

AMSER Case of the Month: March 2023

58-year-old male with chronic weakness and
fasciculations of the upper extremities



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Patient Presentation

HPI: 58-year-old male presents with a 2 year history of muscle spasms and weakness in his upper extremities. Patient endorses a 30 lbs weight loss during this time period. He has no problems with chewing, swallowing, or breathing. No diplopia or ptosis. No bowel or bladder symptoms.

Past medical history: chronic rhinitis, hyperlipidemia, ulcerative colitis

Past surgical history: colonoscopy with polypectomy, EGD biopsy, left inguinal hernia repair

Social history: nonsmoker, runs 1 mile a day 3-5 times a week

EMG: positive waves and fibrillations in the C5-C8 nerve roots bilaterally and diffuse fasciculations in arm muscles

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

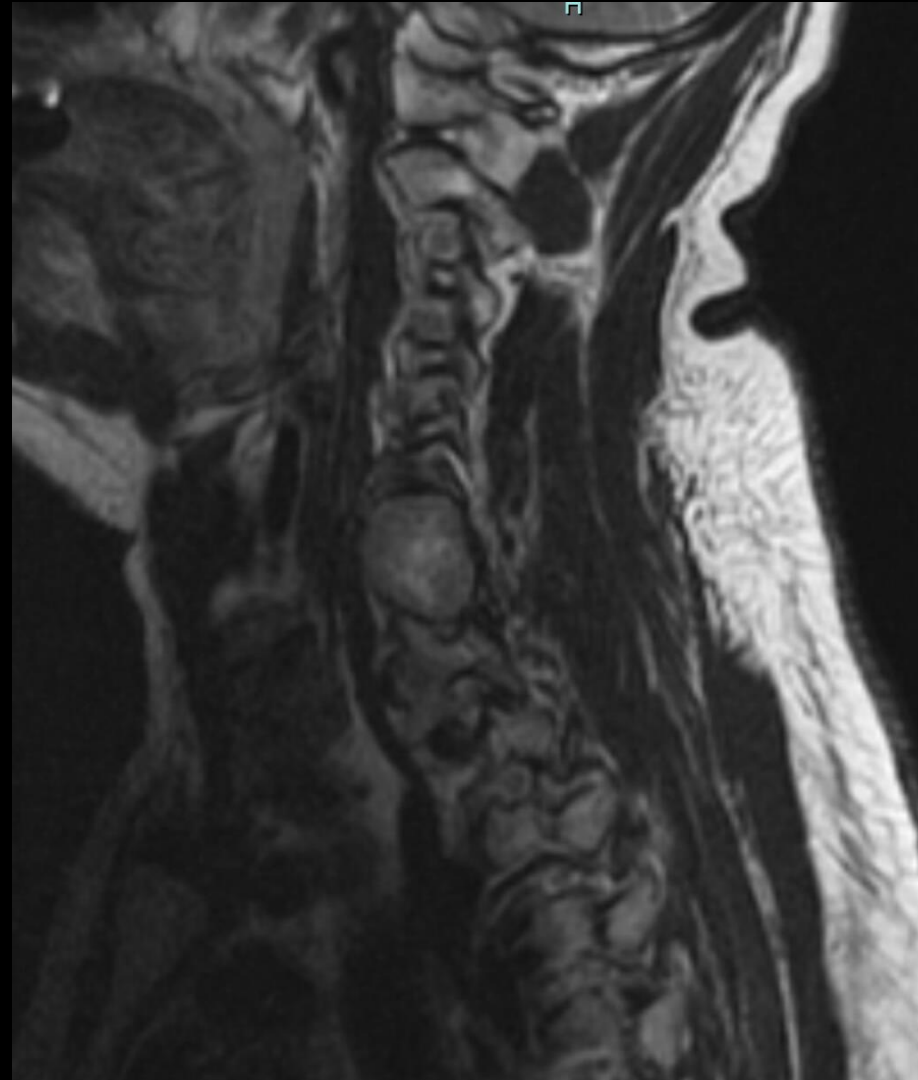
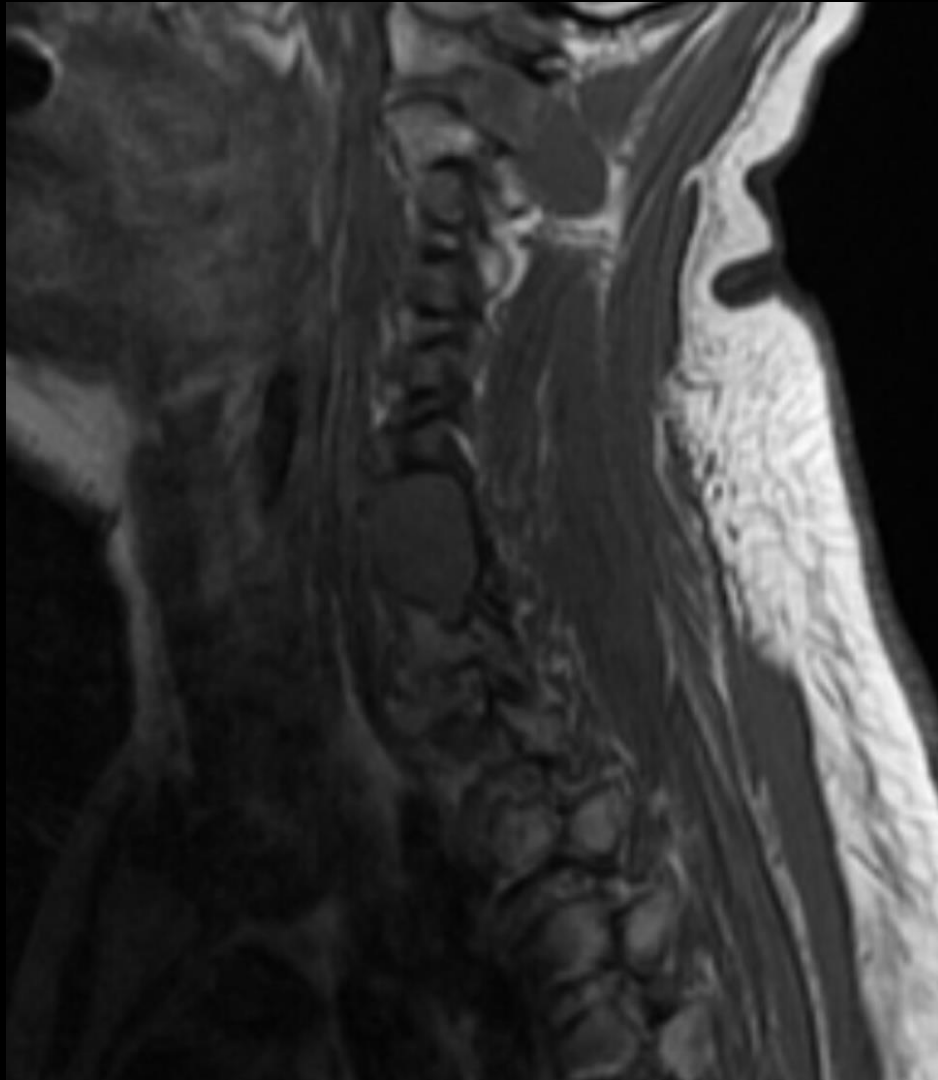
Variant 2: Chronic or progressive myelopathy. Initial imaging.

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



This imaging modality was ordered by the consulting neurologist

MRI w/o contrast (unlabeled)

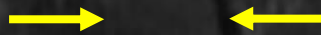


MSER

MRI w/o contrast (labeled)

Well-defined mass centered in the right C6-C7 neural foramen with widening of the foramen.

