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The Flocculus in Computed Tomography

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The flocculus may simulate a cerebellopontine angle mass in computed tomography (CT). The CT appearance of the flocculus was compared with acoustic neuroma. Normal internal auditory canals, symmetric cerebellopontine angle cisterns, modest contrast enhancement, and a location posterior to the porus acousticus distinguish the flocculus from an acoustic neuroma.

Normal intracranial structures that may simulate a neoplasm on computed tomography (CT) because of their morphology or enhancement have been described previously [1-3]. This paper draws attention to a possible pseudotumor, the flocculus. This cerebellar lobule projecting into the cerebellopontine angle and enhancing after intravenous contrast medium may mimic an acoustic neuroma. The normal appearance of the flocculus on CT and criteria to distinguish the flocculus from an acoustic neuroma are described.

Materials and Methods

The flocculus was observed in 15 of 40 patients undergoing CT for suspected acoustic neuroma or other posterior fossa abnormality. Scans were obtained before and after administration of 300 ml of 30% iodinated intravenous contrast medium (iothalamate meglumine). The CT images consisted of contiguous 1.5 mm axial cuts in a plane -15° with respect to the infraorbital meatal line (fig. 1). Axial and coronal sections of 5 mm were obtained in many cases. Technical factors for the CT examinations included 0.8 mm pixel size, 1,150 mAs, 10 sec scan time, and 120 kV.

Observations

The flocculus projects into the cerebellopontine angle cistern between the posterolateral cerebellar fissure and the anterior lobe of the cerebellum [4]. In axial and coronal CT sections, the flocculus is seen between the cerebellar hemisphere and the brachium pontis. The flocculus is posterior to the facial and vestibulocochlear nerves and internal auditory canal, and lateral to the choroid plexus protruding from the lateral recess of the fourth ventricle (figs. 2A-2C). A short segment of the anterior inferior cerebellar artery is adjacent to the flocculus [5] (fig. 2D).

In coronal and axial CT sections, the flocculus is a rounded structure in the cerebellopontine angle that is isodense or slightly hyperdense with respect to adjacent cerebellar tissue (fig. 3). After administration of contrast medium, the flocculus appears to enhance slightly because of the adjacent choroid plexus and anterior inferior cerebellar artery (fig. 4).

The characteristic features of an acoustic neuroma are marked contrast enhancement and flaring of the internal auditory canal (fig 5). Acoustic neuromas arise ventral to the flocculus, and the flocculus may be displaced medially and posteriorly by an acoustic neuroma. Normal internal auditory canals, slight

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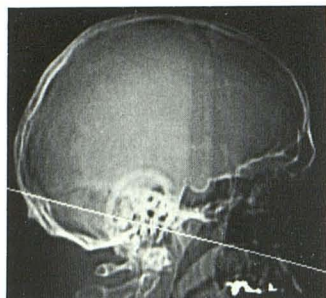
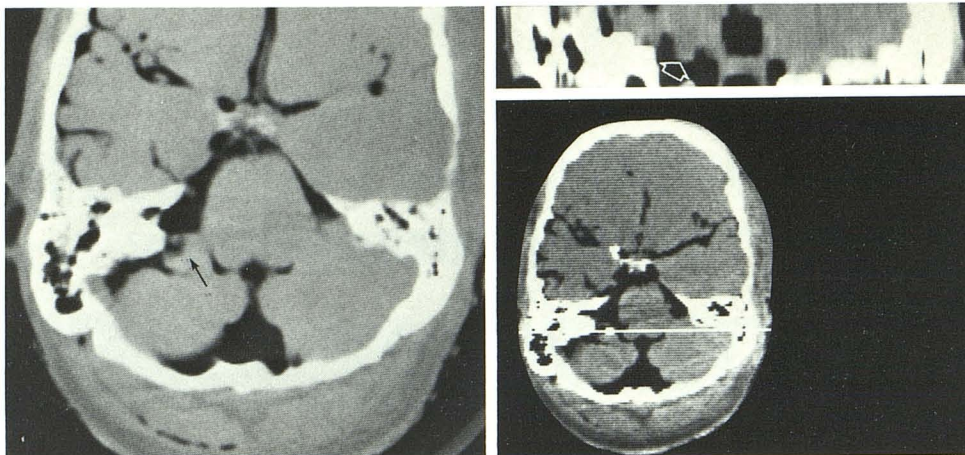
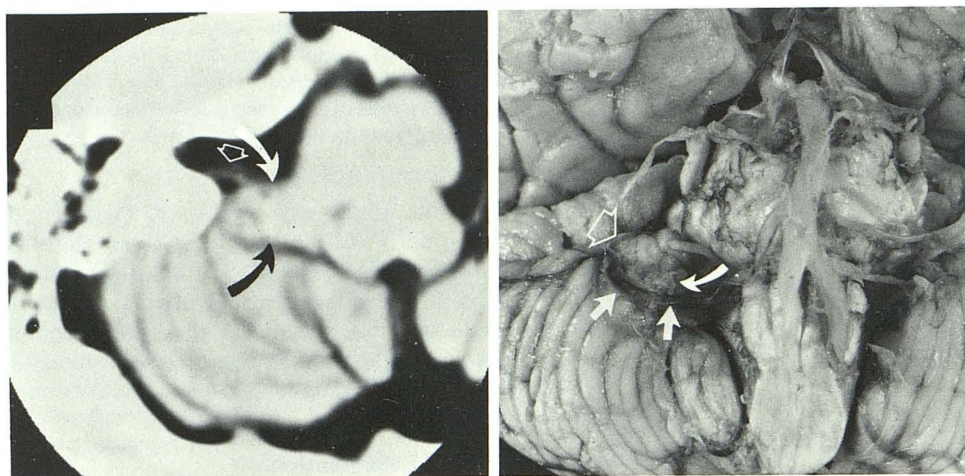


Fig. 1.—Cursor line on lateral localizer image demonstrates plane of section as -15° with respect to infraorbitomeatal line.



A

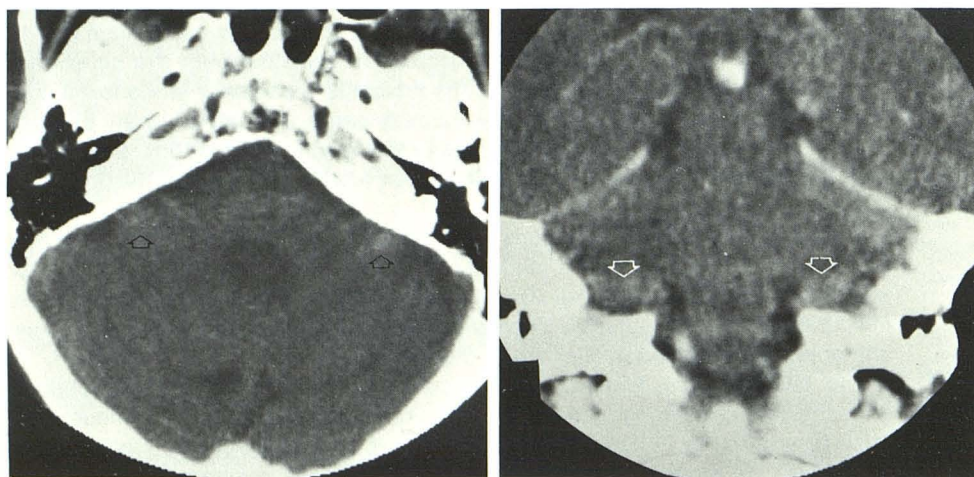
B



C

D

Fig. 2.—Axial (A) and coronal reconstructed (B) CT scans of cadaver. Flocculus (arrow) is seen projecting into cerebellopontine angle. C, Axial CT section of another cadaver. Flocculus (solid arrows) is seen posterior to seventh and eighth nerves (open arrow) in cerebellopontine angle. D, Ventral surface of cadaver brain. Flocculus (open arrow), adjacent choroid plexus (curved arrow), and anterior inferior cerebellar artery (straight arrows).



