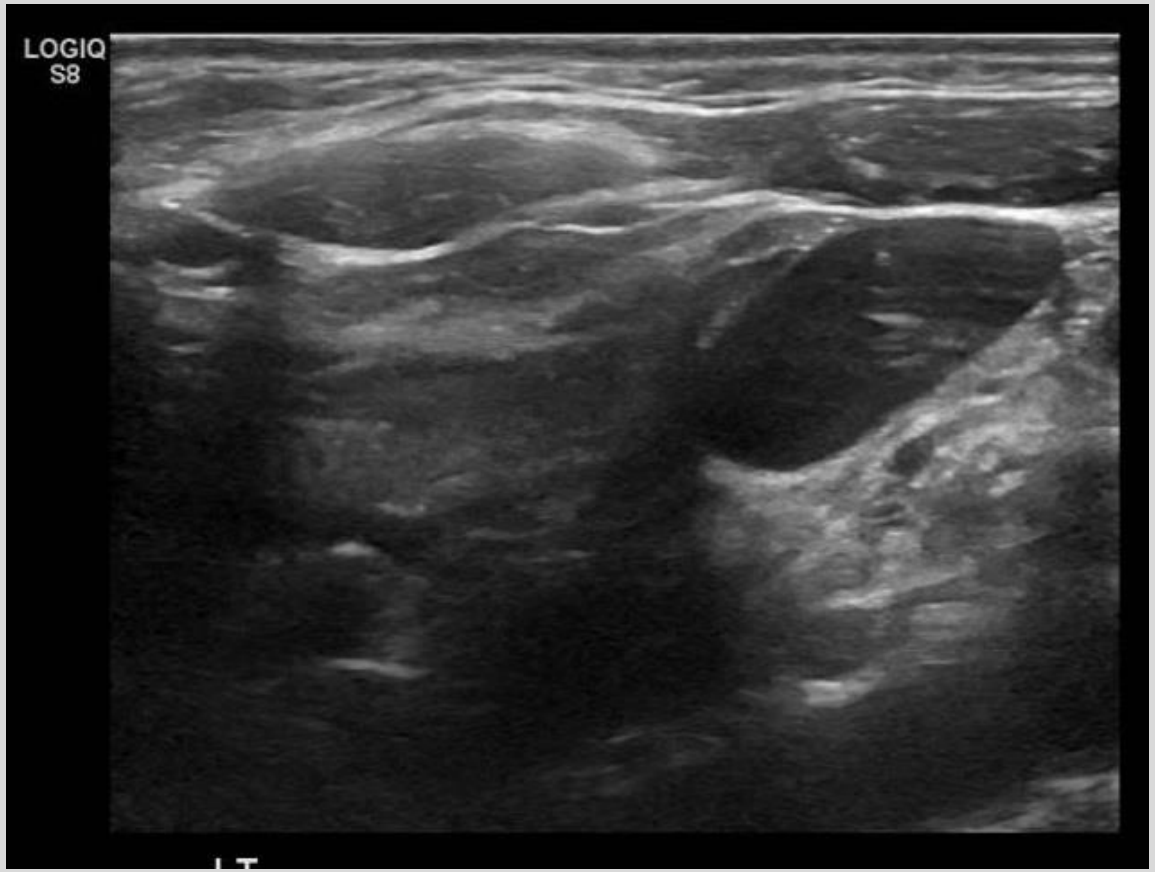


BIR
The British Institute of Radiology

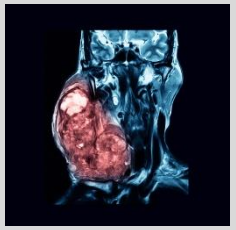


BIR
The British Institute of Radiology





BIR
The British Institute of Radiology



- Ideas slide
- PDL1 CPS
- P16
- Breast/lung immuno etc
- Avoid primary biopsy
- Bilateral nodal disease
- Toxo/ kikuchis/castlemans