

# Giant Aneurysm of the Azygos Anterior Cerebral Artery

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## Summary

Giant aneurysm of the azygos anterior cerebral artery is reported. The aneurysmal wall was partially calcified. This aneurysm was successfully clipped. Giant aneurysm of this location is very rare.

## Introduction

Azygos anterior cerebral arteries are seen in 1.1% of human cases according to BAPTISTA<sup>2)</sup>. The incidence of giant aneurysm is 7.4–13% and that of distal anterior cerebral artery aneurysm is 2–4% of all intracranial aneurysms<sup>3)</sup>. We treated a rare case of giant azygos anterior cerebral artery aneurysm and report it here.

## Case Report

The patient was a 51-year-old male. For ten years, he had experienced gradual progression of gait disturbance and dysarthria. One year before admission, dysphagia appeared, and he could not walk by himself or put on his own clothes. On admission, he showed no obvious disturbance of consciousness. Neurological examination revealed dysarthria, dysphagia, and left to right agnosia. Gait disturbance was partly due to mild motor weakness of both lower limbs. Dyscalculia was noted. It was impossible for him to perform subtraction. Gag reflex had decreased bilaterally. Deep tendon reflexes were normoactive in four extremities. Extensor plantar response was bilaterally positive.

Plain skull radiographs revealed an irregular-shaped, coin-sized calcification in the frontal region (Fig. 1). Computed tomography (CT) scan showed a round, high density mass in the right frontal lobe (Fig. 2). A small iso- and low-density area was enhanced by contrast study. Lateral ventricles were dilated symmetrically. However, continuous cerebrospinal fluid pressure monitoring did not reveal any pressure wave.

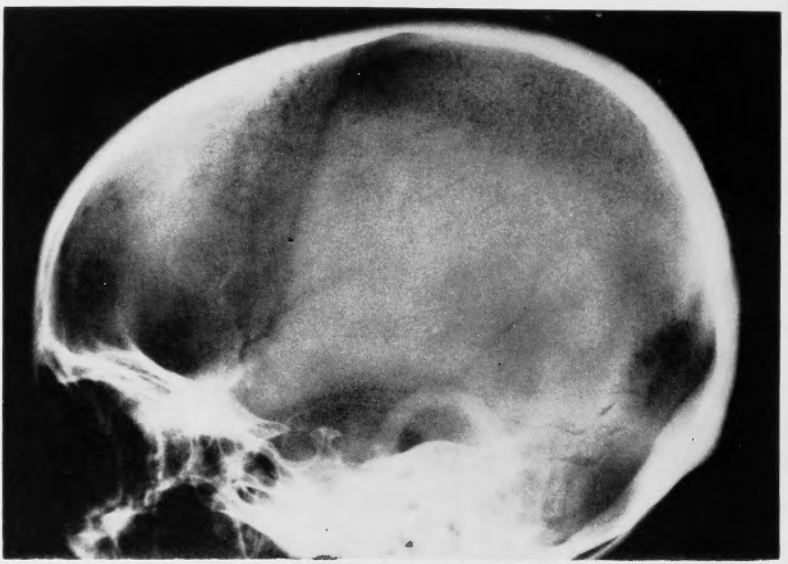
Selective carotid and vertebral angiograms were performed by Seldinger's method. An

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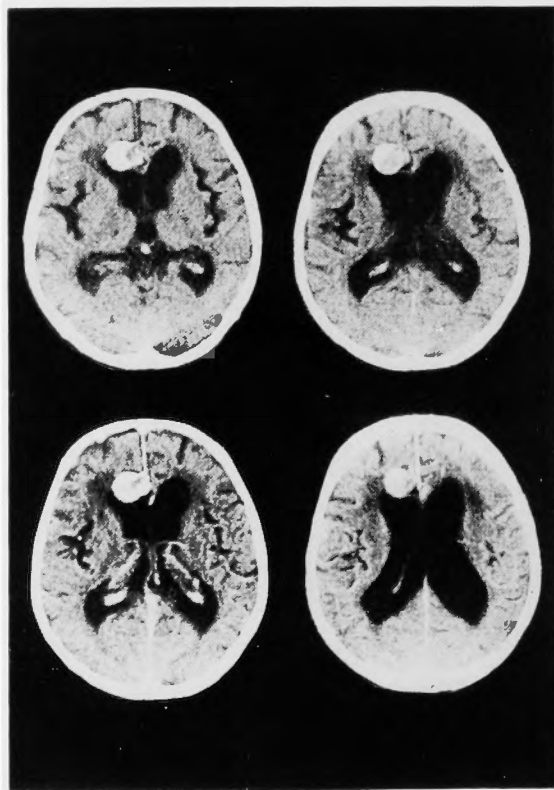
Key words: Anterior cerebral artery, Azygos anterior cerebral artery, Aneurysm of azygos anterior cerebral artery, Giant intracranial aneurysm, Calcified aneurysm.

