

AMSER Case of the Month

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59 y.o. male with chronic, progressive weakness and sensory changes

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Patient Presentation

- 59 y.o. male with remote history of “prodisc” surgery of L3-4 and L4-5 discs presents with chronic, progressive weakness and sensory changes of his bilateral lower extremities. Patient first noticed his symptoms a few months ago following a long flight. More recently, the patient has developed saddle anesthesia but denies bowel or bladder incontinence.

Past Medical History

- Medical: Prostate cancer, DVT
- Surgical: “prodisc” surgery at L3-4 and L4-5
- Medications: non contributory
- Allergies: none
- ROS: bilateral lower extremity weakness and sensory changes (right greater than left), numbness in bilateral lower extremities (right leg more numb than left leg)

Physical Exam

- Neuro: CN II-XII grossly intact. Decreased sensation to light touch from waist down bilaterally. Normal sensation above T12 dermatome.
- MSK: RLE 4/5, LLE 5/5. Two beats of clonus bilaterally.

What imaging should we order?

ACR criteria

Variant 2:

Chronic or progressive myelopathy. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
MRI spine area of interest without and with IV contrast	Usually Appropriate	0
MRI spine area of interest without IV contrast	Usually Appropriate	0
CT myelography spine area of interest	May Be Appropriate	Varies
CT spine area of interest with IV contrast	May Be Appropriate	Varies
CT spine area of interest without IV contrast	May Be Appropriate	Varies
Arteriography spine area of interest	Usually Not Appropriate	Varies
Radiography spine area of interest	Usually Not Appropriate	Varies
MRA spine area of interest with IV contrast	Usually Not Appropriate	0
MRA spine area of interest without and with IV contrast	Usually Not Appropriate	0
MRA spine area of interest without IV contrast	Usually Not Appropriate	0
MRI spine area of interest with IV contrast	Usually Not Appropriate	0
CT spine area of interest without and with IV contrast	Usually Not Appropriate	Varies
CTA spine area of interest with IV contrast	Usually Not Appropriate	Varies

Findings (unlabeled)

