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# THE RARE CASE OF RUPTURED VERTEBROBASILAR JUNCTION ANEURYSM POINTING TO LEFT SIDE AFTER ANTIPLATELETS TREATMENT

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**ABSTRACT**

Mental Vertebrobasilar junction aneurysm are uncommon with incidence 0.5% and usually pointing to right side. They often associated with fenestration. Endovascular treatment is more favorable than surgical for this aneurysm. There was increased risk of bleeding with addition clopidogrel on aspirin. A fifty eight years old woman had ruptured the vertebrobasilar junction aneurysm. One month back she had ruptured right ICA wide neck aneurysm near at the right ophthalmic artery and unruptured vertebrobasilar junction aneurysm and she underwent stent assisted coiling for ophthalmic aneurysm only. She continued dual antiplatelet for the stent . This time patient underwent endovascular coiling for the vertebrobasilar aneurysm. After coils embolization, there was no aneurysm filling.

**Keywords :** vertebrobasilar junction aneurysm, dual antiplatelets, multiple aneurysms.

## INTRODUCTION

Endovascular treatment is more favorable than surgical for the uncommon vertebrobasilar junction aneurysm with good result. Stent placements need dual antiplatelets. There was increased risk of bleeding for unruptured aneurysm with addition clopidogrel on aspirin.

### Clinical Presentation

A 58 years- old female was admitted to our hospital with complain of sudden onset severe headache and vomiting. One month back she had subarachnoid hemorrhage Hunt and Hess grade II due to ruptured right ICA wide neck aneurysm near at the right ophthalmic artery and she underwent stent assisted coiling. She continued on dual antiplatelet aspirin 150 mg and clopidogrel 75 mg. After stent assisted coiling we planned proximal basilar aneurysm coiling later.

At present admission again she had sudden onset severe headache . She was alert and no focal neurological deficits other than neck stiffness (Hunt and Hess grade II). The unenhanced CT revealed subarachnoid hemorrhage along basal cistern, perimesencephalic cistern and Sylvian fissure (Fig.1 A). The angiogram revealed ruptured wide neck aneurysm measuring 5x6 mm at right ophthalmic origin toward anterior (Fig.1 B). After stent assisted coiling, the aneurysm is not visualized (Fig. 1 C) At first admission actually there was the other aneurysm

measuring 6X3mm seen above the vertebrobasilar junction with the tip directed left side, superiorly and unruptured (Fig. 1D). After one month of the first admission, the vertebrobasilar junction aneurysm ruptured (Fig. 1E). The endovascular procedure was performed under general anesthesia and full systemic heparinization. A 6 F guide catheter was passed in right proximal vertebral artery. Excel-14 microcatheter with Transend-14 microwire was navigated under road map and microcatheter tip was positioned in the sac of aneurysm. Under road map 4x6 mm 3D framing coil was placed into aneurysm sac. Future coils were placed to obliterate aneurysmal sac. After coiling the aneurysm was not visualized (Fig. 1 F).

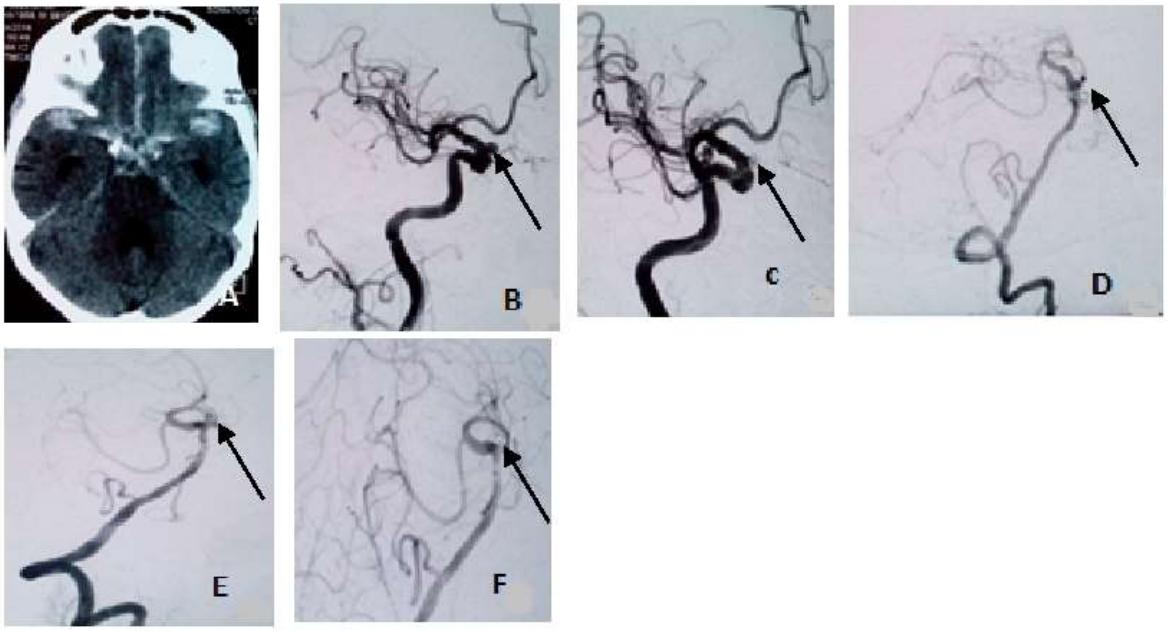


**Fig. 1 A** CT scan at present admission revealed subarachnoid hemorrhage in basal cistern, perimesencephalic cistern and Sylvian fissure. **B** wide neck aneurysm right ophthalmic origin toward anterior measuring 5x6 mm irregular shape, **C** post stent assisted coiling, **D** unruptured aneurysm measuring 6x3mm above the vertebrobasilar junction with the tip directed left side and superiorly. **E** ruptured aneurysm after taking antiplatelets, **F** post coiling.

