Hemorrhagic Cervical Synovial Cyst with Atypical Chest Pain Presentation

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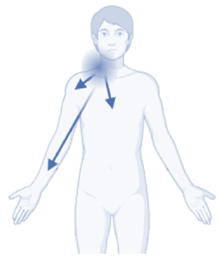
History

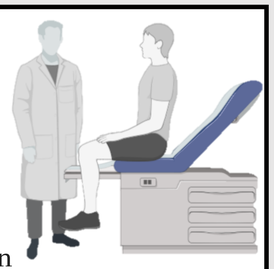
- 58-year-old male presented to neurosurgery with tingling in the right shoulder region for five months, without any precipitating event
- He reported having constant, achy right neck pain, radiating to the right shoulder, anterior chest wall, and dorsal forearm
- Lying down aggravated his symptoms, especially in the chest wall, but pain also radiated to the aforementioned regions
- He described weakness in the right hand, difficulty with dexterity (e.g., handwriting)
- Physical therapy and chiropractic care did not lead to beneficial outcomes



Purpose

This is the seventh reported case of cervical hemorrhagic synovial cyst, but our case is unique because of the atypical presentation of nonanginal chest pain

Physical Exam



Cervical Spine Motion Testing

- Limited in all planes, especially flexion
- Right forearm and medial hand pain in flexion
- Medial arm pain with right lateral rotation
- Right chest wall pain with right-side bending

Cervical Spine Palpation

- Tenderness over the right distal lateral masses

Tactile Sensation

- Response in the right upper limb was decreased in the medial hand, including the fourth and fifth digits

Other

- Muscle stretch reflexes were normal; no Hoffman's sign
- Gait normal; Romberg negative
- Muscle bulk, tone, and strength were normal
- Right median nerve neural tension test was positive

Diagnostic Imaging

- Cervical spine MRI showed hemorrhagic synovial cyst at the right C7-T1 level, resulting in severe right foraminal stenosis (Figure 1A-D)
- Cervical spine CT scan had similar findings
- Cervical spine X-rays did not show spondylolisthesis or instability

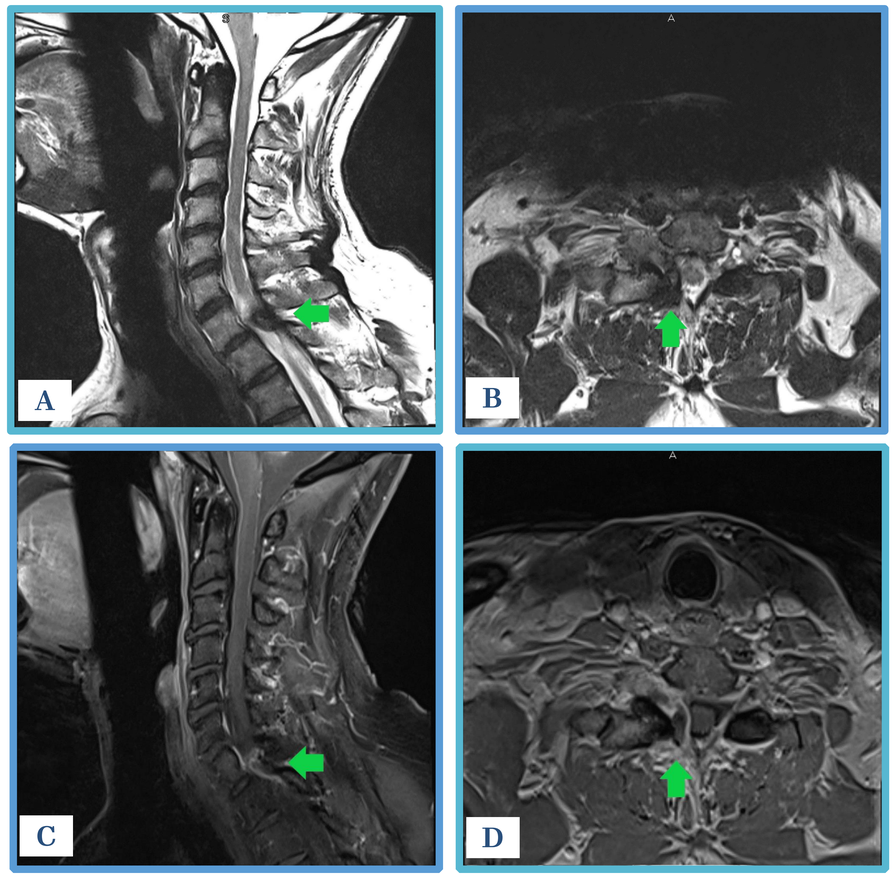


Figure 1, A-D. T2-weighted (A & B) and contrast enhanced (C & D) sagittal and axial images of cervical spine, spinal cord and surrounding structures, with green arrows identifying synovial cyst

Treatment

- Gabapentin, opioids, and oral non-steroidal anti-inflammatory drugs provided only partial relief
- A taper of oral Prednisone on two occasions resulted in complete resolution of symptoms
- Patient declined an EMG and chose to proceed with surgery
- A right C7-T1 laminoforaminotomy and synovial cyst resection surgery was performed 3 months after initial presentation in office

Outcomes

- The patient had complete resolution of his symptoms as well as his right-hand weakness
- He returned to work and activities of daily living without restrictions
- He stated, "*I feel 100% better and back to normal*"
- Maintained improvement during the 19 months of follow-up

Conclusion

Based on our case, it would be beneficial to include cervical etiology for nonanginal chest pain as a differential until completion of the diagnostic work-up

Discussion

Why was there a contradictory presentation?

- Musculoskeletal-based or non-cardiac chest pain is known to improve in the supine position [1], but our patient's chest pain worsened lying down
- *Hypothesis* for this contradictory presentation: Lower cervical nerve roots are displaced during relative neck flexion when lying down with the neck supported. Based on the synovial cyst position to the right C8 nerve root, this small amount of motion would have a more dramatic impact [2]

How can this manifest as chest pain?

- The C8 nerve root contributes to the median and/or lateral pectoral nerves
- The median pectoral nerve may have protopathic sensibility, and the lateral pectoral nerve carries proprioceptive and nociceptive fibers
- Chest pain can manifest via referral through these peripheral nerves
- Referred pain may also be conducted via the sinuvertebral nerve [3]

References