STENTING IN POSTERIOR INFERIOR CEREBELLAR ARTERY ANEURYSM: A CASE REPORT

Amelia Anggia[1], Ahmad Sobri Muda[2*], Anas Tharek[2], Mohd Fandi Al Khafiz Kamis[2], Rajeev Shamsuddin Perisamy[3], Siow Li Ting[4], Badrisyah Idris[5]

[1]Radiology Departement, University of Brawijaya, Malang, Indonesia

[2]Radiology Department, Hospital Pengajar University Putra Malaysia, Selangor, Malaysia

[3]Department of Radiology, Kulliyyah of Medicine, International Islamic University Malaysia, Kuantan, Pahang, Malaysia

[4]Anaesthesiology and Critical Care Departement, Hospital Pengajar University Putra Malaysia, Selangor, Malaysia

[5]Neurosurgery Department, MSU Medical Centre, Selangor, Malaysia

***Corresponding author:**
Ahmad Sobri Muda, Radiology Department, Hospital Pengajar University Putra Malaysia, Selangor, Malaysia.

Email: asobri@upm.edu.my

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ABSTRACT

Posterior inferior cerebellar artery (PICA) distal aneurysm is a relatively rare condition, accounting for 1% or less of all cerebral aneurysms. They may manifest as severe headaches, altered consciousness, lower cranial nerve dysfunction, brainstem compression, or posterior fossa symptoms such as nausea, vomiting, imbalance, or ataxia. Digital Subtraction Angiography (DSA) is the gold standard for detecting aneurysmal SAH. Endovascular treatment (EVT) has become the primary strategy for managing PICA aneurysms in recent years.

Keywords: Posterior Inferior Cerebellar Artery, Aneurysms, Stenting

INTRODUCTION

Aneurysms of the posterior inferior cerebellar artery (PICA) are uncommon. Most PICA aneurysms originate from the PICA-vertebral artery junction. Posterior circulation aneurysms, including PICA, has re-bleeding rates as high as 78%, primarily due to their relatively thin aneurysm wall and dissecting nature (Deora et a., 2020).

The most frequent clinical presentation of VA or PICA aneurysms is subarachnoid haemorrhage (SAH). Patients may experience headaches, and in a majority, vertigo and drowsiness. Additionally, unruptured VA, PICA, or vertebrobasilar aneurysms can lead to lower cranial nerve dysfunction, brainstem compression, or posterior fossa symptoms such as nausea, vomiting, imbalance, or ataxia (Hung, 2012).

The microsurgical approach is limited by anatomical corridors of the brainstem, petrous occipital bone, and multiple neurovascular structures occupying the cerebellomedullary and cerebellopontine cisterns. We present a case of ruptured PICA aneurysm treated with stenting.

CASE REPORT

A 59-year-old man with a Glasgow Coma Scale (GCS) of E1VTM1 (2T/15) and a blood pressure of 134/78 mmHg was transferred for endovascular treatment. Right external ventricular drainage done under general anaesthesia at a previous hospital. Upon arrival, the patient complained of neck stiffness, severe headache, blurred vision, vomiting, unsteady gait, and a decrease in consciousness from a GCS of 15 to 13. Plain brain CT scans revealed presence of SAH and intraventricular haemorrhages in the third and fourth ventricles, (Figure 1). Cerebral angiography identified an aneurysm of the right posterior inferior cerebellar artery (PICA) (Figure 2). The patient received an antiplatelet combination of aspirin 150 mg and clopidogrel 75 mg before the intervention. After MDT discussion, patient was decided for endovascular treatment. Braided stent LEO+ Baby (Balt International) 2.0 mm x 12 mm navigated crossed the PICA aneurysm using microcatheter VASCOT (Balt International) 017 system (Figure 3.1). The stent fully developed with pattern flow of parent artery. There is constant stagnation following the stent placement (Figure 3B).

DISCUSSION

Fusiform nonsaccular aneurysms at vertebrobasilar locations, more prevalent than in the anterior circulation due to dissections and carry a high risk of bleeding. Early treatment of ruptured aneurysms is crucial due to the high re-bleeding rate and the potential risk of direct brainstem compression, leading to a high mortality rate (Hung 2012).

