AMSER Case of the Month June 2019

49 year old male with neck, back, and shoulder pain

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Patient Presentation

- 49 year old male with no PMHx presents with atraumatic neck, back and shoulder pain x 6 weeks
- Pt was previously treated with cervical manipulation by a chiropractor which exacerbated his symptoms
- Additionally the Pt was seen at an Urgent Care and treated with muscle relaxers and steroids which did not provide lasting relief
- Pt presented to ED with an acute exacerbation of his symptoms after performing stretches at home.

Patient Presentation

- Pt reports that pain began in his neck and radiates to his right arm, and that his symptoms are worse with cervical extension
- Endorses some associated right upper extremity weakness
- Denies fevers, chills, numbness, paresthesia, bowel or bladder incontinence, saddle anesthesia, or gait abnormalities

Patient Presentation

- Vitals: T: 36.7 BP: 118/68 HR: 75 RR: 18 Sp02: 99%RA BMI: 31

- Physical Exam:
  - General: A&O x 3
  - Neck: posterior midline and paraspinal musculature is non-tender to palpation
  - Upper extremities: 5/5 Strength b/l, diminished sensation in C6 dermatome on the right
  - Neuro: CNII-XII grossly intact, negative Hoffman's sign bilaterally, heel-to-shin and finger-to-nose intact b/l.

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

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ACR Appropriateness Criteria®
Cervical Neck Pain or Cervical Radiculopathy

Variant 1: **New or increasing nontraumatic cervical or neck pain. No "red flags." Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
Radiography cervical spine	Usually Appropriate	☢☢
MRI cervical spine without IV contrast	May Be Appropriate (Disagreement)	O
CT cervical spine without IV contrast	May Be Appropriate	☢☢☢
CT cervical spine with IV contrast	Usually Not Appropriate	☢☢☢
MRI cervical spine without and with IV contrast	Usually Not Appropriate	O
CT cervical spine without and with IV contrast	Usually Not Appropriate	☢☢☢
CT myelography cervical spine	Usually Not Appropriate	☢☢☢☢
CTA neck with IV contrast	Usually Not Appropriate	☢☢☢
Discography cervical spine	Usually Not Appropriate	☢☢
Facet injection/medial branch block cervical spine	Usually Not Appropriate	☢☢
MRA neck with IV contrast	Usually Not Appropriate	O
MRA neck without IV contrast	Usually Not Appropriate	O
MRI cervical spine with IV contrast	Usually Not Appropriate	O
Tc-99m bone scan whole body with SPECT/CT neck	Usually Not Appropriate	☢☢☢☢
X-ray myelography cervical spine	Usually Not Appropriate	☢☢☢

