The presence of bilateral cervical ribs in a female High school tennis athlete - a case study
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Background: A 16-year-old female high school tennis athlete at a preparatory school in Massachusetts was complaining of neurological symptoms in the right lateral side of the hand. The patient has no pertinent past medical history. The Patient complained of paresthesia down the medial side of the hand into the 5th digit. The Patient also had a lack of neuromuscular control of the fifth digit. The fifth digit was fixed in a slightly flexed position. The hypothenar eminence was beginning to atrophy. Distal pulses and capillary refill were all within normal limits. Differential Diagnosis: Thoracic outlet syndrome, a partial tear of the ulnar nerve, stenosing tenosynovitis (trigger finger), or ulnar nerve palsy. 

Treatment: Evaluation of the shoulder and hand region did not show any signs of thoracic outlet syndrome through Allen's, Adson's, or the Military brace test. The distal radial pulse of the patient was not diminished. Radiographic imaging was completed on the upper chest and the shoulder. The imaging showed the presence of an extra cervical rib on both sides of the ribcage. The imaging showed compression on the ulnar nerve causing the symptoms. The patient only experienced neurological symptoms in the right hand though bilateral cervical ribs were present. The patient underwent an ostectomy to remove the cervical ribs and the first ribs bilaterally, to relieve nerve compression, and prevent any further compression. The patient was told full motor function of the fifth digit might never return. Rehabilitation was focused on re-establishing the motor function of the fifth digit as well as grip strength in the right hand. 

Uniqueness: Prevalence studies have shown that cervical ribs are present in 0.2-8% of the population (Walden et al., 2013). True neurogenic thoracic outlet syndrome that does not affect the blood supply to the upper extremity has been reported as one in one million persons (YILMAZ, KÜÇÜK EROĞLU, & BODUR, 2013). This patient only experienced neurological symptoms which made clinical assessment via normal clinical testing difficult. 

Conclusion: The cervical rib in the patient was compressing the neurovascular bundle in the thoracic outlet. The compression was affecting the ulnar nerve, in turn affecting the mobility of the fifth digit and causing the neurological symptoms radiating down the medial border of the right hand. Thoracic outlet syndrome is a common pathology affecting athletes in overhead sports. True neurologic thoracic outlet syndrome cannot be established through the normal clinical tests. Nerve pain and loss of motor function comes from up the kinematic chain. Examining the kinetic chain is important for the clinician to find the true diagnosis. 

Relevant Evidence: Research on the prevalence of cervical ribs has been done on small populations. Research on select populations has shown 0.2-8% of the population has a cervical rib. True neurologic thoracic outlet syndrome is very rare, one out of one million persons will have neurologic symptoms with objective neurologic or electrodiagnostic findings are available. 

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