P-196

A Case Report: Isolated Extraforaminal C8 Radiculopathy Caused by an Elevated Position of the First Rib

Kyung Hwan Cho MD, Jaeki Ahn MD PhD, Jun Hyeong Song MD
Inje University Sanggye Paik Hospital, Department of Rehabilitation Medicine[1]

INTRODUCTION

Cervical radiculopathy is usually caused by disc herniation or foraminal stenosis, but challenges arise when symptoms do not match imaging findings. In such cases, rare extraforaminal lesions should be considered, and electrodiagnostic studies help confirm root involvement. Structural anomalies of the first rib are classically linked to thoracic outlet syndrome. However, isolated radiculopathy from mechanical irritation of a single nerve root by an elevated first rib is extremely uncommon and may mimic typical cervical radiculopathy. We report a rare case of isolated extraforaminal C8 radiculopathy due to an elevated first rib and emphasize the importance of correlating electrodiagnostic and imaging findings to avoid misdiagnosis.

CASE

A 38-year-old woman with no significant medical history presented with a 6-month history of persistent radiating pain and paresthesia from the right upper extremity in a C8 dermatomal distribution. She denied trauma, and symptoms persisted despite conservative management, including nonsteroidal anti-inflammatory medication and activity modification. Physical examination revealed hypoesthesia in the right C8 dermatome without motor weakness. Spurling's test reproduced radicular pain, whereas Adson's and hyperabduction tests were negative, and no vascular signs were observed.

Cervical MRI showed a left-predominant C5–6 disc extrusion and a mild C6–7 protrusion (Fig. 1) that did not explain the patient's right-sided symptoms. Electrodiagnostic studies were performed for further localization. Nerve conduction studies were normal, while needle electromyography demonstrated denervation changes in C8-innervated muscles with normal cervical paraspinal findings. These findings supported localization to an extraforaminal C8 radiculopathy.

Further review of MRI and CT demonstrated that the right first rib was positioned higher than the contralateral side and closely approximated the extraforaminal C8 nerve root, suggesting focal mechanical irritation (Fig. 2). Based on combined clinical, electrodiagnostic, and imaging findings, isolated extraforaminal C8 radiculopathy secondary to an elevated first rib was diagnosed. Ultrasound-guided C8 root block with dexamethasone produced more than 70% improvement in symptoms, and the patient showed sustained recovery at follow-up.

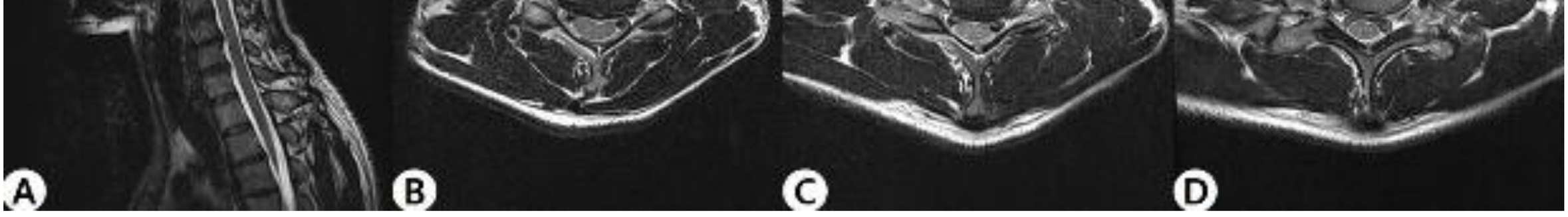

Figure 1) Sagittal and axial MR images of the cervical spine.
(A) T2-weighted sagittal image demonstrates a disc extrusion at the C5-6 level with left predominance and a mild protrusion at C6-7. (B) Axial T2-weighted image at the C5-6 level, (C) at the C6-7 level, and (D) at the C7-T1 level show no evidence of definite C8 root compression by disc pathology.