Isointense mass



Sagittal T1

Hyperintense mass

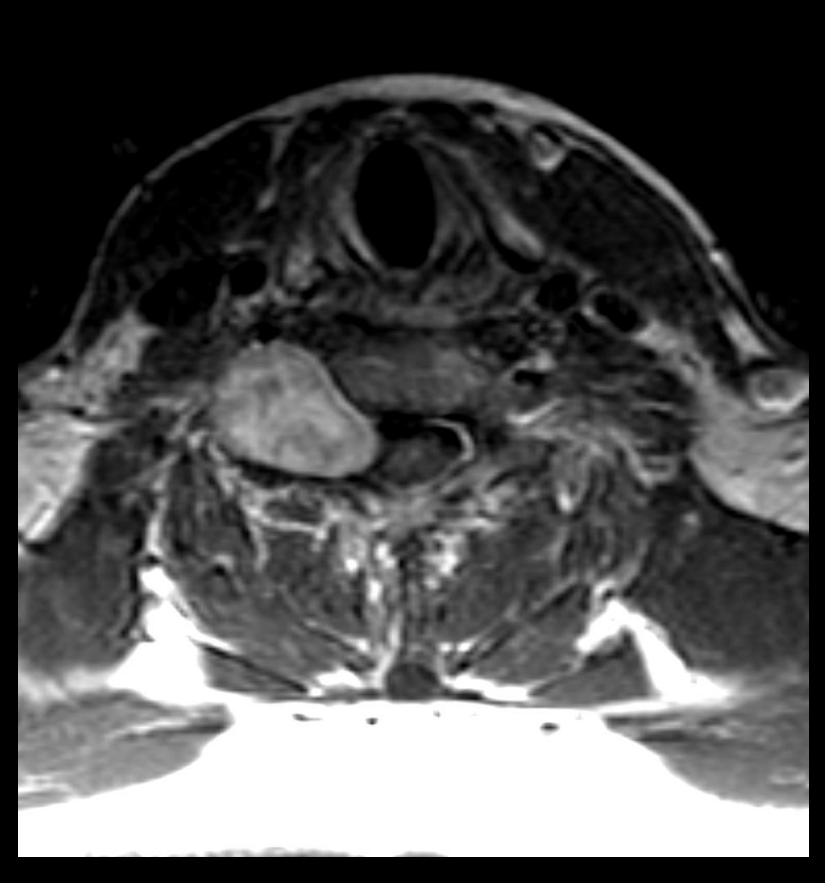
