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Case Report: Thoracic outlet syndrome associated with cervicothoracic scoliosis

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Background

Thoracic outlet syndrome (TOS) is caused by compression of neurovascular bundle with bony abnormalities, such as the presence of a cervical rib or elongated C7 transverse process, However, a relationship to cervicothoracic scoliosis, which similarly may deform the thoracic outlet region, has not yet been described. This case presents TOS in relationship to cervicothoracic scoliosis

Case Report

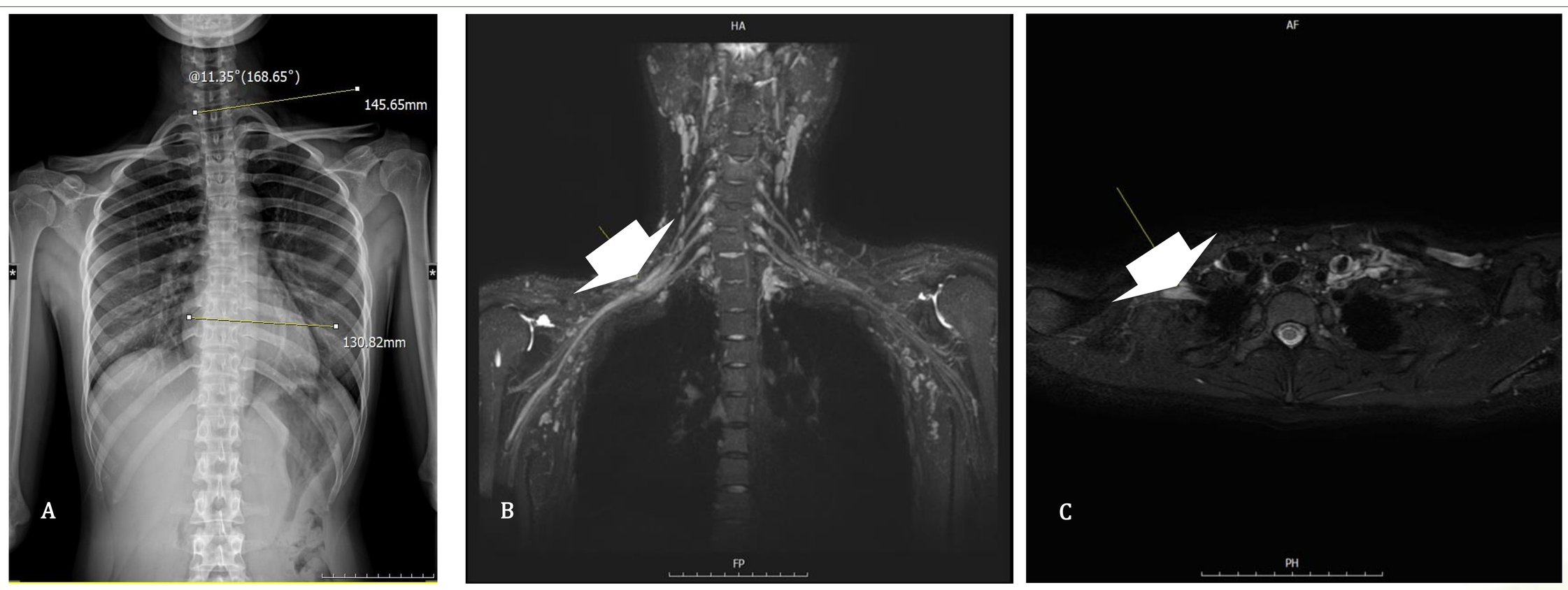
A 26 years female patient was referred for electrophysiologic study who complained of right neck and right shoulder pain with discomfort in posterior scapular region which persisted for approximately two years since onset in early 2024. She was diagnosed with cervical herniated intervertebral disc in local clinic and had stretching and manual therapy since onset in early 2024, but temporary relief was noted.

Clinical examinations showed numbness extending from right upper arm to dorsum of the forearm, thumb, and index finger which was aggravated during prolonged sitting. Right shoulder abductors were graded at fair grade in manual muscle test, while other muscles in right shoulder girdle were graded at good grade. Muscles atrophy in right shoulder girdle was not noticed, and passive range of motion test was within normal range. Adson's test was positive in right arm.

Electrophysiologic test showed decreased amplitude of CMAPs in right dorsal scapular nerve conduction study in comparison to the left side, but sensory conduction and needle EMG was unremarkable.

X-ray finding (Figure A) showed that left thoracic scoliosis (Cobb angle of 11 degree) was observed, indicating potential compression of the thoracic outlet by the first rib.

MRI imaging of right brachial plexus (Figure B & C) showed that thickening with edema was observed from the right C5, C6, and C7 nerve roots and increased T2 signal intensity with vascular enlargement and hyperintensity was noted in the upper and middle trunks and these edematous lesions extend to the division and cord levels. No definite mass lesion involving the brachial plexus was identified.



X-ray findings shows scoliosis in D-L-spines with right shoulder tilting(Fig A.) and MRI findings shows increased T2 signal intensity with vascular enlargement and signal hyperintensity from C5,6,7 root to trunk(upper, middle), division and cord level of right brachial plexus(Fig. B. & C.)

Conclusion

The exact relationship between cervicothoracic scoliosis and TOS has not yet been fully elucidated, but it should have diagnostic consideration in the workup of suspected TOS