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Aneurysm

Dural arteriovenous fistula of the anterior cranial fossa associated with a ruptured ophthalmic aneurysm: case report and review of the literature

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Abstract

Background: Dural arteriovenous fistula (DAVF) accompanied by intracranial aneurysms is an extremely rare situation.

Case Description: A 65-year-old man presented with sudden loss of consciousness for about half an hour. Computed tomographic scan of the brain showed subarachnoid hemorrhage. Angiogram revealed an ophthalmic aneurysm. In addition, a DAVF located in the anterior cranial fossa was also found. The ruptured aneurysm was completely occluded by coil embolization and the DAVF of the anterior cranial fossa was treated with gamma knife radiosurgery after an uneventful postoperative course. The patient was managed nonoperatively and discharged with close follow-up.

Conclusion: An unusual case of anterior cranial fossa DAVF associated with a ruptured ophthalmic aneurysm is reported. We feel special consideration may be required in deciding the priority of treatment in such cases.

Keywords: Dural arteriovenous fistula; Anterior cranial fossa; Cerebral aneurysm

Dural arteriovenous fistula of the anterior cranial fossa are not common. These lesions are considered to be a distinct subgroup of DAVF with high incidence of intracranial hemorrhage [1,4,9]. Dural arteriovenous fistula of the anterior cranial fossa associated with cerebral aneurysms is even rarer. In this article, we present a very rare case of DAVF in the anterior cranial fossa associated with a ruptured ophthalmic aneurysm.

1. Case report

A 65-year-old man presented with sudden loss of consciousness for about half an hour while he was talking to his family in a sitting position. He was sent to a nearby hospital and treated conservatively. Computed tomographic scan of the brain performed 2 days after his onset revealed diffuse subarachnoid hemorrhage (SAH) (Fig. 1). The patient was transferred to our hospital 7 days after his onset. Upon his admission, physical examination revealed neck stiffness but no obvious focal deficits. Cerebral angiography was performed the day after admission. An ophthalmic segment aneurysm in the left internal carotid artery was found. In addition, angiography demonstrated a DAVF of the anterior cranial fossa, which is fed by the bilateral ophthalmic artery and draining into the superior sagittal sinus via tortuous cortical vein with multiple venous dilation (Figs. 2 and 3).

Considering the treatment, we suggested surgical resection of the DAVF combined with clipping of the aneurysm in 1 stage or after embolizaton of the aneurysm. However, the patient did not accept surgical treatment. Therefore, endovascular embolization was chosen. The procedure was performed under general anesthesia. In brief, a 6F guiding catheter (Envoy; Cordis Corp, Miami Lakes, Fla) was first selectively placed in the proximal left ICA via a trans-

Abbreviations: ACA, anterior cerebral artery; AComA, anterior communicating artery; DAVF, dural arteriovenous fistula; ICA, internal carotid artery; MCA, middle cerebral artery; PComA, posterior communicating artery; SAH, subarachnoid hemorrhage.

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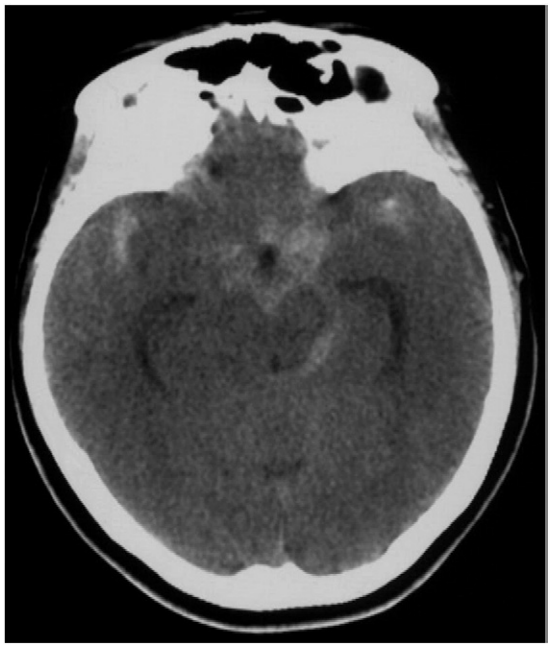

Fig. 1. Noncontrast axial computed tomographic scan reveals extensive SAH mainly located in the left basilar cistern and sylvian fissure.

femoral approach. After the microcatheter (Prowler 14; Cordis Corp) was navigated into the aneurysm sac, coils (Orbit; Cordis Corp) was delivered for embolization until complete occlusion of the aneurysm was achieved (Fig. 4). The patient underwent ventriculoperitoneal shunt 1 week after embolization; the postoperative course was uneventful.

