Bilateral Giant Intracavernous Carotid Artery Aneurysms Mimicking a Cavernous Sinus Neoplasm
—Case Report—

Katsumi MATSUMOTO, Amami KATO*, Keiko FUJI**, Toshiyuki FUJINAKA*, and Ryutaro FUKUHARA*

Department of Neurosurgery, Hanwa Memorial Hospital, Osaka; Departments of *Neurosurgery and **Radiology, Osaka Rosai Hospital, Sakai, Osaka

Abstract
An 84-year-old female presented with bilateral giant intracavernous carotid artery aneurysms manifesting as right total ophthalmoplegia and trigeminal nerve paresis. Computed tomography and magnetic resonance imaging showed the two aneurysms as one fused mass, so the initial diagnosis was a parasellar tumor occupying the bilateral cavernous sinuses. The correct diagnosis required cerebral angiography. Considering her age, no surgical or interventional treatment was given. Eight months later, her right eye movement partially recovered and she had no further symptoms. There was no definite causative factors other than aging in this case.

Key words: giant aneurysm, cavernous sinus, computed tomography, magnetic resonance imaging

Introduction
Aneurysms arising from the intracavernous carotid artery account for 3-5% of all aneurysms.10,13) Giant cerebral aneurysms with a diameter greater than 25 mm9) form a relatively high proportion (16%) of intracavernous aneurysms.5,8) However, bilateral intracavernous aneurysms are rare with only 41 cases reported.4)

We describe a rare case of bilateral giant intracavernous aneurysms with the unusual appearance of a single fused mass on computed tomography (CT) scans and magnetic resonance (MR) images.

Case Report
An 84-year-old female presented with right ptosis and right facial numbness persisting for 3 weeks. Neurological examination revealed right oculomotor nerve paresis with dilated right pupil, right abducens nerve paresis, right trochlear nerve paresis, and sensory loss in the first and second branches of the right trigeminal nerve.

CT demonstrated a mass lesion occupying the bilateral cavernous sinuses. The mass consisted of both enhanced and non-enhanced areas and an enhanced, thin, partially calcified outer membrane (Fig. 1). T2-weighted MR imaging showed a mixed intensity mass, and T1-weighted MR imaging demonstrated an enhanced mass similar to that seen on CT scans. Bilateral internal carotid arteries were visualized as flow voids encircling the mass (Fig. 2). Based on these findings, the diagnoses of bilateral cerebral aneurysms or cavernous sinus tumors were considered. However, cerebral angiography through the aortic arch demonstrated giant cavernous aneurysms of the bilateral carotid arteries (Fig. 3).

In view of her age and general condition, no surgical or interventional treatment was attempted. Eight months later, her right ophthalmoplegia partially alleviated. She was able to open her right eye, and had no additional symptoms.
Discussion

The pathogenesis of giant aneurysms is multifactorial, and many structural and hemodynamic stress factors have been discussed.\(^7,8\) However, the pathogenesis of the cavernous aneurysm is not yet defined and idiopathic intracavernous aneurysms are the most common.\(^8\) Many bilateral intracavernous aneurysm cases have definite causative factors suggesting weakness of the carotid arterial wall. Bilateral intracavernous aneurysms after radiation therapy,\(^10,13\) or in association with fibromuscular dysplasia,\(^11\) and bilateral mycotic intracavernous aneurysms\(^9\) have been reported. All these reports indicate a pathological change in the carotid arterial wall as a factor in aneurysm formation. In our patient, aging may have been a factor in inducing carotid arterial wall weakness resulting in bilateral aneurysm formation.

The radiological diagnosis of giant cerebral aneurysm is sometimes difficult because giant aneurysms are often thrombosed and are not fully visualized by angiography.\(^2,8\) Completely thrombosed aneurysms may be misdiagnosed as a tumor. The CT findings of giant thrombosed aneurysms include the target sign, enhancement of the center and margin of the mass, and the absence of edema around the mass.\(^2,8,12\) Aneurysms are typically seen on T1- and T2-weighted MR images as areas of extreme low intensity due to flow void.\(^14\) However, the MR imaging appearance of a giant aneurysm is complicated because of the multilayered thrombosed portion and patent residual lumen. The thrombus has a mixed intensity, while the lumen has an extremely low intensity due to the flow void.\(^7\) Additionally, aneurysms with turbulent intraluminal flow have an intermediate intensity.\(^5\) In our patient, the bilateral intracavernous aneurysms were fused together and looked like one mass on the CT scans and MR images. Moreover, the MR images of the mass were complicated as mentioned above, so we first diagnosed a cavernous tumor. Although she was 84 years old, cerebral angiography was required for the final diagnosis of this lesion. The present case suggests careful radiological diagnosis of the cavernous lesion of the elderly.

References


Address reprint requests to: K. Matsumoto, M.D., Department of Neurosurgery, Hanwa Memorial Hospital, 7-11-11 Karita, Sumiyoshi-ku, Osaka 558, Japan.