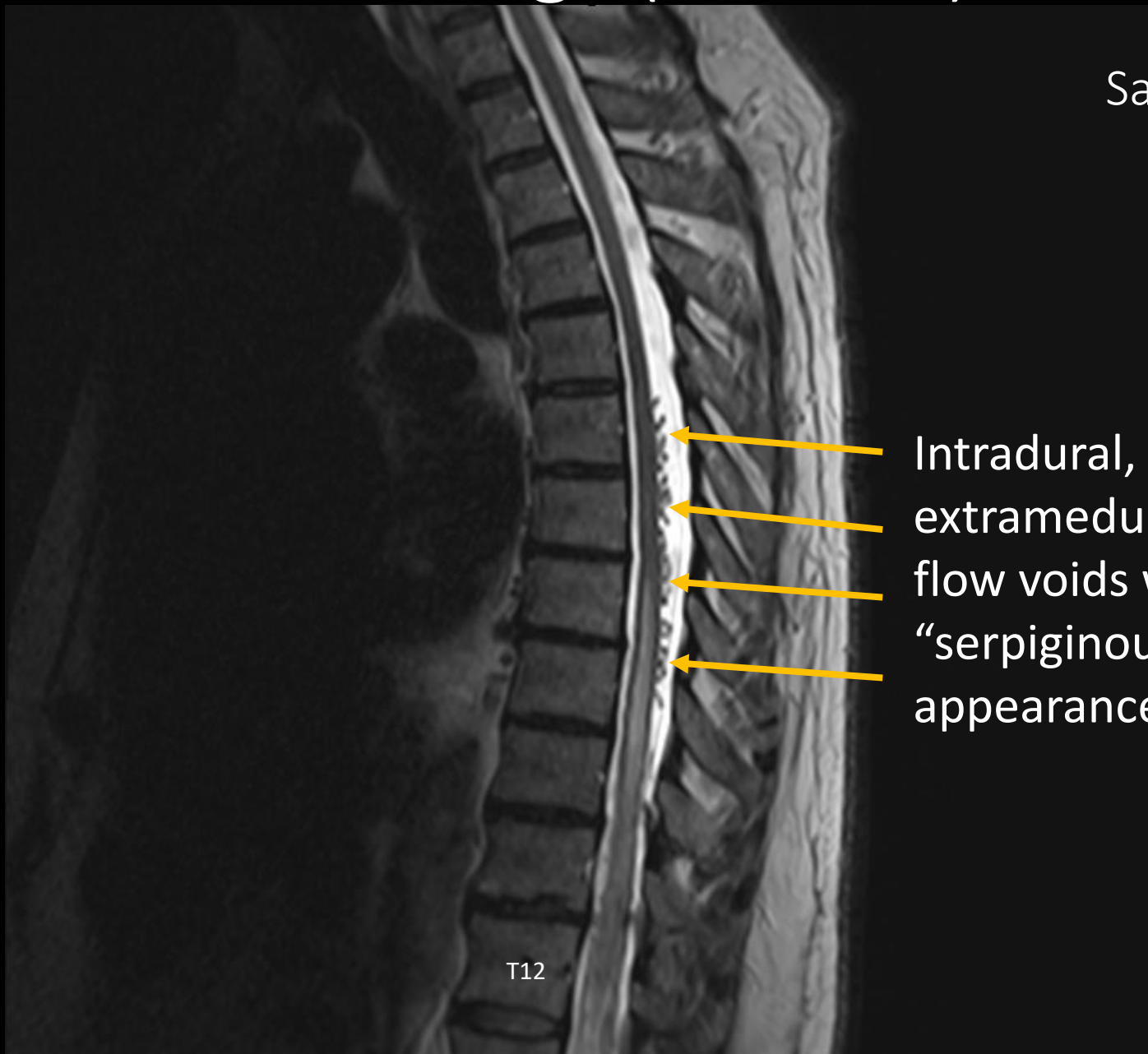
Sagittal T2-weighted image



T12

Findings (labeled)

Sagittal T2-weighted image



Intradural,