## DISCUSSION

Aneurysms on the vertebrobasilar junction are rare, with an incidence of 0.5% of all 2112 treated aneurysms. Peluso revealed the incidence is 0.5% with 70% of them related to the fenestration (1,2). Most patients presented with SAH, and were associated with proximal basilar fenestration (3). The relation of vertebrobasilar junction aneurysms with basilar fenestration is well established and explained by intrinsic defects in the medial vessel wall of fenestrated arteries. In the fetus, the basilar artery is formed by fusion of bilateral longitudinal neural arteries during the fifth gestational week. During this fusion process, temporary bridging arteries connecting the longitudinal neural arteries regress as fusion is completed. If these bridging arteries persist, they result in fenestration of the basilar artery (2).

Surgical access to the vertebrobasilar junction is hampered by the petrous bone and the direct proximity of the aneurysm to the brain stem, with perforating arteries and lower cranial nerves. Several lateral approaches directed through parts of the petrous bone may be used for direct access to the vertebrobasilar junction (4).

Although surgical approach to the vertebrobasilar junction is difficult, endovascular access is easy;

therefore, coil occlusion is the treatment of choice with good initial and midterm results (5,6).

Left vertebral artery is dominant in 69.2% (7). This vertebrobasilar junction aneurysm is pointing to left side. The hemodynamic factor caused this because the patient has right dominant vertebral artery. The hemodynamic determines the direction of projection of the aneurysm dome which in most case toward the opposite side of dominant vertebral artery (8).

This patient has the second aneurysmal subarachnoid hemorrhage from different site from the previous. It may be caused by the use of dual antiplatelets. In CHARISMA study (the Clopidogrel for High Atherothrombotic Risk and Ischemic Stabilization, Management, and Avoidance) there was increased risk of bleeding with addition clopidogrel on aspirin. And the chance of bleeding is greatest in the first year and similar there after (9).

Given the critical role of inflammation in aneurysm pathogenesis, several therapeutic strategies have been investigated with overall mixed but promising results. Perhaps the most promising of all strategies has been acetylic acid (ASA), more commonly referred to as aspirin. ASA exerts its antiplatelet and anti-inflammatory actions by irreversible acetylation of cyclooxygenase-1 and -2, and possibly also through the formation of nitric oxide radicals and the modulation of inflammatory signaling pathways by the main ASA metabolite, salicylic acid. In a case–control study from patients enrolled in the International Study of Unruptured Intracranial Aneurysms, found that patients using aspirin had a lower risk of hemorrhage than those who never used aspirin. Building on this work, the same group reported that ruptured aneurysms have higher immunohistochemical staining for cyclooxygenase-2 and microsomal prostaglandin E2 synthase 1, thus concluding that the protective effect of aspirin against rupture of cerebral aneurysm is mediated in part by inhibition of cyclooxygenase-2/microsomal prostaglandin E2 synthase 1. Indeed, in a trial comparing 5 patients treated with ASA and 5 other control patients, the expression of macrophages and inflammatory molecules in cerebral aneurysms after clipping was found to be significantly decreased in the ASA group. Although this study provided novel data that ASA may attenuate the inflammatory process in the walls of human cerebral aneurysm, larger studies with long follow up periods are needed to address whether ASA also prevents aneurysmal SAH. Bringing confirmation to the work of Hasan et al is a recently published study from Europe that showed that chronic low dose aspirin therapy has a protective effect against SAH and does not increase the risk of intracerebral hemorrhage. Further more, there was a particularly pronounced trend toward decreased risk of SAH among those on long-term aspirin therapy (>3 years). Collectively, these data suggest that aspirin may be a serious noninvasive strategy for prevention of SAH. If the efficacy of aspirin is confirmed in a randomized controlled trial, aspirin could potentially be offered as a treatment for those patients in whom the risk of invasive therapy exceeds the risk of aneurysm rupture. For example, a 75-year-old man with a 5-mm cerebral aneurysm would be a perfect candidate for aspirin treatment. Likewise, aspirin may be used to decrease the risk of aneurysm rupture in patients refusing any sort of invasive therapies or in countries where invasive, specialized therapies are not available. The fact that aspirin is an inexpensive and widely available and used drug makes it an ideal candidate in this setting (7). In conclusion this case report highlight the easy solution for the rare vertebrobasilar aneurysm and reemphasize coiling of multiple aneurysms in the same procedure when using dual antiplatelets as asymptomatic aneurysm may turn symptomatic in patient on dual antiplatelet drugs.

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