A

B

Fig. 3.—Axial (A) and coronal (B) CT sections in patients to show normal flocculus (arrows).

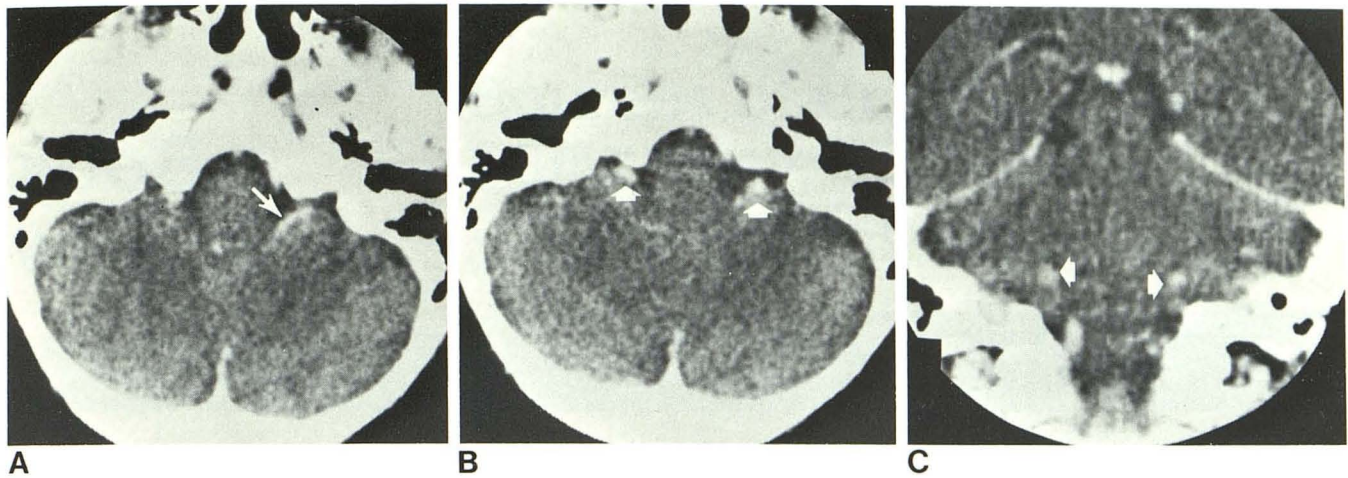


Fig. 4.—Enhancement after intravenous contrast evident in anterior inferior cerebellar artery (arrow) (A) and choroid plexus (arrows) in axial (B) and coronal (C) sections adjacent to flocculus.

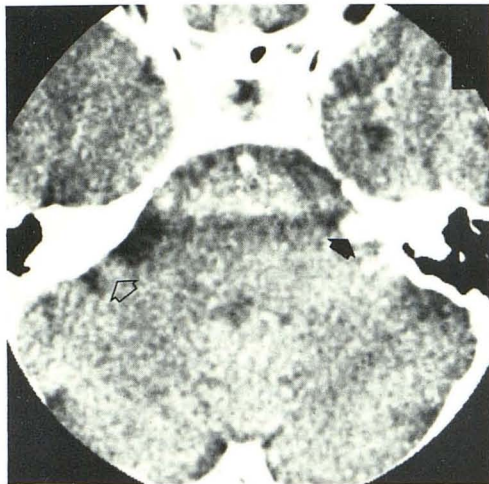


Fig. 5.—Relation of flocculus to acoustic neuroma. Normal flocculus (open arrow) posterior to acoustic neuroma (closed arrow).

contrast enhancement, symmetry of cerebellopontine angle cisterns, and a location posterior to the porus acousticus distinguish the flocculus from an acoustic neuroma.

The flocculus is best seen in CT images when 1.5 mm cuts rather than 5 or 10 mm cuts are used. Acoustic neuromas and cerebellopontine angle masses are also optimally demonstrated in these thin cuts. However, with the criteria described, the flocculus and an acoustic neuroma can be differentiated in most cases.

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