extramedullary
flow voids with
“serpiginous”
appearance

T12

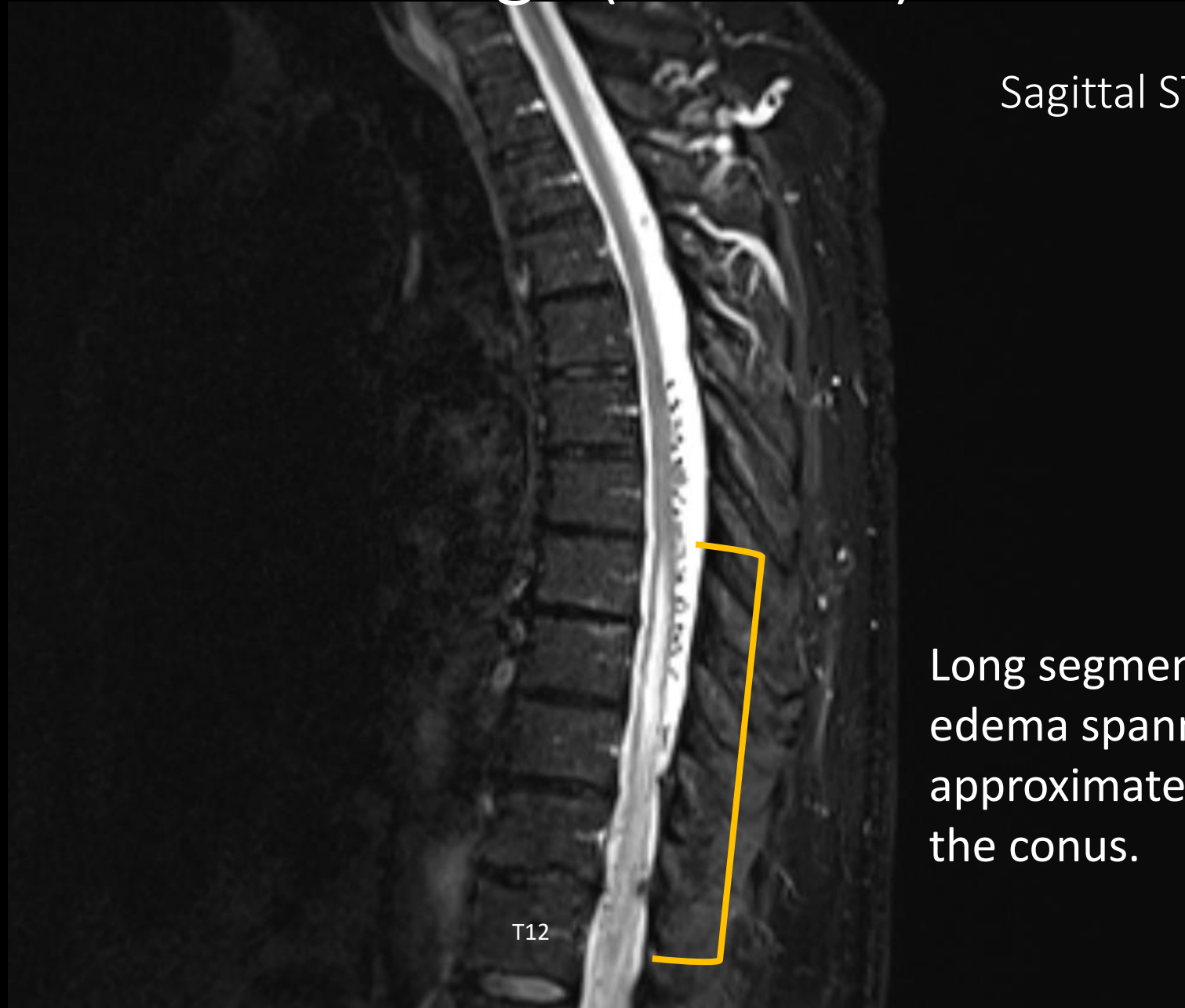
Findings (unlabeled)