索引語：前大脳動脈，奇前大脳動脈，奇前大脳動脈瘤，巨大脳動脈瘤，石灰化動脈瘤。

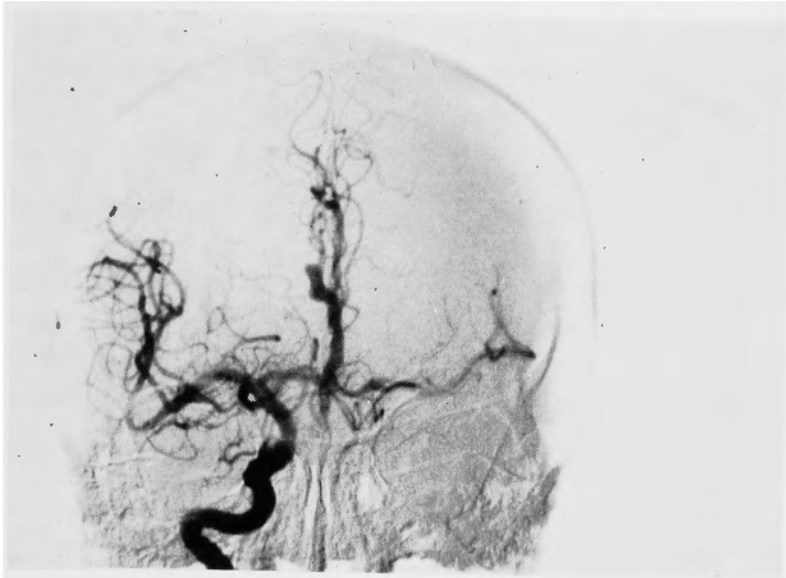
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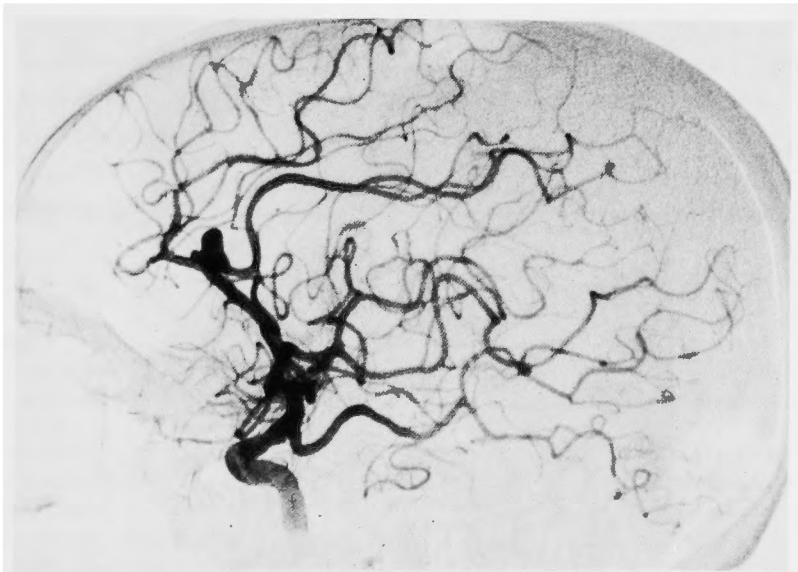
**Fig. 1.** Lateral view of plain skull x-ray. Faint calcified lesion was found in the frontal area.



**Fig. 2.** CT scan (axial view). A part of the mass was enhanced by contrast media administration. The dome of the aneurysm was partially thrombosed and calcified. Moderate ventricular dilatation with vague periventricular low density around the frontal horns was found (Upper: plain CT scans, Lower: enhanced CT scans).