These imaging modalities were ordered by the ER physician

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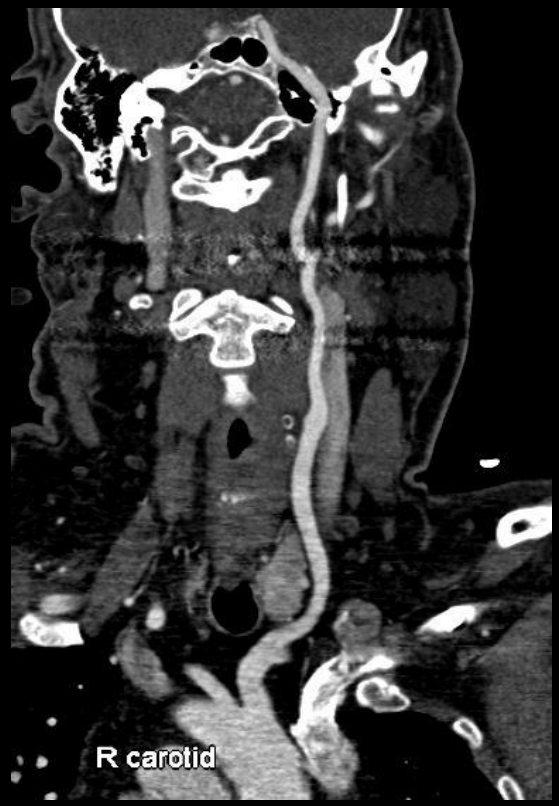
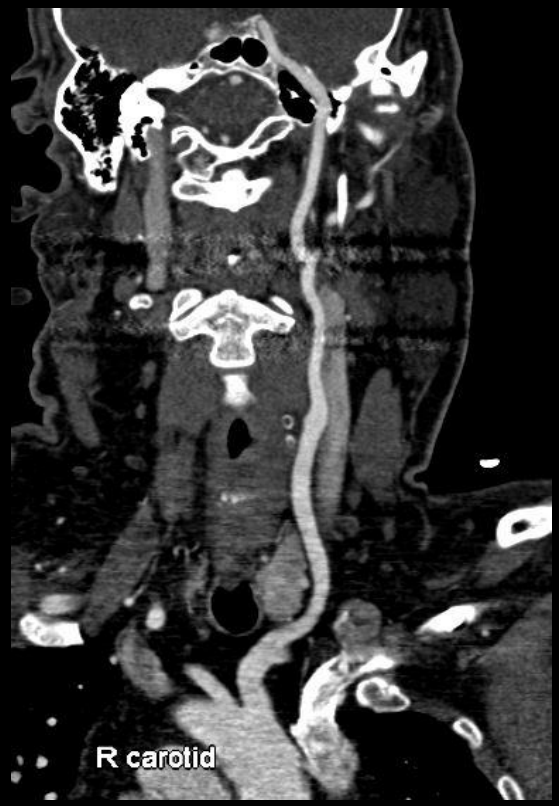
CT ANGIOGRAM - NECK



Due to history of recent cervical manipulation, CTA was obtained to r/o vascular injury

