

MULTIPLE ANEURYSMS AT THE JUNCTION OF P1-P2 OF THE POSTERIOR CEREBRAL ARTERY

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SUMMARY :

The authors present a case with three aneurysms at the junction of the P1 and P2 segments of the posterior cerebral artery. One of these was clipped, the others were treated by clipping the P2 segment proximal to the aneurysms. This rare condition is discussed in the light of the literature.

KEY WORDS :

Cerebrovascular aneurysm, multiple aneurysm, posterior cerebral artery, subarachnoid hemorrhage.

INTRODUCTION

Posterior circulation aneurysms comprise 10-15 % of all intracranial aneurysms and treatment of these is difficult, because they are located very close to the vital portions of the brain stem and deep (3, 5, 6). 5 % of multiple intracranial aneurysms are located in the vertebrobasilar system (2), but none have been reported at the junction of P1-P2 segments of the posterior cerebral artery. A case with multiple aneurysms at the junction of the P1 and P2 is reported and difficulties of treatment are discussed.

CASE REPORT

In December 1988, a 64-year-old female patient attended the emergency service with subarachnoid hemorrhage which had occurred 16 hours before. She was accepted as Grade III according to the Hunt-Hess classification, with neck stiffness, minimal cooperation and orientation deficit, bilateral subhyaloid hemorrhagia, oculomotor nerve paresis on the right and hemiparesis on the left side.

A right thalamic hematoma and bilateral caudate nucleus hemorrhage was seen by nonenhanced Computed Tomography (CT) on the same day (Fig 1). Fifteen days later, an enhanced CT showed that the hematoma had been reabsorbed and a hyperdense mass on the right posterior cerebral artery (PCA) was seen (Fig 2). Angiography by femoral catheterisation showed three aneurysms located at the junction of P1 and P2 segments (j. P1/P2) of the right posterior cerebral artery (Fig 3A-B) and hypoplasia of the right posterior communicating artery.

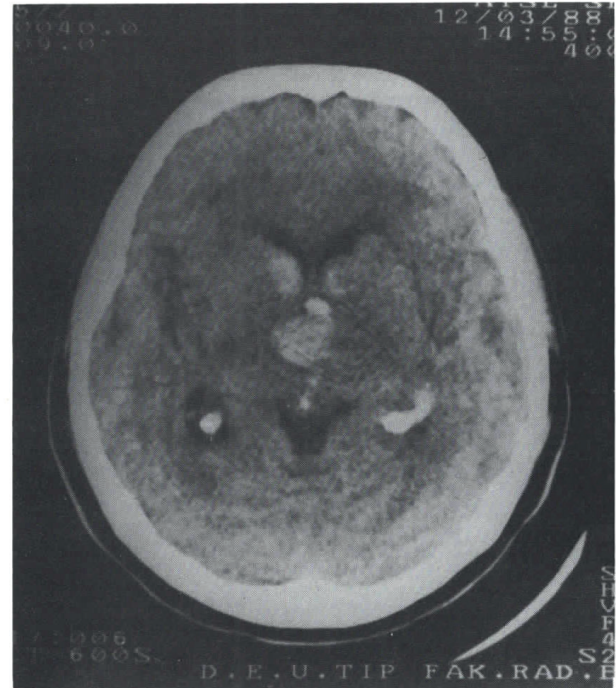


Fig.1 : Nonenhanced Computed Tomography showing right thalamic and bilateral caudate nucleus hematoma.

By modified right pterional approach and temporal lobe elevation, the patient was operated in January 1989. j.P1/P2 of the right side was seen by dissection through the hyperplastic posterior communicating artery and a 5x8x8 mm aneurysm was clipped from its neck. The other large ones were clipped with P2 segment together and that region was disconnected from the circulation.

On the third postoperative day, because of sleepiness and progression of the left hemiparesis, a



Fig.2 : Enhanced CT, repeated 15 days later showing hyperdense mass on the right PCA.



Fig.3-A : A-P angiogram showing 3 aneurysms at the j.P1/P2.



