Sudden hemorrhage in an acoustic neuroma

Case report

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The authors present a case of acoustic neuroma associated with spontaneous hemorrhage. The sudden onset of new symptoms was noted and appears to be common to all such cases. The computerized tomography appearance of the mass underwent changes consistent with the clinical, surgical, and pathological findings.

Key Words • acoustic neuroma • subarachnoid hemorrhage • computerized tomography • acoustic nerve tumor

Acoustic neuromas account for 8% to 10% of all intracranial tumors and 71% of all tumors in the region of the cerebellopontine angle. They usually present with gradual onset of unilateral hearing loss and subsequent involvement of adjacent cranial nerves and other structures. Development of sudden hemorrhage as an acute symptom is unusual.

We present a case in which an acoustic neuroma was associated with spontaneous hemorrhage. The role of computerized tomography (CT) in the diagnosis of these lesions is discussed.

Case Report

This 61-year-old man developed unilateral hearing loss in the right ear accompanied by tinnitus 2 years prior to admission. He had also noted “dizziness,” which consisted of unsteadiness of balance with vertigo. Audiometric tests performed at that time showed no measurable hearing in the right ear, and mild sensorineural impairment on the left side. Polytomography of the right internal auditory canal, performed as an outpatient, was normal.

First Admission. On admission, general physical examination was normal. Neurological examination showed an alert, oriented patient with total hearing loss and absent ice-water caloric response on the right, decreased corneal reflex on the right side, and a right beating nystagmus on right lateral gaze. No facial palsy was present, but decreased sensation was found in the right external auditory canal. Cerebellar function was normal. No gait disturbance was noted.

A CT scan revealed a low-density lesion, measuring about 3 cm, in the right cerebellopontine angle. The lesion enhanced minimally around its rim with intravenous infusion of contrast agent (Fig. 1), displaying the typical appearance of an acoustic neuroma. Re-
revealed a lesion of increased density, measuring 3 to 4 cm in diameter, and 62 white blood cells. The analysis of the cerebrospinal fluid revealed a protein level of 170 mg%, glucose of 60 mg%, 26,200 red blood cells, and 62 white blood cells. Repeat CT scanning without contrast enhancement revealed a lesion of increased density, measuring 3 to 3.5 cm, in the right cerebellopontine angle (Fig. 2 left). After injection of contrast material, the lesion appeared slightly larger, suggesting some enhancement of the rim of the mass (Fig. 2 right). Vertebral angiography was consistent with a right cerebellopontine angle mass. No aneurysm or arteriovenous malformation was noted.

Operation. The patient underwent a suboccipital craniotomy. An encapsulated yellowish tumor, 3 to 4 cm in diameter, was found in the right cerebellopontine angle area. The tumor was opened, and a large liquifying hematoma was found, surrounded by a rim of yellowish tumor, 3 to 4 mm thick. The clot was evacuated and the tumor removed.

Pathological Examination. On gross appearance, the specimen consisted of blood clot from inside the tumor and two fragments of tan-white tissue with yellow flecks. Microscopically, these tissue fragments were composed of interlacing bundles of spindle-shaped cells interposed with variable amounts of collagen. There were zones of palisading and interlacing fascicles (Fig. 3 left). While most of the spindle-shaped cells had elongated oval nuclei, some had hyperchromatic larger nuclei. Zones of fatty degeneration were present in the tumor. The tumor was very vascular (Fig. 3 right). Some portions contained only small capillaries, while others had numerous thin-walled dilated vascular channels. In one section, a large sclerotic vessel was observed (Fig. 3 left). Blood was present in the surrounding tumor and within spongy cavernous-like areas with thin walls formed by tumor cells. A dense band of collagen demarcated the wall of the hemorrhagic cyst. Large numbers of histiocytes containing hemosiderin pigment were identified. Electron microscopic examination confirmed the light microscopic observations that the tumor consisted of collagen and Schwann cells.

Discussion

Development of subarachnoid hemorrhage (SAH) associated with acoustic neuroma has been reported by others. In all of these patients, there was an acute onset of new symptoms that probably coincided with the abrupt occurrence of bleeding within the tumor, and with invasion of the blood into the subarachnoid space. Our patient developed a sudden pain about the right ear. The patient reported by Gleeson, et al., had the abrupt onset of a severe occipital headache, and that of Fine, et al., noted a sudden decrease of visual acuity. McCoyd, et al., reported a sudden loss of consciousness followed by death in their patient.

The unique aspect of the present report is the close correlation of the SAH, the changes in the CT scan, and the operative findings. Computerized tomography confirmed the presence of a lesion in this case. The initial CT scan showed a hypodense nonenhancing area (Fig. 1); but a repeat noncontrast-enhanced CT scan after the onset of bleeding showed a hyperdense area compatible with blood inside the tumor (Fig. 2). Angiography provided further confirmation of the presence of a space-occupying lesion and excluded the presence of an aneurysm or arteriovenous malformation.

Occurrence of SAH in intracranial and intraspinal tumors is well documented. The most common intracranial tumor to present in this manner is the malignant astrocytoma; ependymomas most commonly bleed in the spinal cord. Hemorrhage from a meningioma has been reported to occur in the cerebellopontine angle area. Kasanikul and Netsky reported five cases of combined neurinoma-angioma in this region, and some areas of the tumor in our case had a histological appearance similar to that reported by those authors.

Hemorrhage probably relates to the abnormal anatomy of the tumor-vessel wall, which contains only simple endothelium without supporting media or ad-
ventitia. Thrombosis readily occurs, leading to necrosis and rupture with hemorrhage. It would seem reasonable to believe this is more likely to happen in necrotic areas of the tumor where external support of the vessel is reduced or when actual erosion of the thin vessel wall by tumor growth occurs.

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References

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