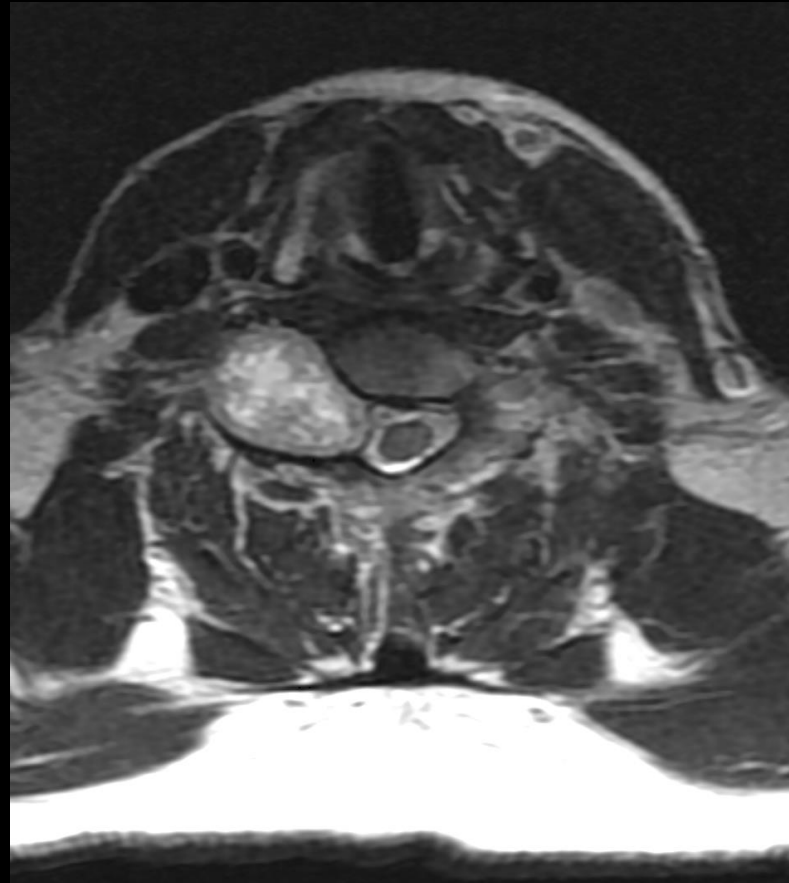
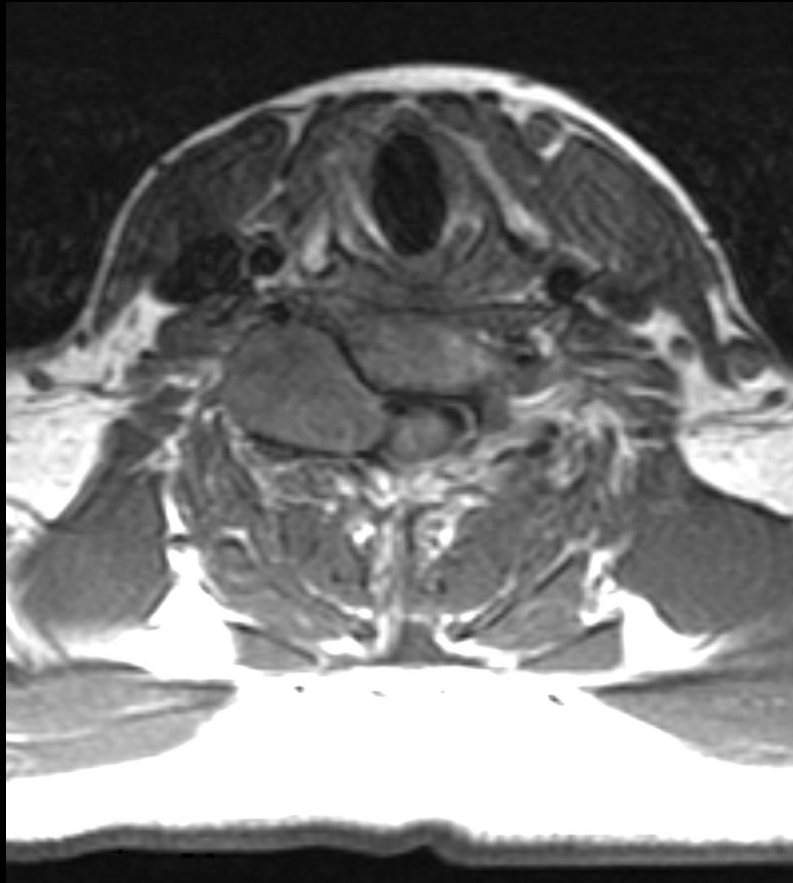