Sagittal STIR image:

T12

Findings (labeled)



Sagittal STIR image:

Long segment cord edema spanning approximately T8 to the conus.

T12

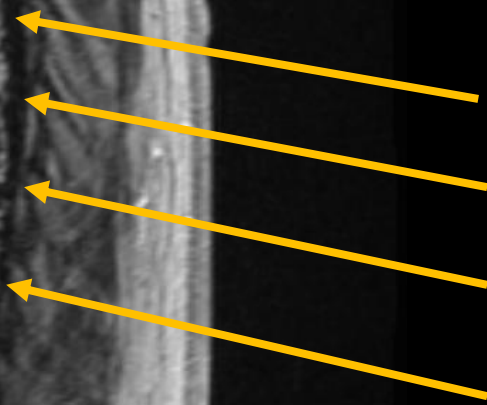
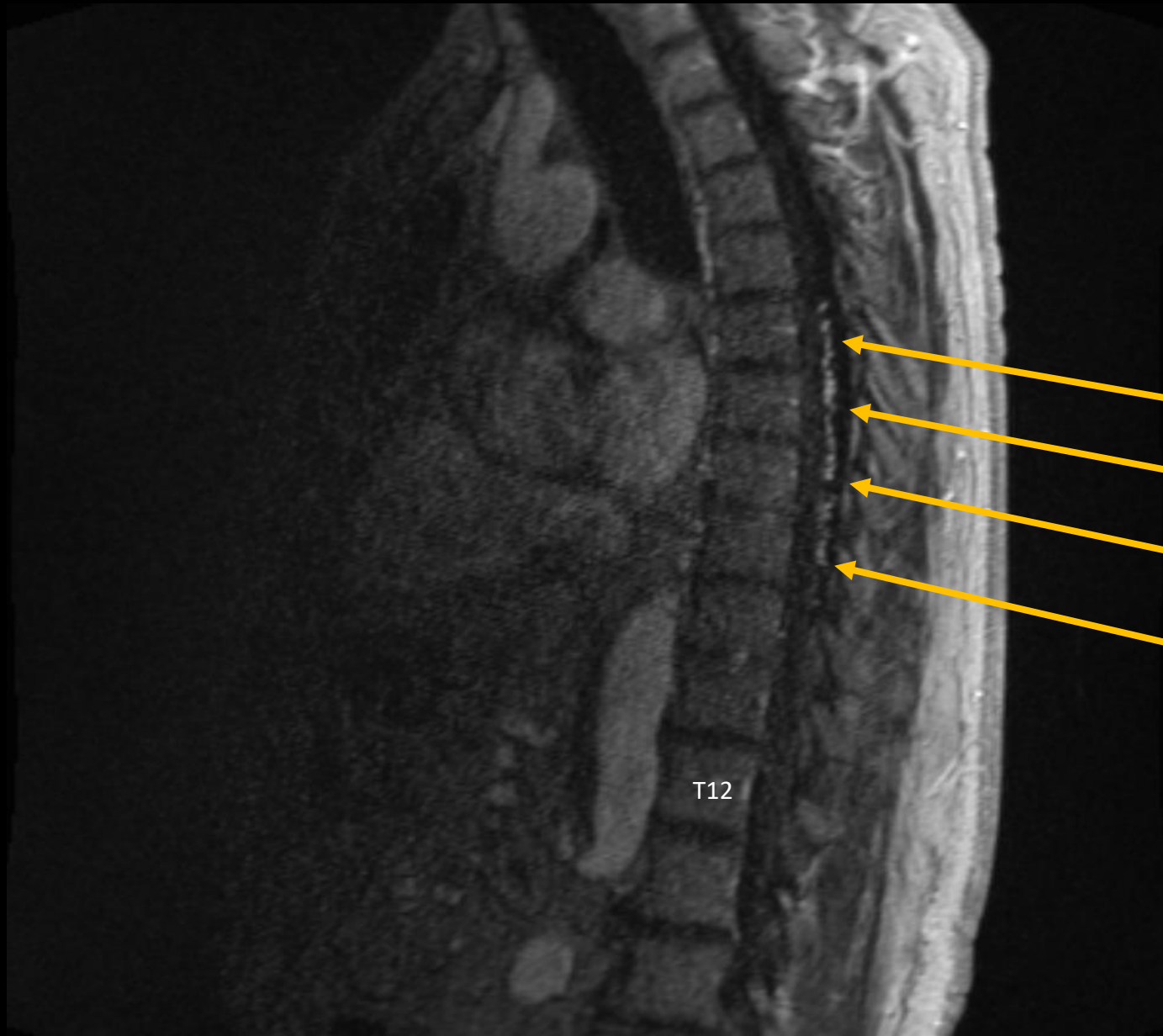
Findings (unlabeled)

Sagittal T1-weighted
post-contrast image:



Findings (labeled)

Sagittal T1-weighted
post-contrast image:

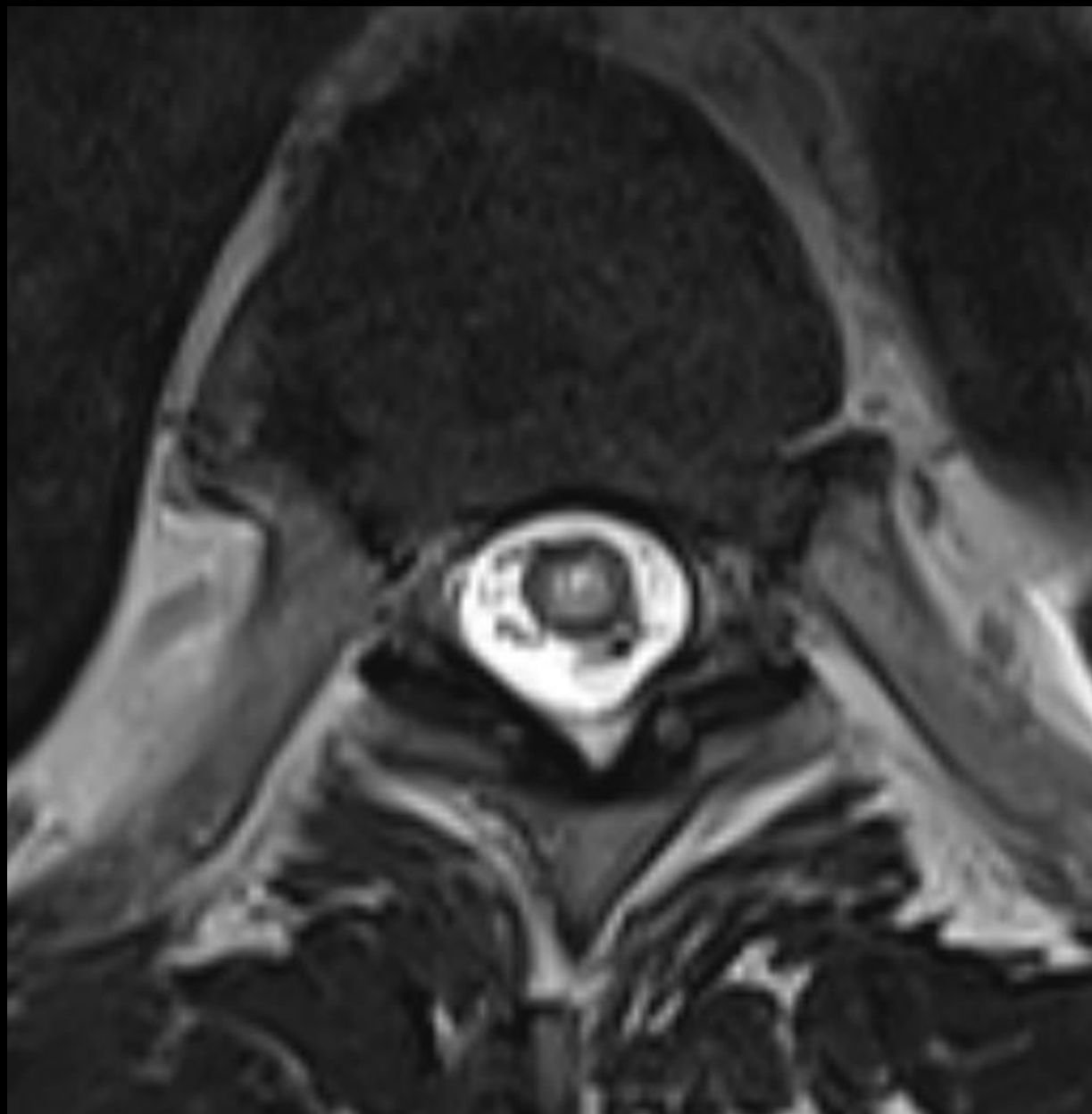


Serpiginous
vessels enhance
with contrast.