CT ANGIOGRAM – NECK FINDINGS



Widely patent carotid and vertebral arteries without evidence of vascular injury

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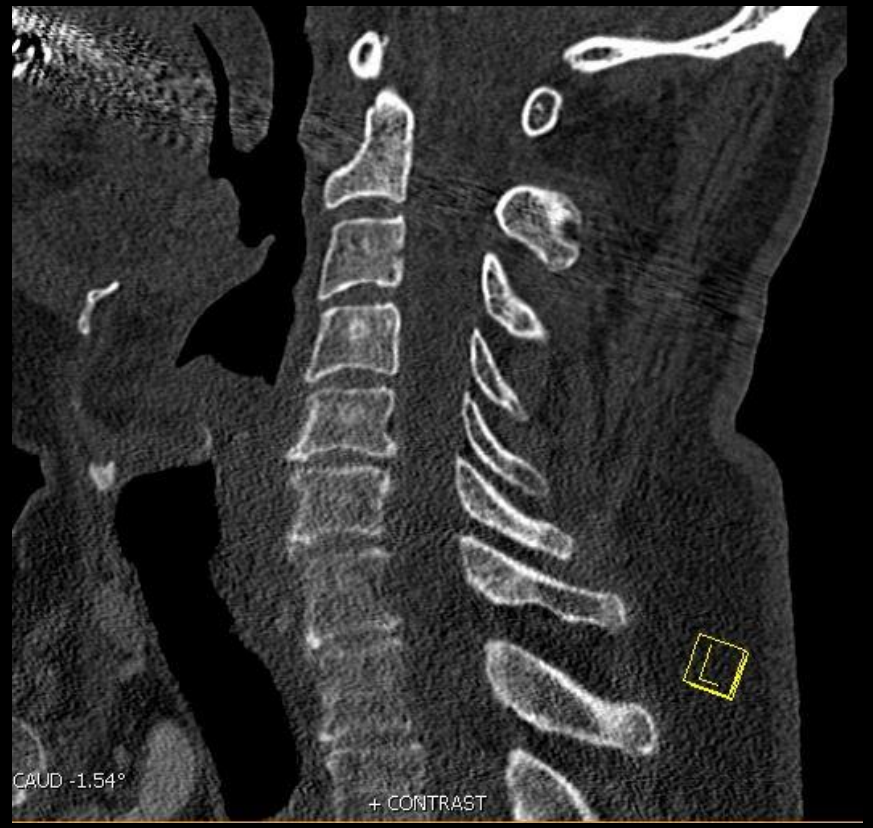
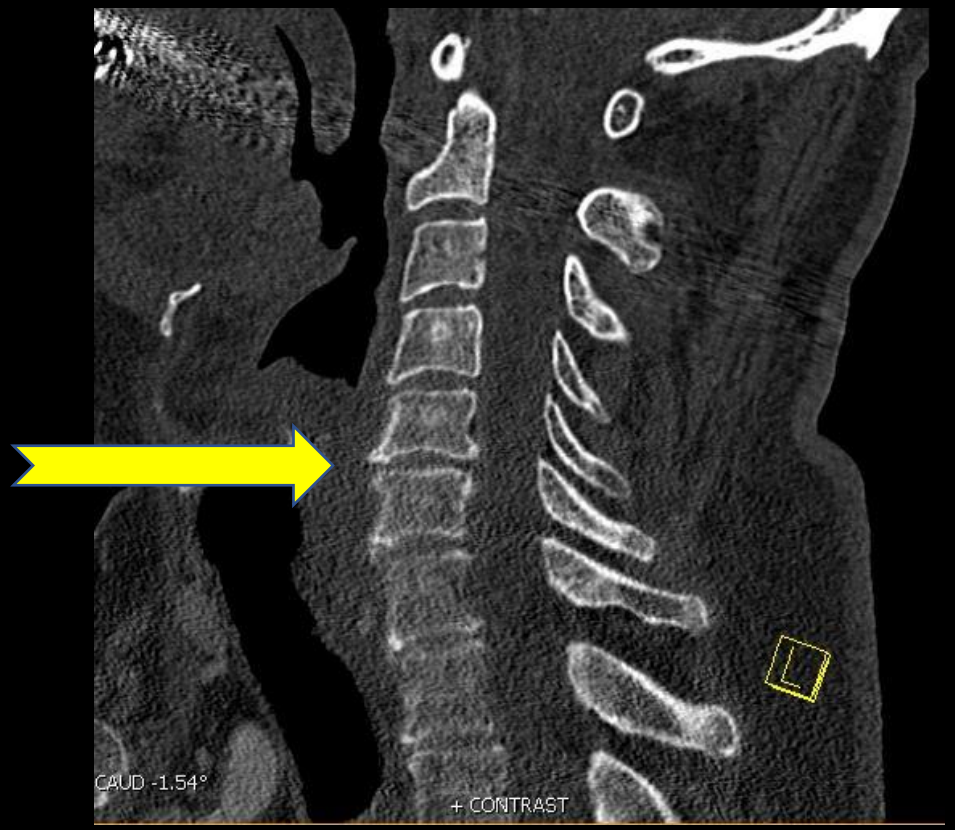
CT CERVICAL SPINE



CT CERVICAL SPINE - FINDINGS



Degenerative changes seen at C5-C6, C6-C7 without evidence of acute fracture or dislocation. Loss of cervical lordosis is nonspecific.

Preliminary Diagnosis:

- Cervical radiculopathy
- Pt was discharged home and referred to Orthopaedic Surgery for further evaluation

Select the applicable ACR Appropriateness Criteria

New or increasing nontraumatic cervical radiculopathy. No "red flags." Initial imaging.