**Fig. 3a.** Anteroposterior view of right CAG with compression of left carotid artery



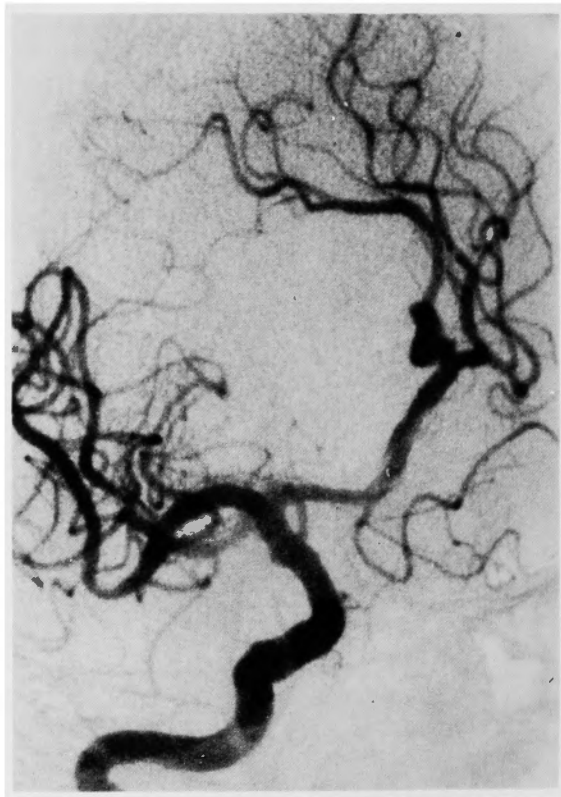
**Fig. 3b.** Lateral view of the right CAG. Aneurysm of the azygos anterior cerebral artery was clearly recognized at the bifurcation of pericallosal and callosomarginal arteries.

aneurysm of the azygos anterior cerebral artery was detected on bilateral carotid angiograms (CAG) (Figs. 3a, 3b, 3c, and 3d). It was located at the bifurcation of the pericallosal and callosomarginal arteries. The wall of the aneurysm was partially calcified and the dome was partially thrombosed. It was  $27 \times 18 \times 20$  mm in size judging from the CT scan and angiogram.

A craniotomy was performed. The azygos anterior cerebral artery was visualized easily and the aneurysm was approached through the interhemispheric fissure. The aneurysm was



**Fig. 3c.** Anteroposterior view of the left CAG without carotid compression



**Fig. 3d.** Oblique view of the right CAG

successfully clipped and the parent artery was spared. Neurological deterioration occurred postoperatively, but gradually returned to the preoperative state.

### Discussion

Anomalies of the distal segment of the anterior cerebral arteries have been classified by BAPTISTA into three types: those appearing in the<sup>1)</sup> unpaired artery (azygos anterior cerebral artery)<sup>2)</sup>, artery giving forth a branch to the contralateral cerebral hemisphere (bihemispheric anterior cerebral artery)<sup>3)</sup>, triplicate artery (accessory anterior cerebral artery)<sup>2)</sup>. These arterial anomalies can increase hemodynamic stress and cause the formation of cerebral aneurysms<sup>6)</sup>.

Aneurysms of the azygos anterior cerebral artery are very rare. Thirty-eight cases of azygos anterior cerebral artery aneurysms have been found in the literature<sup>1, 2, 4, 5, 7-14)</sup>.

NIIZUMA, et al, stated a single CAG with contralateral compression is sufficient for diagnosis of the azygos anterior cerebral artery<sup>14)</sup>. However, careful CAG is necessary for their diagnosis and bilateral CAG with contralateral carotid compression are more adequate. Definitive diagnosis can also be made at operation.

Giant aneurysms of the azygos anterior cerebral artery are extremely rare. HAYASHI, et al, reported two cases of a largely thrombosed aneurysm<sup>7)</sup>. Calcification of the aneurysmal wall was found in our case. Thrombus formation was recognized on CT scan. Clinical manifestation (in this case; signs of frontal lobe compression and anterior cerebral artery syndrome) was mainly due to the mass effect of the giant aneurysm. Transient symptomatic aggravation was also noted in our case. It is important to preserve ample vascular supply into the bilateral cerebral hemisphere in operating on an azygos anterior cerebral artery aneurysm.

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## 和文抄録

# Azygos Anterior Cerebral Artery に生じた Giant Aneurysm の一例

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今回、我々は、azygos anterior cerebral artery に発生した giant aneurysm の一例を経験したので報告する。

症例は51才男性。10年前より歩行障害と構音障害があった。入院時には、さらに左右失認、両下肢の筋力低下、gag reflex の低下と両側の Babinski 反射を認めた。

頭部 X-ray では、前頭部に不規則なコイン状の石

灰化を認め、CT では、右前頭葉の円形の high density mass の一部が造影剤投与により増強された。

脳血管撮影により、azygos anterior cerebral artery に生じた giant aneurysm と判明した。

Neck clipping が施行され、術後一過性に症状の悪化が認められたが、徐々に回復し、軽快退院した。文献的考察を加えた。