Sagittal T2

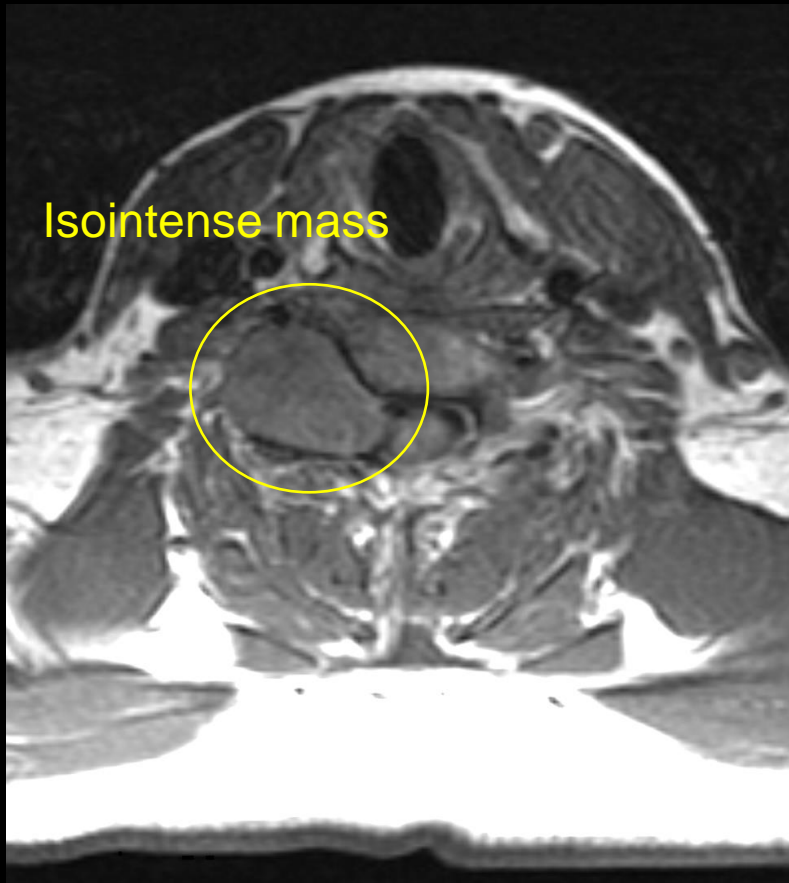
Patient was referred to neurosurgery for evaluation the following month

Repeat MRI of the cervical spine with contrast was performed to further characterize the lesion

MRI w/ & w/o contrast (unlabeled)

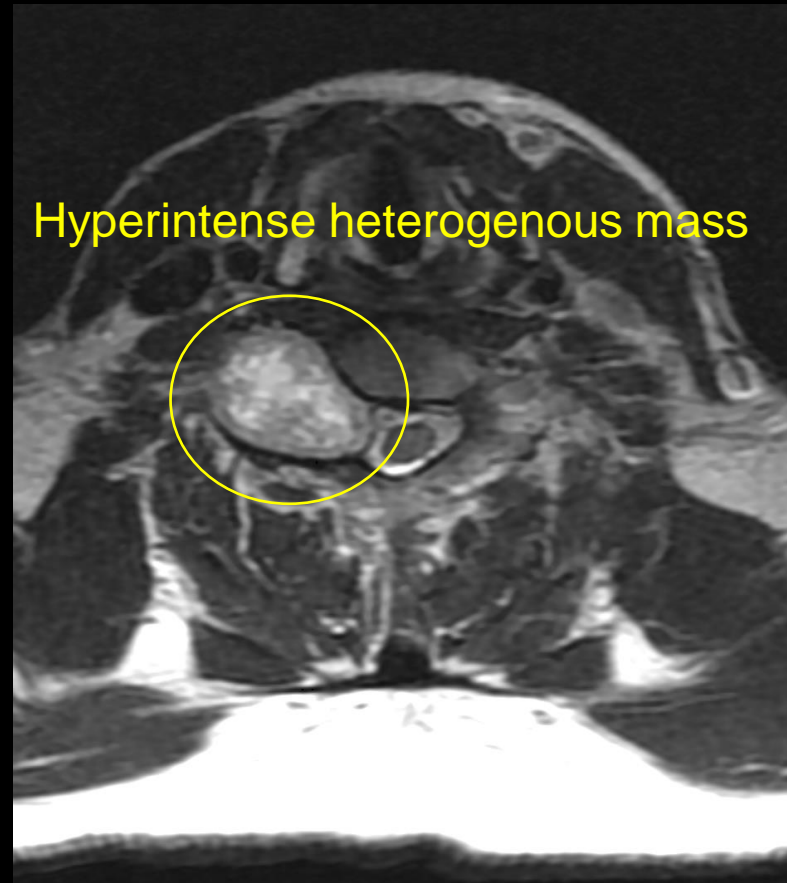


MRI w/ & w/o contrast (labeled)