PICA aneurysms exhibit diversity in location and morphology, making it challenging to apply a single treatment modality consistently. The choice of treatment depends on factors such as aneurysm morphology, location, and the preference of the surgeon or interventionist. When considering aneurysm location, PICA aneurysms can be classified as proximal (including those arising at the origin of the PICA-vertebral junction or within the anteromedullary segment) and distal (located after the anteromedullary segment) (Khayat et al., 2020).

Most PICA aneurysms arise at the junction of the PICA and vertebral artery, with approximately one-third arising more distally. The variable origin, tortuous course, and close proximity to vital neurovascular structures present challenges for both endovascular and open surgical approaches (Lheto et al., 2014).

Endovascular treatment (EVT) has become the predominant strategy for treating PICA aneurysms recently, accounting for 55.4% of ruptured PICA aneurysms. EVT reduces the risk of direct brainstem injury and anaesthesia-related complications, making it preferable for patients with poor clinical status. EVT strategies such as stand-alone

coiling, stent-assisted coiling, direct coiling, flow diversion, and parent artery occlusion with coils have been successfully used to treat PICA aneurysms. EVT-related complications, including intraprocedural ruptures and new-onset infarcts, are not rare, with reported morbidity from EVT-related imaging infarcts reaching up to 33%, although many of them may not show apparent symptoms (Chen et al., 2018).
Patients who survived the hospital admission period were scheduled for clinical follow-up in the outpatient clinic at 6 weeks and for angiographic follow-up at 6 and 18 months. In some patients treated with coil occlusion of the aneurysm including the PICA origin and/or vertebral artery occlusion, only MR imaging and MR angiography (MRA) follow-up was performed (Peluso and Rooji, 2008).

CONCLUSION

PICA aneurysms present challenging lesions associated with high mortality rates if early diagnosis is missed. The primary goals of examination are to identify the site of the vascular lesion and determine whether immediate intervention is required. CT and MRI serve as the imaging modalities of choice for identifying and locating the infarct area and detecting vascular abnormalities. Digital Subtraction Angiography (DSA) stands as the gold standard for detecting aneurysmal SAH (Andrew et al., 2023).
Endovascular treatment (EVT) has emerged as the dominant strategy for managing PICA aneurysms, as it reduces the risk of direct brainstem injury and anaesthesia-related complications, particularly in patients with poor clinical status.
Involvement of a multidisciplinary team is crucial for diligent treatment planning, given the complexity of these lesions. The information provided in this report is intended to assist in the decision-making process.

DATA AVAILABILITY STATEMENT

https://interventionjournal.padimedical.com/external/view/421a04a0-9172c6b6-64725c36-ac89bfd6-2d85d9d0/

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FIGURE LEGENDS:

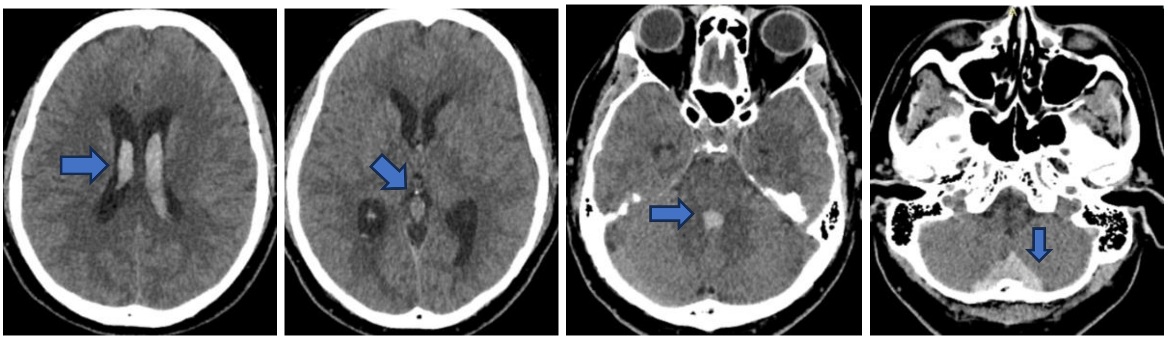

Figure 1: CT scan showed intraventricular haemorrhages at third and fourth ventricle causing obstructive hydrocephalus and subarachnoid haemorrhage.