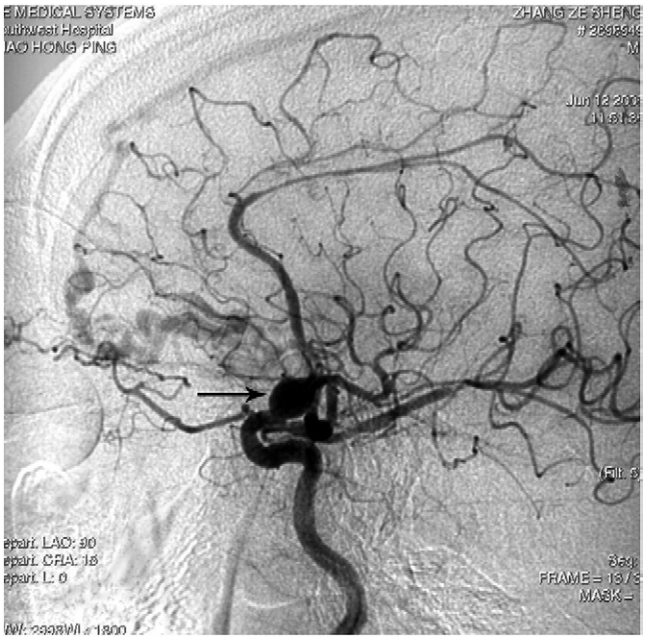

Fig. 2. Lateral view of left internal carotid artery angiogram shows an ophthalmic aneurysm (arrow). In addition, a DAVF of the anterior cranial fossa is fed by the ipsilateral anterior ethmoidal artery with drainage to the superior sagittal sinus via tortuous cortical vein.

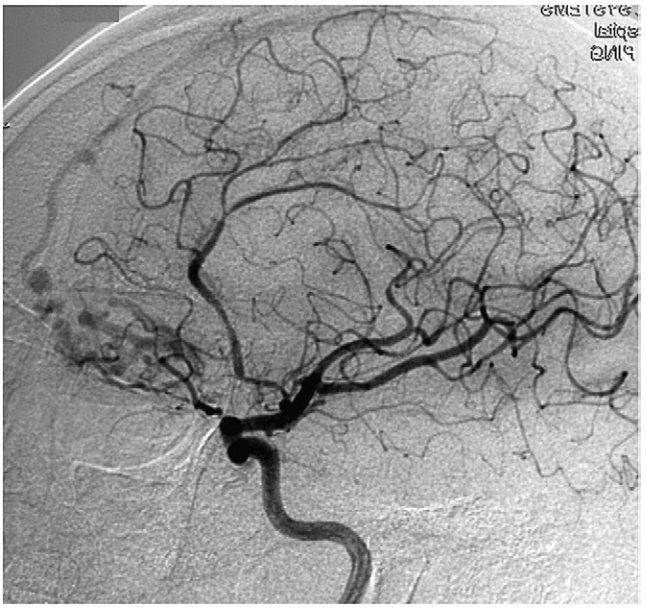

Fig. 3. Lateral view of right internal carotid artery angiogram shows the DAVF is also fed by the right ophthalmic artery.

He was then treated with gamma knife radiosurgery and discharged with close follow-up.

2. Discussion

In contrast to cerebral arteriovenous malformation, DAVF associated with cerebral aneurysms is very rare. Eleven cases of anterior cranial fossa DAVF in conjunction with cerebral aneurysms have been previously reported (Table 1). All cases involved men, ranging in age from 27 to 70 years (mean, 58 years), which is indicative of

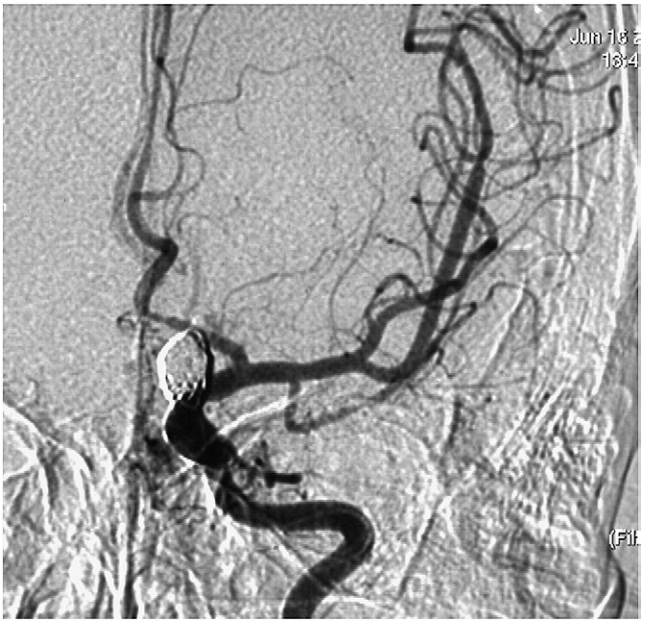

Fig. 4. Anterioposterior view of left internal carotid artery angiogram after embolization demonstrates complete disappearance of the aneurysm.