Fig.3-B : Lateral vertebral angiogram showing 3 aneurysms at the j.P1/P2.

control CT was taken and shift to the left side resulting from right parieto-occipital acute infarction was seen. After conservative treatment, on the fifteenth postoperative day, a control angiography showed an obstruction at the P2 segment of the right PCA and the aneurysms could not be filled (Fig. 4). Repeated computed tomographies showed regression of shift

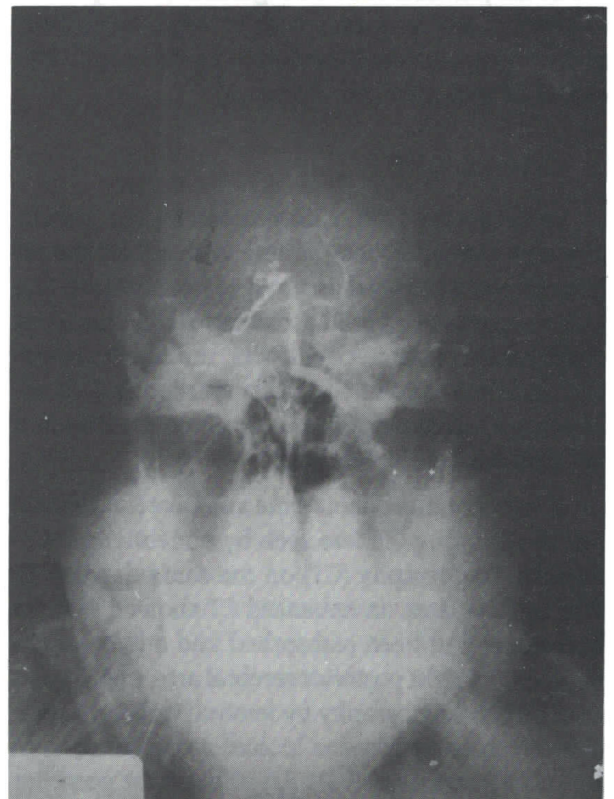


Fig.4 : Post-operative A-P vertebral angiogram showing 2 clips at the aneurysm side.

ting. When she was discharged, there was left hemiparesis and right oculomotor paresis. She was cooperative and was able to say single words, so she was accepted as grade III according to the Glasgow outcome Scale. One month later she was able to walk using a tripod.

DISCUSSION

Posterior circulation aneurysms are located on the trunks or the branches of vertebral or basilar arteries and in spite of advanced microsurgery, instrumentation and operative techniques, morbidity and mortality rates are still high (3,5-7).

Posterior circulation aneurysms are seen in decreasing order of frequency at the basilar bifurcation, basilar trunk, junction of posterior inferior cerebellar artery-vertebral artery, and PCA. (6,7).

From P1, the segment between the basilar bifurcation and the posterior communicating artery of PCA, thalamoperforating, medial posterior choroidal, quadrigeminal arteries and perforating branches to the cerebral pedunculus and mesencephalon that originate. From P2, the segment after the posterior communicating artery, lateral and medial posterior choroidal arteries, hippocampal, thalamogeniculate arteries and branches to the cerebral pedunculus originate. At the junction of the posterior temporal artery, the P3 segment begins and divides into the calcarine and parietooccipital arteries.

Because of these perforating branches, approach to the J.P1/P2 region is difficult. Yaşargil operated on three patients with aneurysms in that region, two by pterional and the other by subtemporal approach. Yamaura reported four patients who had aneurysms at the J.P1/P2 region among 193 vertebro-basilar aneurysms. Drake reported 52 J.P1/P2 aneurysms among more than thousand patients (3,6). No multiple aneurysms have been reported at the J.P1/P2 region yet.

Misdiagnosis of subarachnoid hemorrhage (SAH) is common. A CT done on the admission day was unusual for SAH. If the CT had not been repeated after the hematoma resolution an early diagnosis of aneurysm would not been made. So, further CT examination after hematoma resolution will cause the aneurysm patient population to rise.

By a modified pterional craniotomy including subtemporal approach as Solomon defined (5), better approach has been performed to our patient. Because of right internal carotid hypoplasia, toleration of P2 clipping was difficult for our patient and discharging her in the postoperative second month indicates this.

The mortality and morbidity rates of these patients are high but with intensive care and rehabilitation, prognosis would be better.

This case is the first with multiple aneurysms in the J.P1/P2 region and we wish to stress the importance of repeated enhanced CT after intracerebral hemorrhage.

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