AMSER Case of the Month
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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

These imaging modalities were ordered by the ER physician
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
CT CERVICAL SPINE
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

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>Relative Radiation Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI cervical spine without IV contrast</td>
<td>Usually Appropriate</td>
<td>○</td>
</tr>
<tr>
<td>CT cervical spine without IV contrast</td>
<td>May Be Appropriate</td>
<td>☢️</td>
</tr>
<tr>
<td>Radiography cervical spine</td>
<td>May Be Appropriate (Disagreement)</td>
<td>☢️</td>
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</tbody>
</table>

These imaging modalities were ordered by the Orthopaedic Spine Surgeon.
PLAIN RADIOGRAPHYS
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 - FINDINGS

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.
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.
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
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:

