Cystic Cavernous Angioma
—Case Report—

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Abstract

A rare case of a cystic cavernous angioma in a 20-year-old female was diagnosed preoperatively by magnetic resonance imaging and computed tomography. Total surgical removal resulted in a successful recovery. Cystic cavernous angioma is benign and can be completely removed. The importance of magnetic resonance imaging in the differential diagnosis is emphasized.

Key words: cavernous angioma, intracranial cyst, magnetic resonance imaging

Introduction

Intracranial cavernous angioma is a relatively rare but important clinical entity because surgery can achieve complete remission. Computed tomography (CT) demonstrates cavernous angiomas but cerebral angiography fails to do so in one-third of cases. Magnetic resonance (MR) imaging now detects these lesions more sensitively and specifically.

Cavernous angiomas must be included in the differential diagnosis of intracranial large cystic masses. Only ten cases of cavernous angiomas with large cysts and surrounding edema have been reported previously. None were detected preoperatively but identified histologically after surgery.

We report a case of cavernous angioma associated with a large cyst diagnosed by CT and MR imaging, which was successfully treated by surgery.

Case Report

A 20-year-old female was admitted on April 25, 1989, with progressive headache and vomiting over 1 week. Physical and neurological examination showed that she was alert and completely oriented but had papilledema. A plain skull x-ray film was normal. A precontrast CT scan revealed a large, round isodense lesion with surrounding edema in the left frontal region, containing a small, irregular calcified structure posteriorly (Fig. 1). The midline was shifted to the right. A postcontrast scan revealed no enhancement. A T1-weighted MR image demonstrated a round hyperintense mass containing an irregular hypointense area posteriorly (Fig. 2 left). The round...
mass appeared on a T₂-weighted image as a slightly hypo- and isointense lesion containing a reticulated mixed intensity core (Fig. 2 right). Cerebral angiograms demonstrated a large avascular area in the left frontal region but no abnormal vessels.

A left frontal craniotomy and a small cortical incision in the middle frontal gyrus exposed a large cystic cavity containing about 50 ml of degraded bloody fluid. After draining the cyst, a network of blood vessels was disclosed in the posteromedial wall. The solid nodule was completely removed by microsurgery. There were no large feeding or draining vessels.

Histological examination revealed the lesion composed of thin-walled sinusoids. Neural tissue was absent but hemosiderin deposits and calcification were present (Fig. 3). The cyst wall consisted of a fibrous membrane.

The postoperative course was uneventful. She was discharged on May 14, 1989. A CT scan 5 months later disclosed no residual or additional lesions. She continues to do well.

**Discussion**

The 11 reported cases of cystic cavernous angioma, including the present case, are summarized in Table 1.¹-⁴,¹Three females and four males with ages ranging 3-54 years and averaging 36 years. Ten patients had signs of increased intracranial pressure, i.e., headache and papilledema. One patient suffered a focal seizure. Three cystic cavernous angiomas were located in the parietal lobe, three in the frontal lobe, and three in the cerebellar hemisphere. All cysts had angiomatous nodules at the wall. Seven cysts contained xanthochromic or yellowish fluid and four degraded bloody fluid, including ours. All patients underwent total removal of the cyst and angioma, with good results. Cystic cavernous angiomas are therefore benign and can be completely removed.

Cavernous angioma associated with a large cyst is an uncommon but important intracranial cystic lesion. In all cases, including ours, the differential diagnosis of cystic cavernous angioma was difficult to base only on CT and angiographic findings. However, in the present case MR imaging clearly revealed a nodule with mass effect due to cyst formation and edema. A T₂-weighted MR image showed the nodule as a reticulated mixed intensity area attached to the cystic wall. This MR feature is typical of cavernous angioma, as described previously by Rigamonti et al.⁶ Therefore, cystic cavernous angioma can be differentiated from other cystic tumors using MR imaging in addition to CT and angiography.