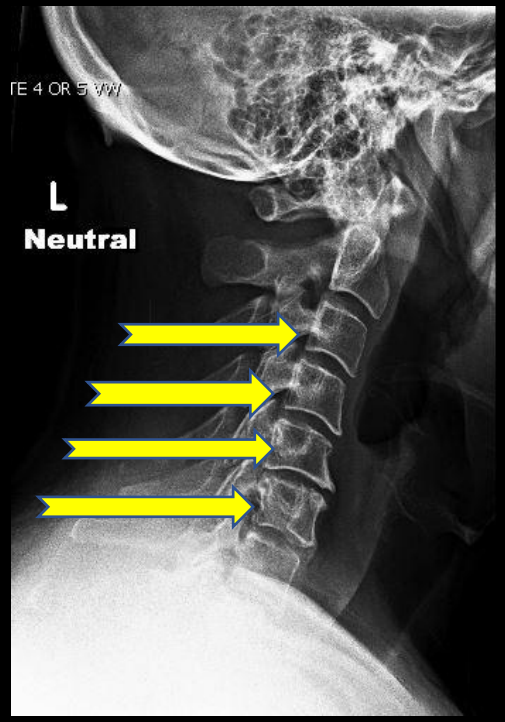
Procedure	Appropriateness Category	Relative Radiation Level
MRI cervical spine without IV contrast	Usually Appropriate	O
CT cervical spine without IV contrast	May Be Appropriate	☢☢☢
Radiography cervical spine	May Be Appropriate (Disagreement)	☢☢

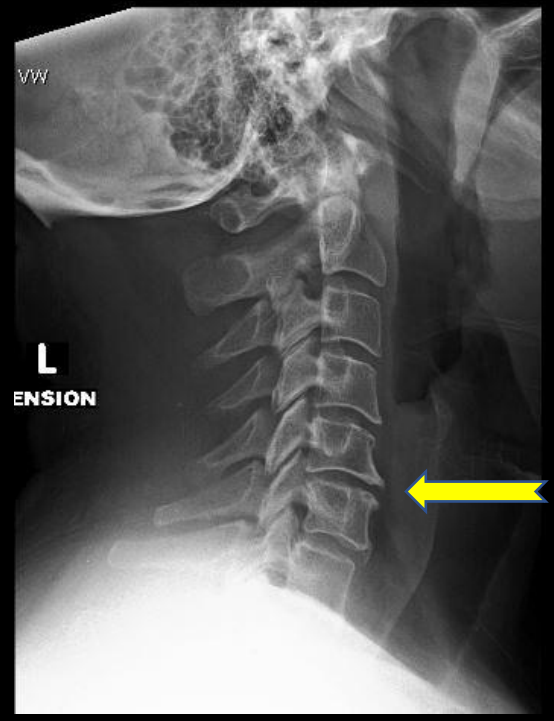
These imaging modalities were ordered by the Orthopaedic Spine Surgeon

PLAIN RADIORAPHS

PLAIN RADIOGRAPHS - FINDINGS

Loss of cervical Lordosis





C6-C6 Degenerative changes

Lateral, Flexion, and Extension views demonstrating loss of cervical lordosis and degenerative changes that are most pronounced at C5-C6 with anterior osteophytes and loss of disc height. There is no evidence of acute fracture, dislocation, or dynamic instability.

