A Giant Intracranial Aneurysm
which Disappeared
Angiographically Following
Pneumoencephalography

Jiro SUZUKI and Takehide ONUMA

Division of Neurosurgery, Institute of Brain Diseases,
Tohoku University, School of Medicine, Sendai, Japan

Summary

A case of a giant aneurysm arising from the junction of the right posterior cerebral artery and the top of the basilar artery is reported. The aneurysm showed a bizarre arteriographic appearance like a loop which would be due to laminated intramural thrombosis. Follow-up angiograms, taken 16 months after subarachnoid hemorrhage, revealed the spontaneous disappearance of the aneurysm. In this case, the loss of buoyance following pneumoencephalography could have possibly caused the aneurysm neck to bend and induced obliteration of the aneurysm.

Key words:
giant aneurysm, spontaneous disappearance, pneumoencephalography

Preface

Giant aneurysms are characterized by their space-taking lesion and less frequent occurrence of hemorrhage than usual sized aneurysms.2,5) Clinically, giant aneurysms are classified into extracavernous and intracavernous ones. The former is more likely to rupture and its mass lesion can sometimes be fatal.5) We are reporting of an untreated giant aneurysm arising from the junction of the right posterior cerebral artery and the top of the basilar artery which showed a bizarre angiographic appearance. The aneurysm disappeared angiographically 16 months following the subarachnoid hemorrhage. It is possible that in this case spontaneous obliteration was induced by bending of the aneurysm neck caused by loss of buoyance during pneumoencephalography.

Case report

A 22-year-old girl experienced severe headaches, nausea and vomiting on June 14, 1970 and was admitted to a local hospital on the following day. On the fourth day of hospitalization, lumbar puncture revealed slightly blood-tinged cerebrospinal fluid with initial pressure of 170 mm H2O. Right carotid angiogram showed no significant abnormality. Three days later she was alert but right oculomotor palsy and slight left hemiparesis were reported. These neurological deficits and her headaches improved gradually and she was discharged without headache nor obvious deficits on July 24, 1970. She was referred and admitted to the Neurosurgical Institute of Tohoku University on November 2, 1970 because of severe periodical headaches.

Examination

The patient was fully conscious but slight weakness of the left lower limb with exaggerated deep tendon reflexes and Babinski's reflex on the left were recognized. Ophthalmological examination revealed left inferior homonymous quadrantanopsia, but ocular fundi and extraocular movements were normal. Routine laboratory examinations were normal. Electroencephalogram showed lazy activity and irregular alpha waves over the right hemisphere. Echoencephalogram revealed shift of the mid-line echo to the left and abnormal pulsating echo
near the deep median region of the right hemisphere. Plain skull films demonstrated neither abnormal calcification nor destruction of the bone. Bilateral carotid angiography showed no significant abnormality. The serial left vertebral angiogram revealed displacement of the basilar artery to the left and an abnormal loop like dilated vascular shadow. Starting from the junction of the right posterior cerebral artery and the top of the basilar artery, it followed a loop like course of first lateral and dorsal, then medial and anterior, and finally of lateral and posterior directions. (Fig. 1, 2) This bizarre vascular shadow was long, irregular and loop shaped which measured as illustrated in the Figure 3, but its proximal portion was narrow. The contrast medium in this abnormal vascular channel remained, even 3 seconds after its injection and no draining vein was found. Pneumoencephaloroulette tomography\(^3\) demonstrated the displacement of the third vetricle to the left by the space occupying lesion situated deep in the

![Fig. 1 Left vertebral angiogram, lateral view.](image1)

![Fig. 2 Left vertebral angiogram, anteroposterior view.](image2)
A Giant Intracranial Aneurysm which Disappeared Angiographically

Course

During her hospitalization, mild paresis of left lower limb improved and headaches disappeared almost completely. Direct surgical attack was not performed, after considering her excellent general condition and surgical risk. She was discharged on December 2, 1970.

Follow-up angiograms

Serial left vertebral angiograms taken 16 months after and 2 years after the attack of subarachnoid hemorrhage, demonstrated the disappearance of the bizarre vascular shadow and stenosis at the junction of left posterior cerebral artery and the top of the basilar artery. (Fig. 6) The patient is presently healthy and working without symptoms.

Discussion

Almost without exception, cerebral aneurysms of more than 2 cm in diameter are partially filled by the laminated thrombus\(^\text{10}\) and median region of the right hemisphere. (Fig. 4, 5) The mass lesion closely coincided with the abnormal angiographical shadow in location and size.
not infrequently demonstrate semilunar or serpentine appearance in angiogram.\textsuperscript{5,7,11} Therefore, the angiographical shadow may sometimes give erroneous or misleading indication about the actual size and shape. This case is thought to be a giant globooidal aneurysm arising from the junction of the right posterior cerebral artery and the top of the basilar artery and growing into the deep portion of the right hemisphere. Intramural thrombus made turbinate flow of contrast medium into the periphery of the sac. Prognosis of a giant aneurysm is different according to its location. Extracavernous giant aneurysms are apparently more serious than intracavernous ones and direct approach to them is difficult because of their locations and broad necks.\textsuperscript{2,4,5,6} As Morley stated, the laminated thrombus within the aneurysm does not protect the rupture\textsuperscript{6} and complete obliteration of the lumen by natural thrombosis is thought very rare.\textsuperscript{1,8,9} In this case, the aneurysm thombosed spontaneously without leaving any obvious neurological deficits except visual at an unknown period within 16 months after the onset of subarachnoid hemorrhage. The exact time of thrombosis was not ascertained but there is a possibility that in exchanging of cerebrospinal fluid with air during pneumoencephalography, the buoyance of intracranial substances was lost and the aneurysm was displaced downward by its own gravitational weight. This shift may have bent the narrow neck of the aneurysm and consequently caused thrombosis by decreasing the blood flow into the sac of aneurysm.

References