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CT Demonstration of Cervical Vertebral Erosion by Tortuous Vertebral Artery

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Enlargement of a cervical intervertebral foramen is generally caused by a tumor of neurologic origin. It also can result from vascular disorders, such as vertebral artery aneurysm or coiling of a loop of this artery [1-6]. We describe two cases of the latter condition in which final diagnosis was provided by CT performed after rapid intravenous contrast medium injection, avoiding arteriography. We have not found another CT demonstration of this well known entity in the radiologic literature.

Case Reports

Case 1

A 26-year-old man underwent radiographic examination of the cervical spine because of a common mechanical nonradiating pain of a few weeks' duration that increased with motion. The only abnormality observed was an enlargement of the right C4-C5 intervertebral foramen due to a smooth erosion of the right aspect of the body C4 and of the inferior margin of its right pedicle (fig. 1A). The outline of this notch was sharp, with a fine sclerotic margin. There was no involvement of C5, particularly of its uncinete process.

CT demonstrated an enlargement of the whole right intervertebral foramen. After rapid intravenous injection of 50 ml of contrast me-

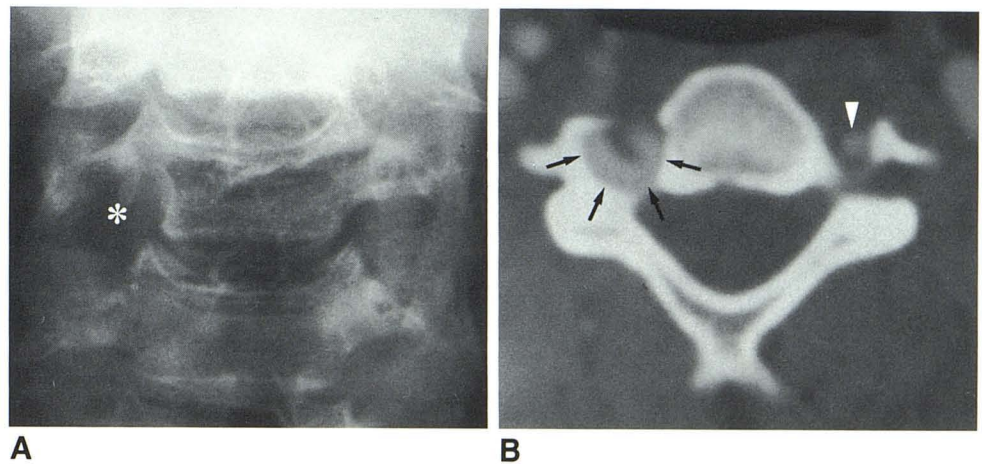
dium, a crescentic opacity became apparent, conforming to the margins of the enlarged foramen (fig. 1B) and corresponding with a well defined loop of the right vertebral artery. The left vertebral artery appeared normal, as a small round opacity in the left foramen. Arteriographic confirmation was considered superfluous. The complaints of the patient were so common and so benign that they were judged unrelated to the observed abnormalities; therefore, no specific therapy was instituted.

Case 2

A 40-year-old woman complained of chronic pain along the left side of the neck without any objective symptom. Plain films and tomograms demonstrated mild degenerative lesions at C5-C6 and C6-C7. Enlargement of the left C4-C5 intervertebral foramen was caused by a well defined notch at the lateral aspect of the body of C4 extending to the anteroinferior margin of the left pedicle (fig. 2A). This notch had a fine sclerotic rim.

CT scans after rapid intravenous injection of a bolus of 50 ml of contrast medium demonstrated an opacified loop covering the posterior aspect of the enlarged C4-C5 left intervertebral foramen (fig. 2B). Since the relation between this abnormal vertebral artery and the complaints of the patient was uncertain, no specific therapy was instituted and nonsteroidal antiinflammatory drugs provided adequate improvement.

Fig. 1.—Case 1. **A**, Anteroposterior view of cervical spine. Enlargement of right C4-C5 intervertebral foramen (*) caused by erosion of lateral aspect of C4 body and of inferior margin of its right pedicle. **B**, CT scan through middle of C4 body. Enlargement of right intervertebral foramen. After rapid intravenous injection of contrast medium, loop of right vertebral artery opacified (arrows), conforming to erosion of vertebral body. Left vertebral artery is normal (arrowhead).



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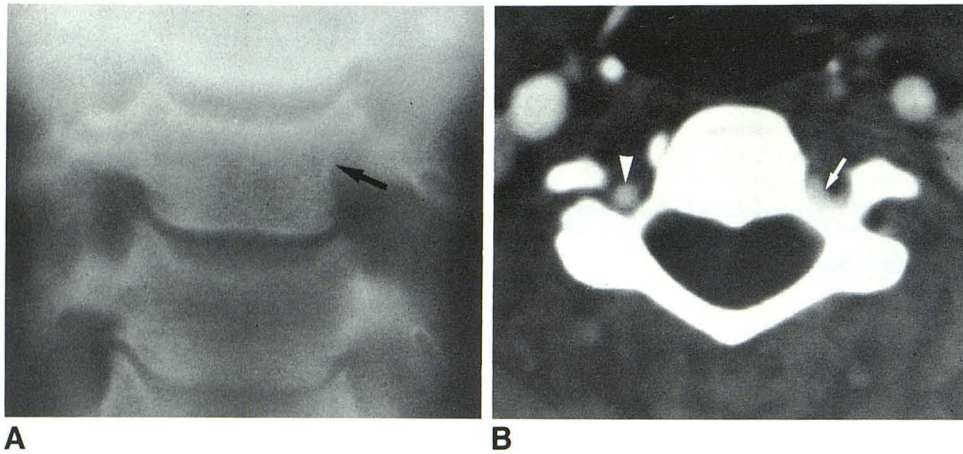


Fig. 2.—Case 2. **A**, Anteroposterior tomogram. Well defined erosion of left lateral aspect of body of C4 (arrow). **B**, CT scan of C4 after rapid intravenous injection of contrast medium. Opacified loop of left vertebral artery conforms to posterior and medial aspect of enlarged intervertebral foramen (arrow). Right vertebral artery is normal (arrowhead).

Discussion

The most common causes of enlargement of a cervical intervertebral foramen are tumors of neurologic origin, such as neurofibroma, meningioma, or meningocele. Aneurysms of the vertebral artery can also erode the margins of the intervertebral foramen. A few cases of enlargement of this foramen caused by an abnormal loop of the vertebral artery have been reported [1–6].

Wackenheim [3] described a good sign allowing differentiation of tumor from coiling of a loop of the vertebral artery: In the latter, the uncinat process of the vertebra forming the inferior part of the enlarged foramen remains intact, whereas it can be eroded when a tumor is growing into the foramen.

This fact was confirmed in our two cases and in previously published cases. Some of those cases have undergone myelography in search of a neurologic tumor; all of them had vertebral arteriography. In one case [4], CT scan was performed but without contrast medium injection, and final diagnosis was obtained by arteriography. CT performed with rapid intravenous injection of contrast medium can easily

provide accurate diagnosis without any more aggressive technique.

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