Intrachiasmatic arteriovenous malformation

Case report

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A patient presented with an abrupt monocular decrease in visual acuity and a bitemporal hemianopsia. At surgery, a totally intrachiasmatic arteriovenous malformation was removed, with subsequent resolution of the visual deficit.

KEY WORDS • arteriovenous malformation • optic chiasm • bitemporal hemianopsia • cryptic arteriovenous malformation

We are reporting an unusual occurrence of a cryptic arteriovenous malformation (AVM) situated completely within the optic tract and chiasm. Surgical removal of the AVM resulted in complete resolution of the patient's visual problems.

Case Report

This 37-year-old man was admitted to the University Hospitals complaining of blurred vision for the past 5 to 6 days. A similar episode had occurred 6 months prior to admission, and cleared over several days. Each episode was associated with mild headache.

Examination. Physical examination was entirely within normal limits except for his vision. Visual acuity was 20/70 in the left eye and 20/20 in the right eye. Visual field examination revealed an incongruous, virtually complete, bitemporal hemianopsia.

Computerized tomography (CT) disclosed a suprasellar mass that was seen equally well on the unenhanced and the enhanced scans (Fig. 1). Polytomographic studies revealed no abnormalities of either optic foramina or any erosion in the area of the sella turcica. A technetium brain scan and cerebral arteriogram were within normal limits. Pneumoencephalography showed an asymmetrical mass in or around the area of the optic chiasm.

Operation. Through a left frontotemporal craniotomy, the optic chiasm was visualized with the aid of an operating microscope (Fig. 2 left). There was a pronounced asymmetrical enlargement of the chiasm, without any evidence of external compression. On initial inspection, it appeared to be caused by an intrachiasmatic glioma. Under higher magnification, an area of darkening was noted along the left posterior aspect of the optic chiasm. When this area was opened, dark coffee-colored fluid escaped which appeared to be old blood (Fig. 2 right). The opening...
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FIG. 2. Pictures of the left optic nerve (arrow) and the optic chiasm (double arrow) taken through the operating microscope. The hole in the left posterior aspect of the chiasm through which the arteriovenous malformation was removed is shown (right).

was slightly enlarged, and a tangle of fibrotic material was evacuated. Bleeding was easily controlled with bipolar microcoagulation. A small cavity totally within the chiasm was left behind. The walls of this cavity appeared to be of normal chiasmatic tissue. The previously noted enlargement of the optic chiasm had disappeared.

Postoperative Course. The patient made an uneventful postoperative recovery. His vision improved immediately, with visual acuity returning to 20/20 bilaterally, and the bitemporal field defect decreased to only bitemporal crescents. Over a 3-month period, the visual field examination returned to normal. On follow-up examination at 1 year, the patient had no neurological deficit and his vision remained normal.

Pathological examination of the operative tissue revealed an arteriovenous malformation.

Discussion

Visual abnormalities caused by intracranial AVM's and intracranial aneurysms have usually been associated with large temporal or occipital lobe AVM's or with external chiasmatic or optic nerve compression.1-6 Fermaglich, et al.,2 reported a patient with a monocular visual deficit which at surgery was found to be due to a venous angioma within the optic chiasm which had bled into the chiasm as well as under the arachnoid.2 To the best of our knowledge, ours is the first case of a totally intrachiasmatic cryptic AVM that has been reported.

Our patient and the patient reported by Fermaglich, et al.,2 were both men aged in their 30's. Each had visual deficits associated with headaches. In our patient, the deficit was of abrupt onset, while in the other case it was progressive. In both cases, a liquefied hematoma was found in the chiasm, indicating that the visual deficits were secondary to rupture of the vascular malformation. Neither patient had retinal vascular change or evidence of any other vascular malformations.

The incidence of cryptic AVM's has been well described.3 As in our present case, CT scanning has been shown to be a major help in delineating these small cryptic AVM's when arteriography has failed to demonstrate any abnormality.2,4,5

The presence of an intrachiasmatic AVM should be considered in a patient who presents with headache and visual changes of abrupt onset.

References


Dr. Roski was the recipient of an Allen Fellow Scholarship.

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