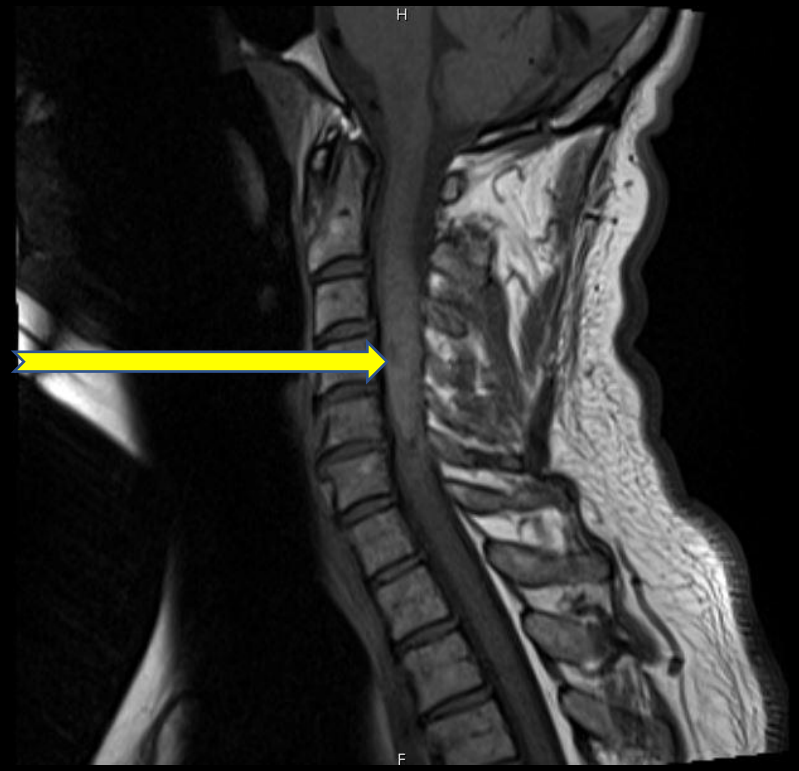
MRI CERVICAL SPINE

T1

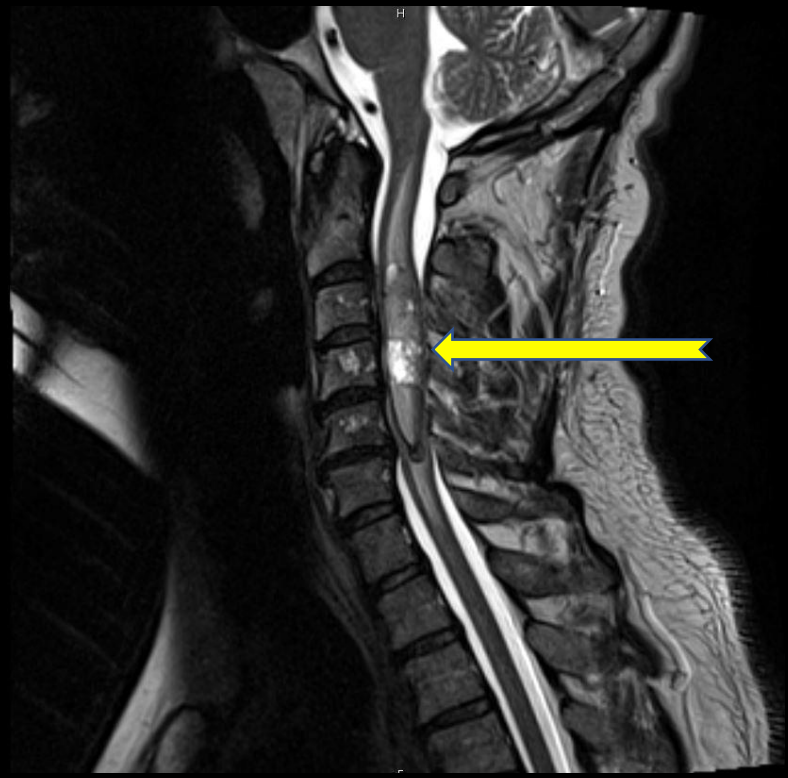
T2

MRI CERVICAL SPINE - FINDINGS

T1



T2



T1 and T2 Sagittal Images of the cervical spine demonstrating an intramedullary mass that spans the width of the spinal cord that extends from C3-C5. This measures approximately 6.0 x 1.1 x 2.2 (CC x AP x TV) cm. There appear to be solid and cystic components with septation. There is T2 prolongation consistent with cord edema superior and inferior to the mass from the cervicomedullary junction to the level of C7.

