Cavernous Angioma of the Optic Chiasm
—Case Report—

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Abstract
A 31-year-old female presented with cavernous angioma originating from the optic chiasm manifesting as sudden onset of right retroorbital pain and right visual disturbance. She had had a psychomotor seizure 10 years ago. Cavernous angioma at the right basal ganglia had been partially removed at that time. After the operation, the patient had left hemiparesis, but gradually improved. Neurological examination revealed decreased right visual acuity, left homonymous hemianopsia, and left hemiparesis. Magnetic resonance imaging revealed a mixed signal intensity mass at the right optic nerve to the optic chiasm with a low signal intensity rim on T2-weighted imaging, situated at the right basal ganglia where the cavernous angioma had been partially resected. Right frontotemporal craniotomy was performed by the pterional approach. A subpial hematoma was situated at the right optic nerve to the optic chiasm. The hematoma with an angiomatous component was completely resected from the surrounding structure. Histological examination of the specimens confirmed cavernous angioma. Postoperatively, her right visual acuity was slightly improved, but the visual field defect was unchanged. We emphasize the importance of correct diagnosis by magnetic resonance imaging and subsequent resection for preserving and improving the visual function of patients with cavernous angiomas of the optic chiasm.

Key words: optic chiasm, cavernous angioma, magnetic resonance imaging

Introduction
Cavernous angiomas are benign vascular malformations which can occur in any intracranial region, but most commonly in the intracerebral regions. Intracranial extracerebral cavernous angiomas are very rare and mainly originate from the dura of the cavernous sinus region.7) Cavernous angiomas outside the middle cranial fossa are extremely rare, such as those of intradural origin outside the cavernous sinus,6,12,13) in the cranial nerves,11,20,22) and in the pituitary gland.17) Cavernous angiomas originating from the optic chiasm are very rare. We describe a case of cavernous angioma originating at the optic chiasm which was totally surgically resected.

Case Report
A 31-year-old female suffered sudden onset of right frontal headache on June 28, 1998. The next day she noticed decreased right visual acuity and was admitted to our hospital to evaluate the cause of the visual disturbance. Ten years previously she had had a psychomotor seizure. A cavernous angioma at the right basal ganglia had been partially removed at that time. After the operation, she had left hemiparesis which gradually improved.

Neurological examination on admission revealed decreasing right visual acuity, left homonymous hemianopsia, and left hemiparesis. Her visual acuity was 0.03 (0.6) in the right eye and 0.05 (1.5) in the left eye. Magnetic resonance imaging showed a heterogeneous intensity mass at the right optic nerve to the optic chiasm, situated at the right basal ganglia where the cavernous angioma had previously been partially resected (Fig. 1). Magnetic resonance imaging findings speculated the continuity of the cavernous angioma from the basal ganglia to the optic chiasm. Angiography revealed elevation of the right A1 segment of the anterior cerebral artery with no tumor stain.

Right frontotemporal craniotomy was performed on July 13, 1998. The pterional approach exposed the subpial hematoma at the right optic nerve to the
optic chiasm (Fig. 2). The gliotic layer was situated around the hematoma and a small feeding vessel entered the angioma. The angiomatous mass with the hematoma was totally resected. Histological examination of the specimen revealed cavernous angioma (Fig. 3).

Postoperative course was uneventful and her right visual acuity was slightly improved, but the visual field defect was unchanged.

Discussion

Only 15 cases of cavernous angiomas at the optic chasm have been reported.1-4,8-10,14,15,16,18,19,21,23) The symptoms are sudden onset of retroorbital pain and visual disturbance, the so-called chiasmal apoplexy, or subacute or progressive symptoms. Previous cases included eight of acute onset, five of subacute onset, and two with slowly progressive symptoms.

Before the era of magnetic resonance imaging, the diagnosis of pathology at the cranial nerves was very difficult.11) Only seven cases of cavernous angiomas of the optic nerve were diagnosed preoperatively. Magnetic resonance imaging findings of cavernous angioma of the optic chiasm are similar to those for intracerebral cavernous angiomas. The combination of a reticular core of mixed signal intensity with a surrounding rim of decreased signal intensity strongly suggests the diagnosis of a cavernous angioma.16) In our case, the diagnosis was relatively easy because of the previous cavernous angioma situated at the basal ganglia and the characteristic appearance on magnetic resonance imaging.

The natural history of chiasmal cavernous angioma is unclear. The bleeding rate of intracerebral cavernous angiomas is 0.6%/yr and the rebleeding rate is 4.5%/yr.5) Previous cases bled once in nine, twice in two, and three times in two. Symptoms were progressive with no bleeding in two cases. The surgical indication for this pathology is to prevent rebleeding, relieve optic compression, and preserve and improve visual function.

Good results were obtained by the total removal of the lesions despite surgical problems. Total removal was achieved in nine cases, partial removal in one, and four underwent biopsy. One case was not treated because of spontaneous regression of the symptoms and because the patient was pregnant. After total excision, the visual function was improved in seven cases, unchanged in one, and de-
Surgical resection is possible because the gliotic layer is situated between the cavernous angioma and the normal neural structure, providing the plane of the cleavage for the dissection. Good results have also been achieved in the chiasmatic region. The intraoperative findings of our case showed the optic chiasm was expanded by the angioma and the gliotic layer was situated between the angioma and optic chiasm. The lesion was relatively easily resected and postoperatively visual function was slightly improved.

We emphasize the importance of the correct diagnosis by magnetic resonance imaging and subsequent resection for preserving and improving visual function in patients with cavernous angiomas of the optic chiasm.

Acknowledgments

We thank Dr. Takeshi Inoue and Dr. Yasutsugu Kobayashi, Department of Pathology, Osaka City General Hospital, for reviewing the surgical specimen.

References


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