Pseudoforamina of the skull base: a normal variant.

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Pseudoforamina of the Skull Base: A Normal Variant

Radiologic evaluation of basal foramina of the skull is frequently a critical aspect in the diagnosis of patients with deficits referable to cranial nerves. Commonly encountered normal asymmetries and individual variations often make interpretation difficult. A pseudoforamen in the skull base was initially observed in skull radiographs of several patients and correlated with images of a dried skull. We stress the importance of recognizing pseudoforamina to avoid diagnostic confusion and error.

Bilateral, rounded lucent areas with sclerotic margins may be visualized on submentovertex or Water's views of the skull base. Located anteromedially to the hypoglossal canals and directly medial to the jugular foramen, these structures may be mistaken for the hypoglossal canal, erosion of the jugular foramen, or other normal structures (Fig. 1). The posterior margins are well defined while the anterior margins of pseudoforamina are indistinct, suggestive of bony erosion. Asymmetry between the two sides is frequent. Pseudoforamina may also be seen on CT scans of the skull base.

Using a dried skull for anatomic correlation, a pointer was placed adjacent to the medial border of the hypoglossal canal outlining the posterior margin of the pseudoforamen while the tip of a second pointer in the anterior condylar fossa lay in the center of the pseudoforamen (Fig. 2). The hypoglossal canal begins on the anteromedial aspect of the foramen magnum and runs anterolaterally and inferiorly, exiting the skull base lateral to the occipital condyles. The thicker medial wall of the hypoglossal canal forms the posterior wall of the pseudoforamen. The longus capitis muscle originates at the C6 vertebral level and inserts on a bony ridge just anterior to the anterior condylar fossa [1]. This ridge forms the anterior border of the foramen. The size and thickness of this ridge is subject to considerable individual variation, presumably reflecting muscle bulk and use patterns. This may also account for the variation in clarity with which the anterior margin of the foramen is seen. The anterior condylar fossa is located posterior to the bony insertion of the longus capitis muscle; its relative lucency accounts for the apparent opening of the pseudoforamen.

CT of the region of the foramen magnum in a dried skull also demonstrates the presence of the pseudoforamina (Fig. 3), but only at certain gantry angulations, which vary for each patient.

Correlation of radiographic features of the pseudoforamina in both dried skull and clinical case material demonstrates the anatomic basis for this normal variant. Recognition of its benign nature is vital to avoid diagnostic error in evaluation of the skull base.

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An Unusual CT Appearance of Lupus Cerebritis

Cerebritis is a common complication of systemic lupus erythematosus (SLE). It affects 14–75% of SLE patients and is a leading cause of death [1]. Diagnosis of this disease remains difficult because of its nonspecific and varied presentation. Persistent headache, alteration in mental status, seizures, psychiatric symptoms, and stroke syndromes among others may represent lupus cerebritis. Patients with such symptoms require prompt corticosteroid therapy.

CT plays an important role in diagnosing lupus cerebritis, and its patterns have been the subject of several recent reviews [2–6]. Two general CT patterns have been described, one associated with an acute clinical presentation, e.g., infarction or focal hemorrhage, and another with more chronic symptoms and signs. CT may demonstrate single or multiple infarctions or hemorrhages in areas unusual for hypertensive bleeding. Patients with a chronic or insidious presenta-

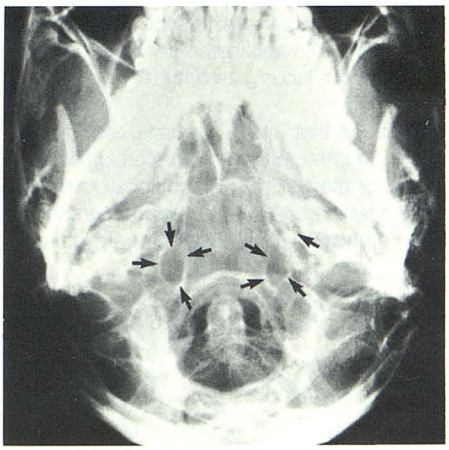

Fig. 1.—Plain film demonstration of bilateral pseudoforamina, more prominent on right (*arrows*).

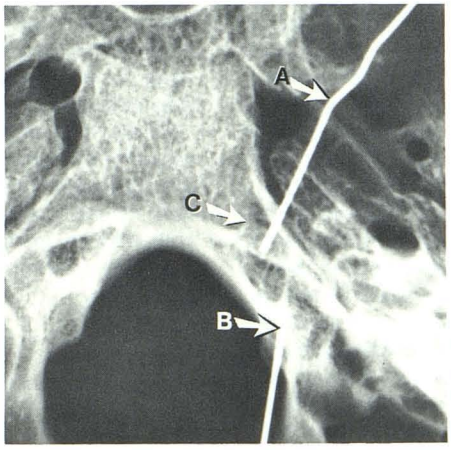

Fig. 2.—Dried skull radiograph. A = tip in anterior condylar fossa appears inside pseudoforamen; B = tip adjacent to medial border of hypoglossal canal; C = bony ridge for insertion of longus capitis muscle.

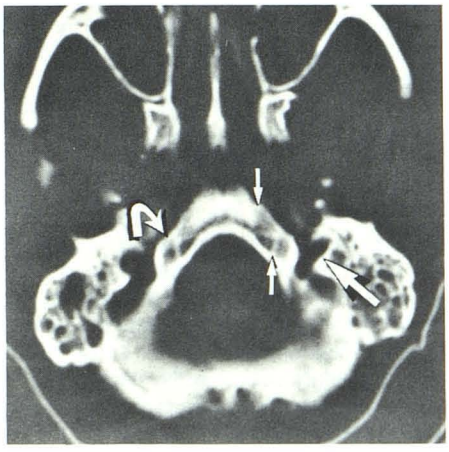

Fig. 3.—CT of dried skull demonstrates anterior and posterior borders of pseudoforamen (*small arrows*), showing relationship to hypoglossal canal (*curved arrow*) and jugular foramen (*large arrow*).