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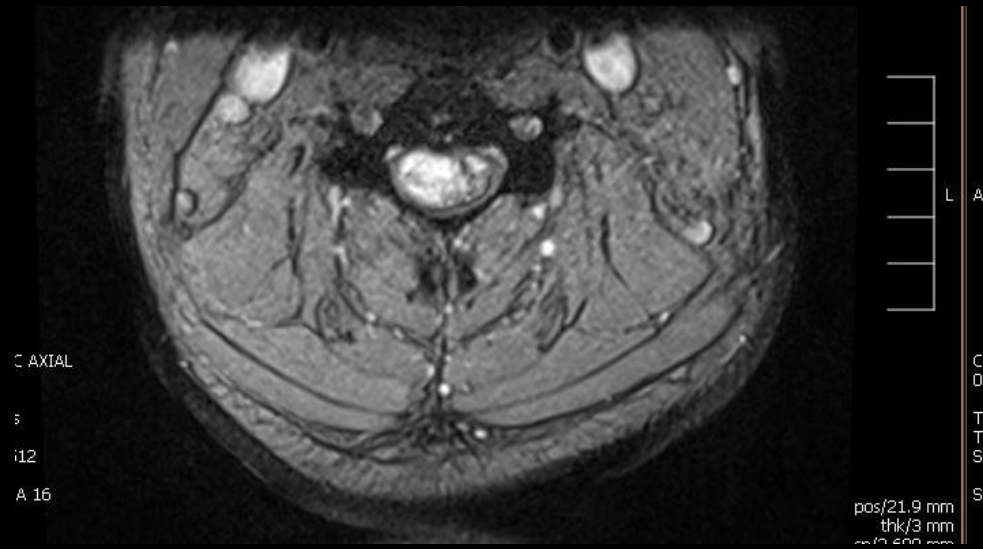
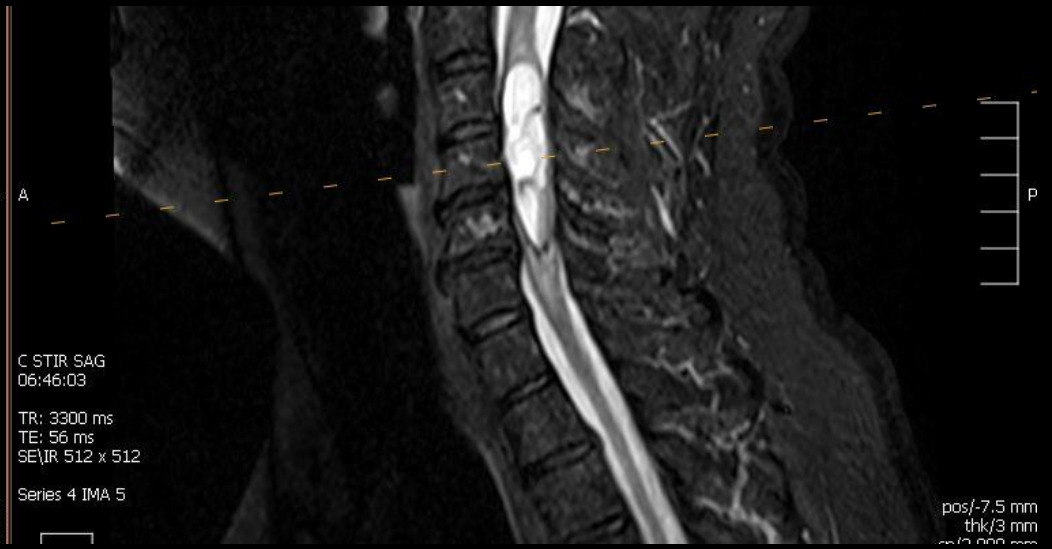
MRI CERVICAL SPINE