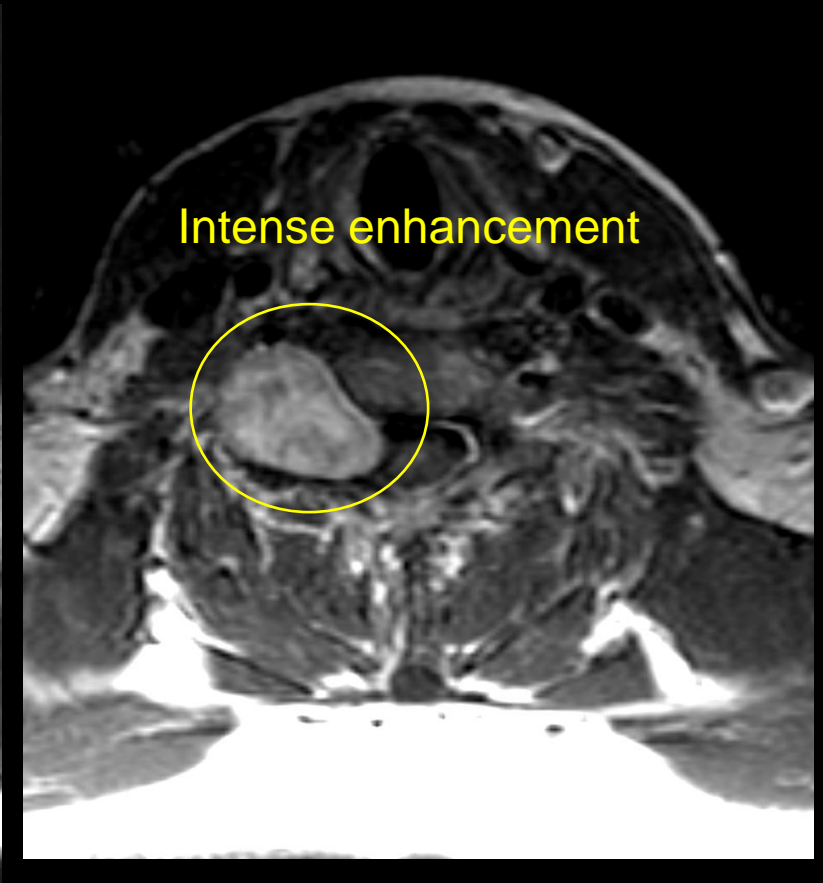
Isointense mass

Axial T1



Hyperintense heterogenous mass

Axial T2



Intense enhancement

Axial T1 +C

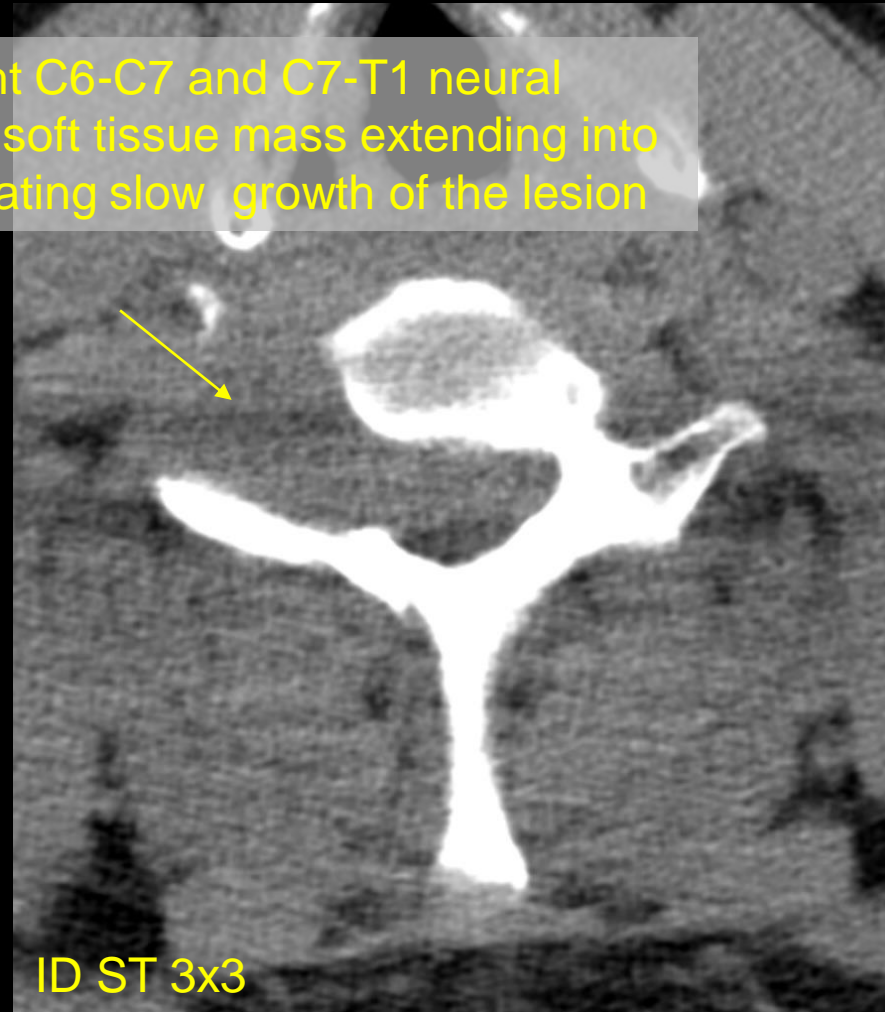
CT of the cervical spine was performed for
preoperative planning

CT w/o contrast (unlabeled)



CT w/o contrast (labeled)

Bony remodeling of the right C6-C7 and C7-T1 neural foramina due to underlying soft tissue mass extending into the right lateral canal, indicating slow growth of the lesion



Final Dx:

Extradural Cervical Spine Schwannoma

Case Discussion

- **Pathology**

- Schwannomas are benign, encapsulated nerve sheath tumors that arise from Schwann cells in the peripheral nervous system
- Biphasic composition with hypercellular (Antoni A) regions and hypocellular connective tissue (Antoni B) regions

- **Epidemiology**

- Most common nerve sheath tumor
- Incidence of spinal schwannomas is 0.3-0.5/100,000 individuals annually

- **Clinical Presentation**

- These slow growing tumors may not present with symptoms for years
- As spinal schwannomas enlarge they may induce symptoms of motor weakness, sensory deficits and radiating pain due to cord compression

Case Discussion

- **Radiologic Findings**

- Since the vertebral bodies are not involved in early tumor stages, MRI is the preferred imaging modality for diagnosis
- On MRI schwannomas are usually a solid tumor with growth in the dorsal root zone and displacement of the spinal cord
- Characterized as a well-defined T1 isointense, T2 hyperintense, and solidly enhancing mass. Cystic changes can be seen.
- CT of the spine can assess for associated bony remodeling if large enough.

- **Classification**

- Type I: intradural localization
- Type II: intradural origin with extradural extension through the neural foramen
- Type III: extradural localization
- Type IV: extradural origin with intradural extension through the neural foramen

Case Discussion

- **Surgical Intervention**

- In this case, elective surgery was performed to remove the schwannoma
- The procedure involved a C6-C7 laminectomy with resection of the extradural tumor and a C4-T1 posterior cervical fusion with lateral screws at left C4-C6, right C4-C5 and pedicle screws at T1 and T2 bilaterally
- Posterior lateral fusion was completed with autologous bone graft material
- Laminectomy with cervical fusion is a safe and effective approach to schwannoma resection and has better outcomes in terms of spinal stabilization compared to laminectomy alone

References:

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