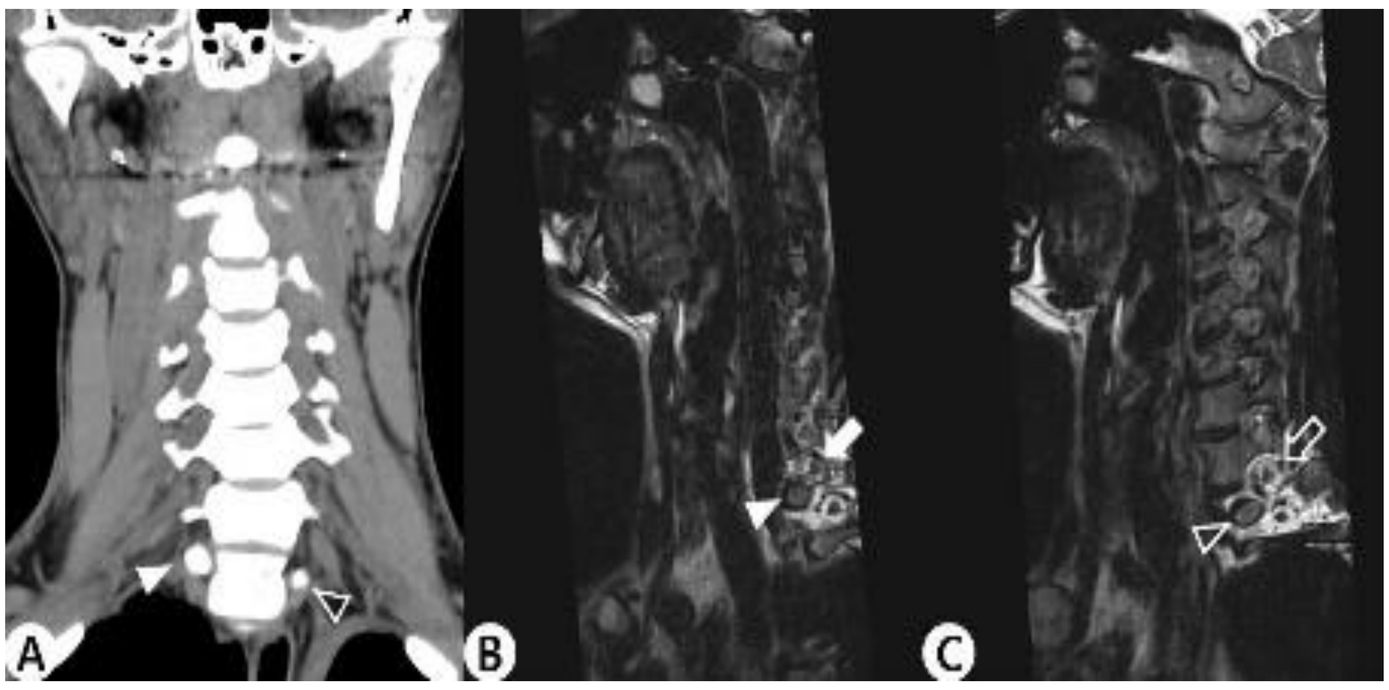

Figure 2) (A) Coronal CT image shows the right 1st rib (white arrowhead) positioned higher than the left 1st rib (empty arrowhead).
(B, C) Oblique sagittal T2-weighted MR images. Image B shows the affected right side, where the elevated 1st rib (white arrowhead) closely approximates the right C8 nerve root (white arrow), suggesting extraforaminal irritation. Image C shows the unaffected left side, where the C8 root (empty arrow) courses with a wider space above the 1st rib (empty arrowhead).

CONCLUSION

This case describes a rare case of isolated extraforaminal C8 radiculopathy caused by an elevated first rib as a skeletal anatomical variant. Unlike neurogenic TOS, which typically involves both C8 and T1 fibers, this lesion presented as a sensory-predominant C8 radiculopathy without intrinsic hand weakness or vascular signs. The case emphasizes that skeletal anomalies should be considered when clinical and imaging findings are discordant and highlights the value of combining electrodiagnostic studies with detailed imaging to localize atypical root lesions and avoid misdiagnosis.