T2



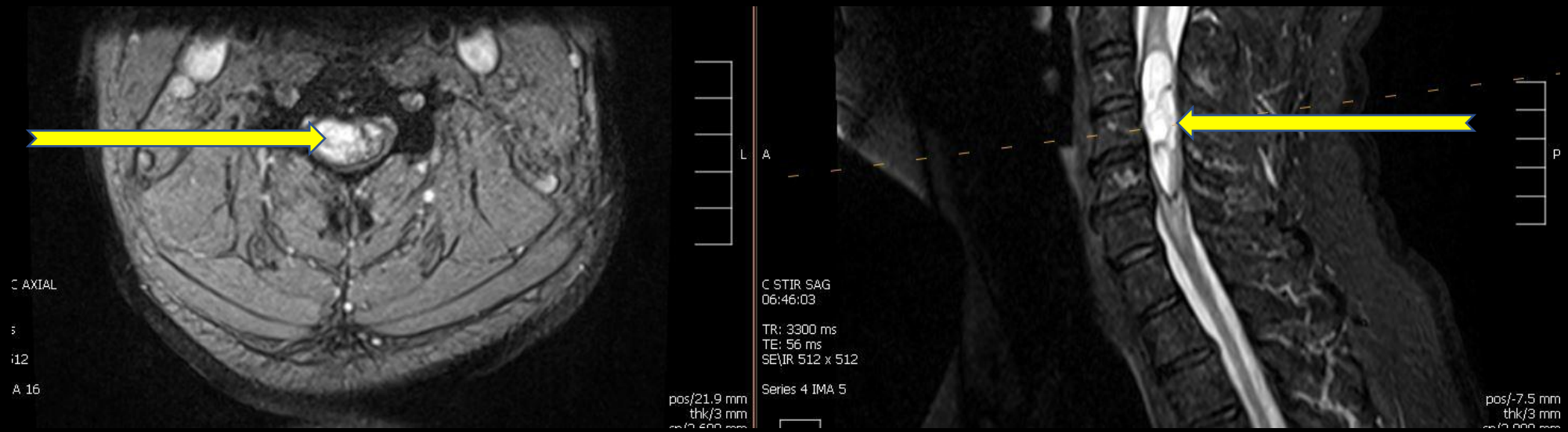
STIR



MRI CERVICAL SPINE

T2

STIR



T2 Axial and Sagittal STIR cuts demonstrating an intramedullary mass with heterogeneous T2 hyperintense signal spanning C3 through C5, with solid and cystic components. Abnormal STIR signal within the cord superior and inferior to mass is compatible with edema.

Final Diagnosis:

Intramedullary mass of the cervical spinal cord at the levels of C3-C5. Imaging characteristics are suggestive of intramedullary ependymoma. Less likely, differential diagnosis includes astrocytoma and hemangioblastoma. Recommend follow-up with contrast-enhanced MRI.

Plan

- A Neurosurgical consult was obtained
- Further imaging was ordered including contrast enhanced MRI of the brain and spinal cord.
- Plan is to undergo a combined decompression and mass resection with Orthopaedic Spine Surgery and Neurosurgery.

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Case Discussion

- Ependymomas represent the most common intramedullary tumors in adults
- In general cervical ependymomas present with less severe motor and gait deficits than those in the thoracic region
- Complete surgical resection by experienced neurosurgeons indicates cure for the majority of patients

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Conclusions

- Intramedullary ependymomas can be treated surgically
- Complete surgical resection indicates cure for the majority of patients
- Rates of permanent surgical morbidity and neuropathic pain syndromes remain the highest among intramedullary tumors
- Morbidity can be reduced by early intervention

References:

Klekamp, J. (2015). Spinal ependymomas. Part 1: Intramedullary ependymomas. *Neurosurgical Focus, 39*(2). doi:10.3171/2015.5.focus15161

AMSER Case of the Month. (2018). Retrieved March 26, 2019, from http://aur.org/Case-of-the-Month/

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