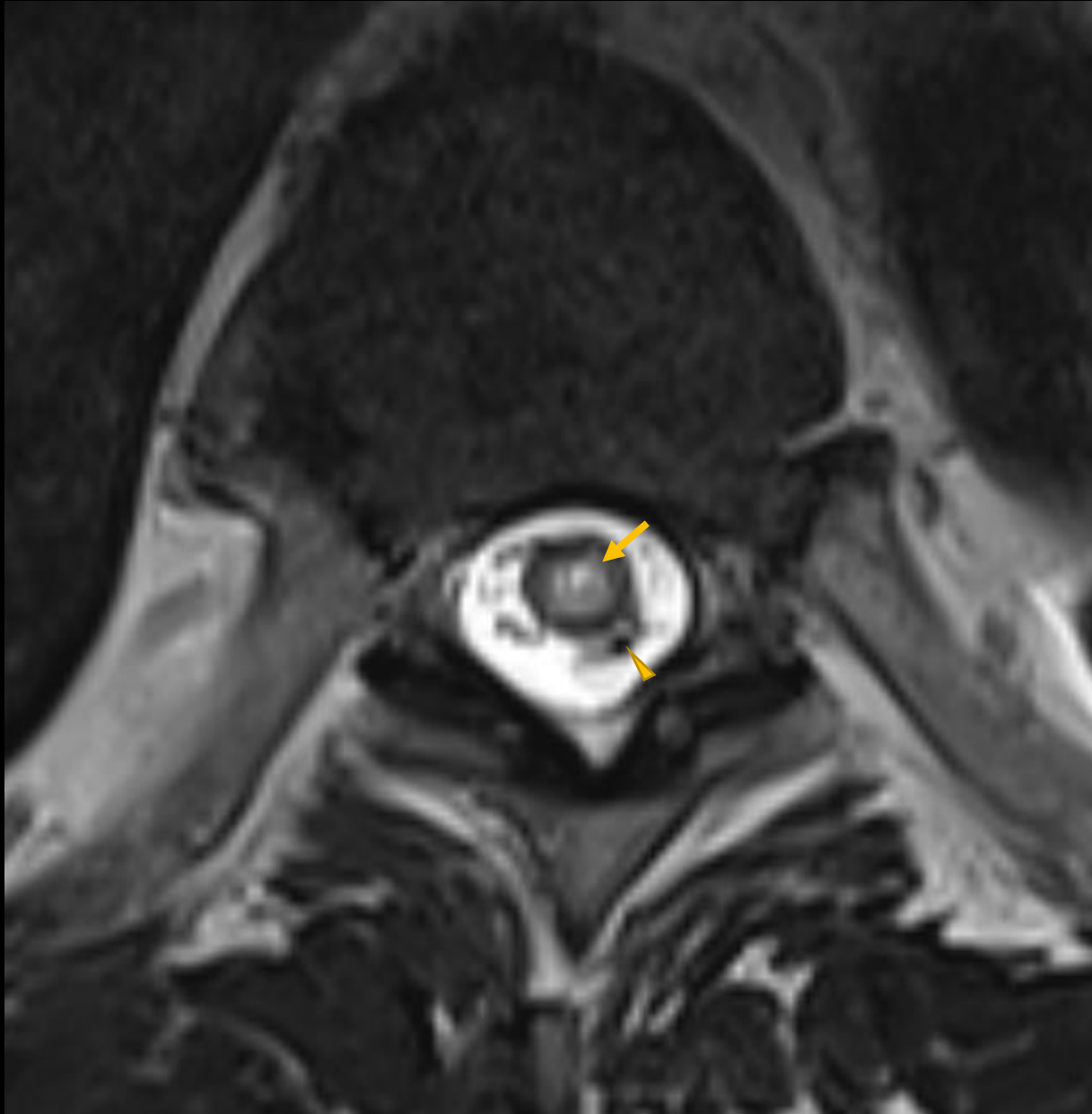
T12

Findings (unlabeled)

Axial T2-weighted image:



Findings (labeled)



Axial T2-weighted image:

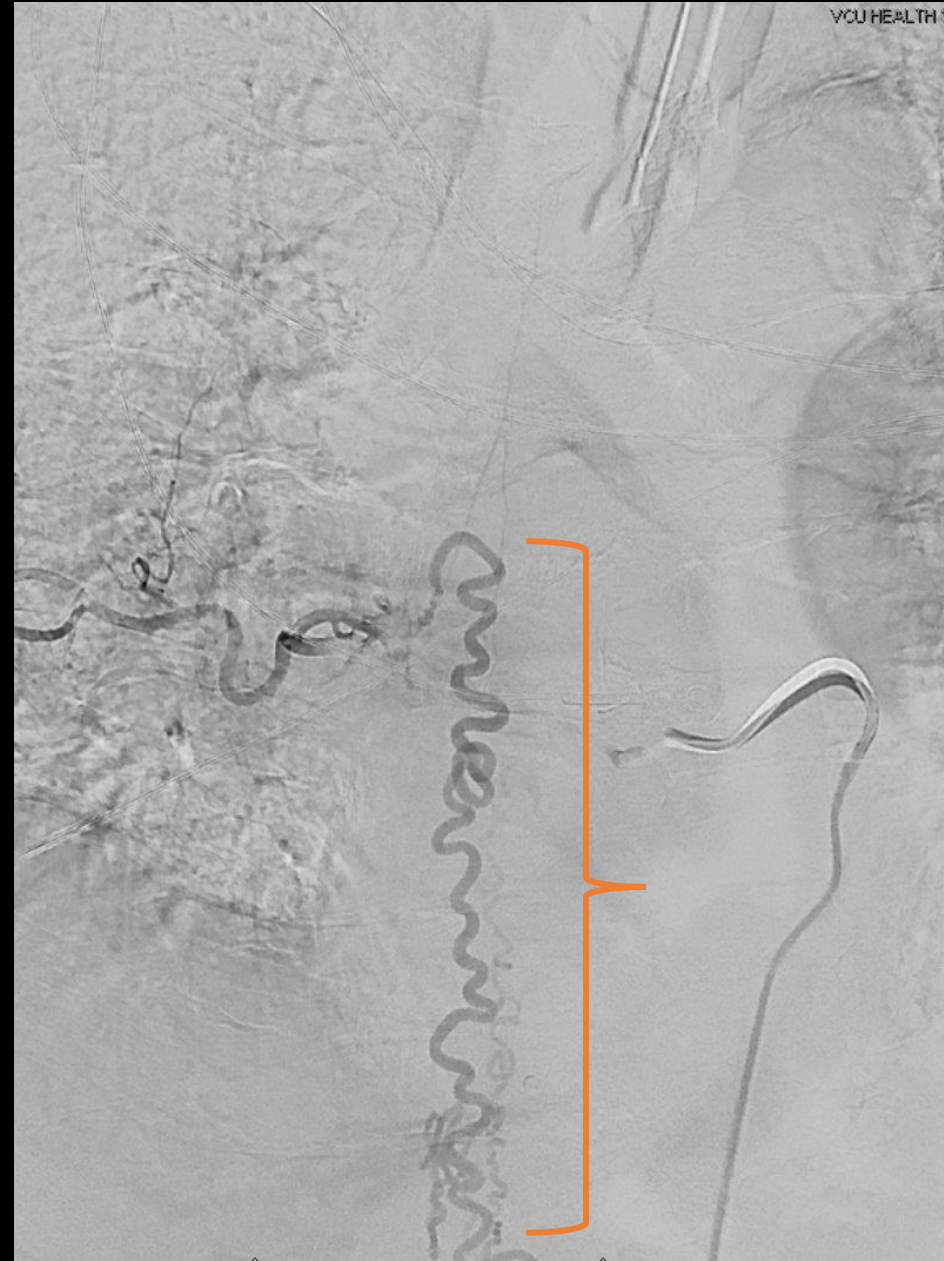
Central cord edema at level T8-9 (arrow)

Partially imaged flow void along the left dorsolateral aspect of the cord (arrowhead).

Findings (unlabeled)



Findings (labeled)



Digital subtraction angiogram, selection of a right radicular artery at T6
Findings: early opacification of serpiginous vessels within the spinal canal

Final Dx:

Spinal Dural Arteriovenous Fistula (SDAVF)

Case Discussion

- Clinical Presentation: progressive pain, lower extremity weakness, sensory changes, sphincter dysfunction¹
- Pathophysiology: Spinal Dural AV fistulas are direct connections between an artery and vein in the dura. The abnormal direct arterial blood flow into the vein raises venous pressure, causing dilation and decreased drainage in the coronal venous plexus, ultimately leading to venous congestion and intramedullary edema.

Case Discussion

- Epidemiology: Incidence of SDAVF peaks in 50-60 year old males. Males are more commonly affected than females. About 60% of SDAVFs are spontaneous. SDAVFs typically occur in the mid to lower spine.
- Risk factors:
 - More common in men than women
 - Infection, syringomyelia, trauma, surgery

Case Discussion

- Radiographic Features: MRI typically shows cord enlargement in the lower thoracic region and conus medullaris. Contrast enhanced MRA may help determine segmental level of fistula to help guide selective catheter angiography.
- Diagnosis: Angiography (DSA) is considered the gold standard test for confirming diagnosis. The site of MRI abnormality does not indicate location of the fistula.
- Differential diagnosis: intramedullary neoplasm, CSF flow artifact, spinal arteriovenous malformation
- Treatment: endovascular occlusion or surgical occlusion

References:

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