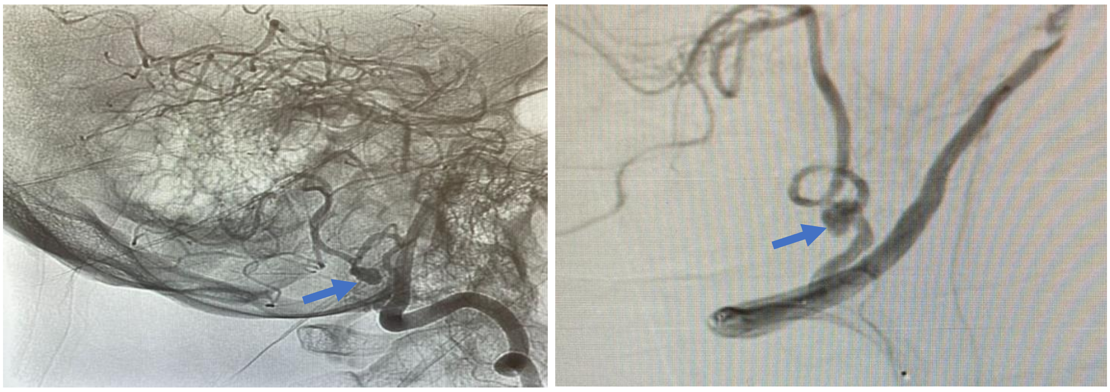

Figure 2: Cerebral angiogram showed aneurysm of the right PICA.

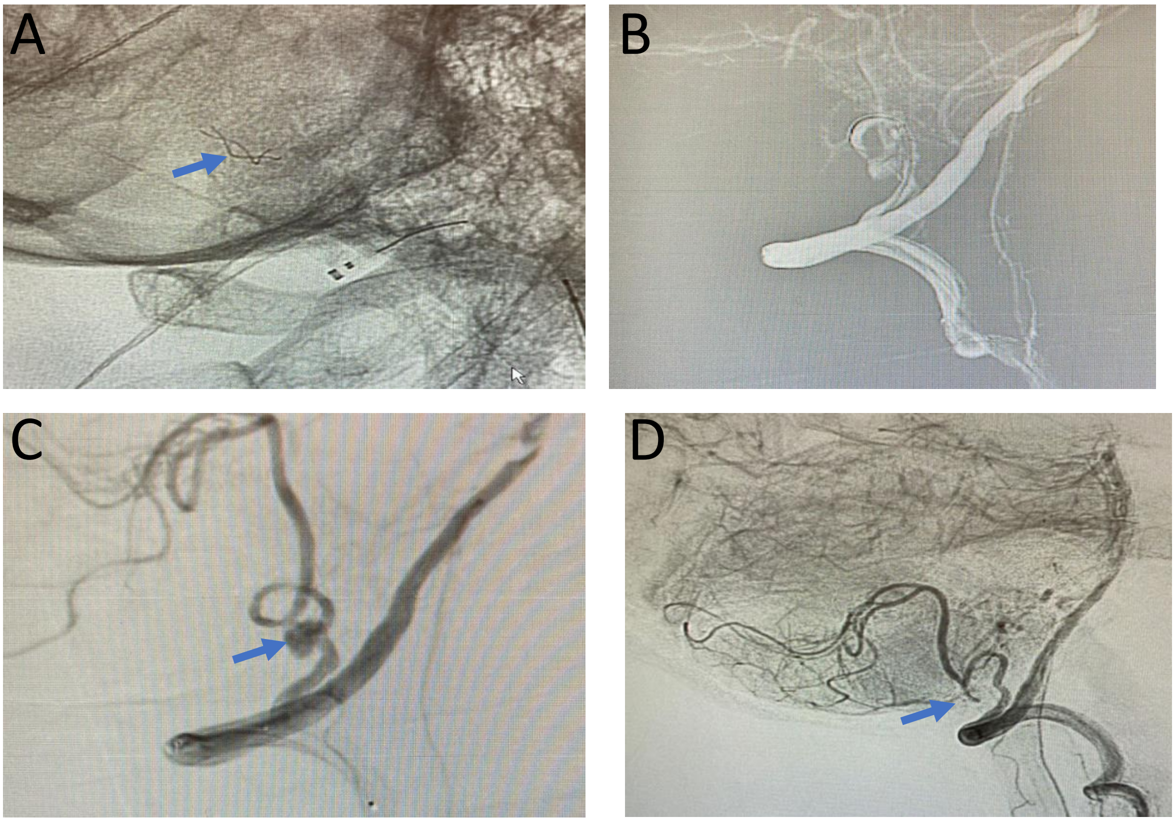

Figure 3: Stenting placement (A), stenting procedure (B), before (C) and post stenting (D).