CLINICAL VIGNETTE

Cervical Ribs in a Young Woman with Shoulder Pain

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Introduction

Incidental findings are common when obtaining diagnostic imaging. Cervical ribs may be seen on x-ray and are often asymptomatic, but can be associated with rare outcomes due to vascular and nerve compression.[1] It is important that primary care physicians are familiar with the clinical significance of these findings so that they can properly discuss the results with patients.

Presentation

A 33-year-old right-handed female with a history of ADHD presented with several weeks of neck and left shoulder pain. She had been in a car accident approximately one month prior in which she was the restrained driver in a vehicle that was directly rear-ended. She denied any loss of consciousness and stated that her airbag did not deploy. She was not sure whether she had struck her head, but did not have any cranial injuries. She was able to ambulate immediately after the accident. Emergency services were called to the scene but she declined emergency room evaluation at the time.

Afterwards, she developed worsening pain and tightness in her neck and left shoulder. When the pain did not resolve six days after the accident, she presented to urgent care, where she had neck x-rays taken. She was told that her spine had lost some of its natural curvature, but was not told of any fractures. She was given a muscle relaxant and discharged home with reassurance. Since her visit to urgent care she had headaches and persistent neck and shoulder pain. She denied any vision changes, focal weakness, numbness, or tingling in her arms. She had taken the muscle relaxant five times with minimal relief prompting primary care evaluation.

Her vital signs included: blood pressure 113/76, pulse 79, respiratory rate 18, oxygen 97% on room air. Her physical exam was notable for spasm of her left trapezius muscle, as well as midline tenderness over her mid-cervical spine. She had no focal neurologic deficits, including intact sensation and muscle strength. Based on the mechanism of injury and presence of midline tenderness, x-rays were obtained to rule-out fracture. She was also referred to physical therapy for treatment of her trapezius muscle spasm.

X-rays showed straightening of the spine and minimal anterolisthesis of C3 and C5, but no evidence of fracture. Incidental note was made of rudimentary bilateral cervical ribs.

Discussion

Cervical ribs are additional, anomalous ribs most commonly arising from the seventh cervical vertebra. Their incidence varies by population, but can range from 0.5-6.2%. Among the population, prevalence is 0.5-1%. They are more common in women and may be bilateral or unilateral.[2]

Up to 90% of individuals with cervical ribs are asymptomatic, but some may develop compression of the brachial plexus or subclavian vessels leading to thoracic outlet syndrome.[1] This is more common in patients with large or complete cervical ribs that are fused to the first cervical rib.[3] Vascular compression can lead to discoloration of the affected hand, claudication, difference in pulse intensity between the two arms, Raynaud's phenomenon,[1] as well as thromboses of the subclavian artery or vein.[3] There are also case reports of recurrent stroke,[4] cerebellar infarction,[5] and subclavian artery aneurysm[6] in patients with cervical ribs. Compression of the brachial plexus may lead to pain in the affected upper limb when it is elevated, paresthesias or numbness in the distribution of the ulnar nerve, and weakness of the muscles of the forearm and hand. On exam, the cervical rib may be detectable as a mass in the supraclavicular fossa.[2]

Conservative management includes treatment with nonsteroidal anti-inflammatory drugs, muscle relaxants, lifestyle changes, and physical therapy. Among patients with refractory symptoms, surgical options include resection of the cervical rib, possibly in conjunction with removal of the anterior scalene and/or the first rib.[3]

In our patient, bilateral cervical ribs were noted on her cervical x-rays, but her symptoms did not correlate with any known complications such as thoracic outlet syndrome. She did not report any paresthesias or hand weakness, and her pain localized over her trapezius muscle rather than her arm. Furthermore, her radiologic findings were described as "rudimentary" cervical ribs that may be less likely to cause significant compression in the future. These findings did not change her immediate clinical management but were still reviewed with her in follow-up.

Conclusion

Cervical ribs are present in up to 1% of the population of the United States and may be found as an incidental finding on cervical x-rays. Though most cervical ribs are asymptomatic, they can cause thoracic outlet syndrome due to compression of the brachial plexus or subclavian vessels. When counseling

patients about incidental findings, it is important to discuss possible future complications.

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