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Bilateral Cerebellopontine Angle Air-CT Cisternography

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Recently, new methods in the workup of cerebellopontine angle (CPA) tumors have been established. These include computed tomography (CT) in combination with intravenous injection of contrast material [1], enhancement of cerebrospinal fluid with metrizamide [2], and most recently air-CT cisternography [3, 4]. We describe a simple technique for examining both cerebellopontine angles with one lumbar puncture using air-CT cisternography. Eight of 10 attempts were successful.

Method

The patient lies on the CT table in the lateral decubitus position with the "suspected" side up. A lumbar puncture is performed with a 20 gauge spinal needle and 3–4 ml of spinal fluid is obtained. Air (5–6 ml) is slowly injected with the head elevated 15° either by tilting the table or elevating the shoulder and head, so that the air may collect in the cerebellopontine angle (CPA) cistern of interest. The patient feels a slight tension behind the ear when the air collects in the CPA cistern. Then, with the patient in the lateral decubitus position, the saggital plane of the head is placed parallel to the table, or a slightly lower position, so that the

air does not rise above the CPA cistern. The plane of section is parallel to the canthomeatal line, and consecutive and overlapping 8 mm sections are obtained cephalad from a line 1 cm below the canthomeatal line. Scanning is continued until the internal auditory canal and CPA cistern being examined are completely visualized (fig. 1A).

Depending on the amount of air already trapped, an additional 2–3 ml may be introduced. The spinal needle is then removed and the patient is ready to be turned into the opposite lateral decubitus position to examine the opposite CPA cistern. Initially, the patient is placed in the supine position while the head and slightly flexed chin are fixed with both hands of the examiner. Then the head is rapidly rotated to the opposite saggital plane with no undue movement. The air previously trapped on one side may now collect in the opposite CPA cistern via the prepontine cistern (fig. 1B). Once the patient is lying in the opposite position, scanning is repeated as described (fig. 1C).

Discussion

Early diagnosis of small acoustic neuromas is essential to minimize the postoperative mortality and the morbidity [5].

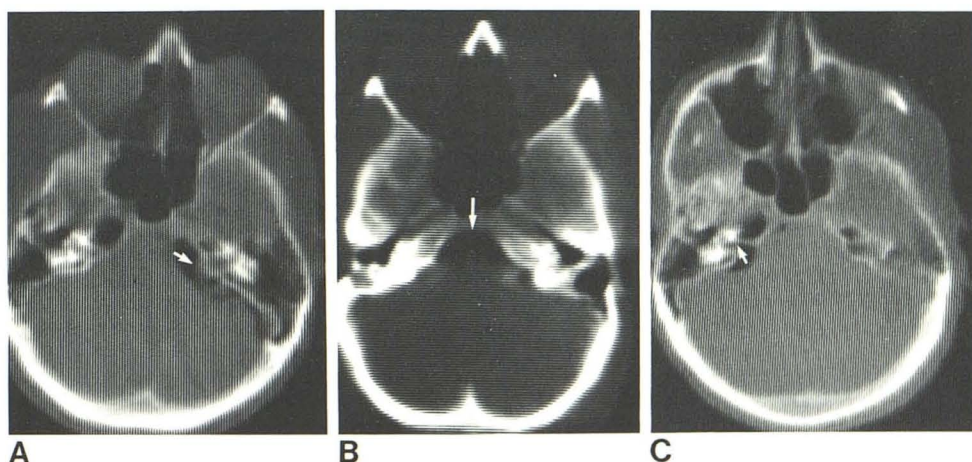


Fig. 1.—A, Small acoustic neuroma (arrow) in entrance of right internal auditory canal, with air in cerebellopontine angle cistern. B, Air (arrow) in prepontine cistern. C, Air (arrow) in normal internal auditory canal.

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Both cerebellopontine angle cisterns and internal auditory canals must be examined not only for comparison purposes, but also for detection of bilateral lesions since 4% of acoustic tumors are bilateral; often in patients with Von Recklinghausen disease [6]. This relatively small and painless procedure allows rapid examination of both CPA cisterns on one occasion.

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