Cavernous angioma is the only cerebrovascular malformation known to form cysts. The etiology is difficult to establish, but may be related to unobserved local hemorrhages. Steiger et al.⁷ reported that the inner surface of the cyst is partially covered by endothelium-derived cells. They suggested that cystic formation originates from sinusoids and growth is similar to the phenomena seen in chronic subdural hematoma. However, in most reported cases including ours, the cyst wall consisted of tough

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*Neurol Med Chir (Tokyo) 31, July, 1991*
Table 1 Clinical findings in 11 cases of cystic cavernous angioma

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Age/ Sex</th>
<th>Signs and symptoms</th>
<th>Location of lesion</th>
<th>Surgical findings</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramina et al. (1980)</td>
<td>45/F</td>
<td>episodic headache</td>
<td>rt temporoparietal</td>
<td>cyst with yellowish-brown fluid, calcified mass</td>
<td>good at 2 mos</td>
</tr>
<tr>
<td>Vaquero et al. (1983)</td>
<td>29/F</td>
<td>headache, lt hemiparesis</td>
<td>rt parietal</td>
<td>cyst with xanthochromic fluid, solid nodule</td>
<td>good at 2 yrs</td>
</tr>
<tr>
<td>Khosla et al. (1984)</td>
<td>51/M</td>
<td>headache, lt hemiparesis</td>
<td>rt parietal</td>
<td>cyst with turbid-grayish fluid, solid lesion</td>
<td>good at 1 yr</td>
</tr>
<tr>
<td>Bellotti et al. (1985)</td>
<td>3/M</td>
<td>mental retardation, papilledema</td>
<td>lt frontoparietal</td>
<td>cyst with decomposing blood, network of blood vessels</td>
<td>good at 4 mos</td>
</tr>
<tr>
<td>Bellotti et al. (1985)</td>
<td>54/F</td>
<td>cerebellar sign, papilledema</td>
<td>cerebellar vermis</td>
<td>cyst with lemon-yellow fluid, intramural nodule</td>
<td>good at 1 yr</td>
</tr>
<tr>
<td></td>
<td>53/F</td>
<td>cerebellar sign, papilledema</td>
<td>rt cerebellar hemisphere</td>
<td>cyst with lemon-yellow fluid, intramural nodule</td>
<td>good at 8 mos</td>
</tr>
<tr>
<td></td>
<td>44/F</td>
<td>cerebellar sign, papilledema</td>
<td>rt cerebellar hemisphere</td>
<td>cyst with lemon-yellow fluid, intramural nodule</td>
<td>good at 5 mos</td>
</tr>
<tr>
<td>Iplikcioglu et al. (1986)</td>
<td>30/F</td>
<td>headache, hearing loss</td>
<td>cerebellomedulopontine angle</td>
<td>cyst with xanthochromic fluid, solid nodule</td>
<td>good at 6 yrs</td>
</tr>
<tr>
<td>Steiger et al. (1987)</td>
<td>21/M</td>
<td>focal epilepsy</td>
<td>lt parietal</td>
<td>cyst with degraded blood, firm nodule</td>
<td>good</td>
</tr>
<tr>
<td></td>
<td>45/M</td>
<td>papilledema, hemiparesis</td>
<td>rt frontal</td>
<td>cyst with degraded blood, firm nodule</td>
<td>good</td>
</tr>
<tr>
<td>Present case</td>
<td>20/F</td>
<td>headache, papilledema</td>
<td>lt frontal</td>
<td>cyst with degraded blood, nodule</td>
<td>good at 5 mos</td>
</tr>
</tbody>
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fibrous membrane. Some signs of silent hemorrhage were seen in the angioma interstices and surrounding gliotic parenchyma. Therefore, we suggest that repeated minor hemorrhage from the angioma is primarily responsible for cyst growth.

References

5) Rengachary SS, Kalyan-Raman UP: Other cranial


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