Acoustic neurinoma presenting as subarachnoid hemorrhage

Case report

ROBERT K. GLEESON, M.D., JOHN F. BUTZER, M.D., AND OLIVER D. GRIN, JR., M.D.

Divisions of Neurology and Neurosurgery, Blodgett Memorial Medical Center, Grand Rapids, Michigan

A case of an acoustic neurinoma presenting as a subarachnoid hemorrhage is described. This is the second such case in the literature.

KEY WORDS □9 acoustic neurinoma □9 subarachnoid hemorrhage □9 cerebellopontine angle □9 schwannoma

Patients with acoustic neurinomas almost invariably present with a history of gradual hearing loss associated with decreased word discrimination and mild involvement of neighboring cranial nerves. We have recently diagnosed and treated a patient who had a subarachnoid hemorrhage (SAH) as the presenting sign of an acoustic neurinoma. We believe this is the second reported case of an acoustic neurinoma to present in this fashion.

Case Report

This 54-year-old right-handed woman presented with the sudden onset of a severe left occipital headache which awoke her from sleep. She had been previously healthy, but had experienced decreased hearing in the left ear for several years and had recently noticed the onset of left facial numbness and paresthesias.

Examination. The physical examination was entirely normal except for the neurological examination. The patient was lethargic but oriented. Cranial nerve examination revealed an inability to abduct the left eye, a decreased corneal reflex on the left, coarse horizontal jerk nystagmus on left lateral gaze, hypesthesia and hypalgesia in all divisions of the left trigeminal nerve, markedly decreased hearing on the left, and mild dyssynergia of the left extremities.

A lumbar puncture revealed pink-tinged fluid which did not clear and was xanthochromic. It contained 20,000 red blood cells/cu mm, the protein was 288 mg/dl and the glucose was 78 mg/dl. A brain scan was normal. Tomograms of the left internal auditory canal showed erosion of the canal. A complete four-vessel cerebral arteriogram 36 hours after admission showed no aneurysms and no spasm but, in the anteroposterior view of the basilar system, did show mass effect in the left cerebellopontine angle where the anterior inferior cerebellar artery (AICA) was displaced. Computerized tomography subsequently confirmed a left cerebellopontine angle mass lesion.
Acoustic neurinoma presenting as SAH

**Operation.** After the patient's condition was stabilized, surgery was performed on the suspected acoustic neurinoma. Through a left paramedian suboccipital craniectomy approach, a large tumor was seen in the left cerebellopontine angle. It was surrounded by much dense scarring and dark fluid representing old hemorrhage. It measured 4 cm in diameter and was removed with preservation of the involved cranial nerves. The AICA and all other adjacent arteries were visually inspected and no aneurysms were seen by the neurosurgeon.

The histological examination of the tumor showed a predominance of Antoni type A fibers with numerous hemosiderin-laden macrophages representing prior hemorrhage. There was no evidence of vascular malformation (Fig. 1).

**Postoperative Course.** One year following surgery, the patient is doing well with a mild left facial paresis, absent hearing on the left, and mild ataxia.

**Discussion**

This patient had SAH as the presenting sign localizing a lesion to the left cerebellopontine angle. Thorough angiographic studies were done and no aneurysm was seen. At surgery, the lesion was found to be an acoustic neurinoma with evidence of prior hemorrhage. This diagnosis was confirmed by histological examination. The evidence favoring localization of the SAH to the tumor was: 1) a marked increase in symptomatology of the previously mild deficits; 2) localization of the pain to the left occipital area; 3) absence of vascular anomaly or spasm on the com-

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**FIG. 1.** Photomicrographs showing the predominance of Antoni type A fibers in the acoustic neurinoma. H & E, × 100 (left), and × 400 (right).
plete arteriogram; 4) the marked amount of scar tissue found immediately adjacent to the tumor at the time of surgery; and 5) the significant increase in the number of hemosiderin-laden macrophages found microscopically. McCoyd, et al., reported the first case of an acoustic neurinoma presenting as a subarachnoid hemorrhage in 1974; in that case the diagnosis was made at autopsy.

Several mechanisms have been proposed for SAH occurring in tumors. Globus and Sapirstein note that “it is the exception rather than the rule for a tumor not to show some seepage of blood from its blood vessels into the surrounding tumor tissues.” However, large amounts of hemorrhage are not common except in glioblastoma multiforme. The usually accepted mechanisms are vascular endothelial proliferation with subsequent lumen obliteration and distal vessel necrosis, vessel distention and distortion by tumor growth and displacement, and tumor erosion of the vessels. The gap junctions seen by electron microscopy appear to be related to leakage of protein but not to hemorrhage. We can offer no further elucidation for the cause of bleeding.

Subarachnoid hemorrhage is seen with many tumor types, including gliomas, pituitary tumors, vascular tumors, meningiomas, and choroid plexus papillomas. It has previously been reported in two cerebellopontine angle meningiomas and has now been reported in two acoustic neurinomas. This report suggests that an acoustic neurinoma is a rare cause of SAH.

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Address reprint requests to: Robert K. Gleeson, M.D., 711 Wheaton Road, Iowa City, Iowa 52240.