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Arteriovenous Malformation and Associated Aneurysm in the Territory of AICA: A Rare Incident with a Distinguishable Management Approach

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Learning Objectives

1- be able to describe the unusual pattern/location of cerebrovascular lesion presented in the study.
2- discuss the endovascular intervention used.
3- discuss applied management approach in comparison to other approaches currently available in the literature.

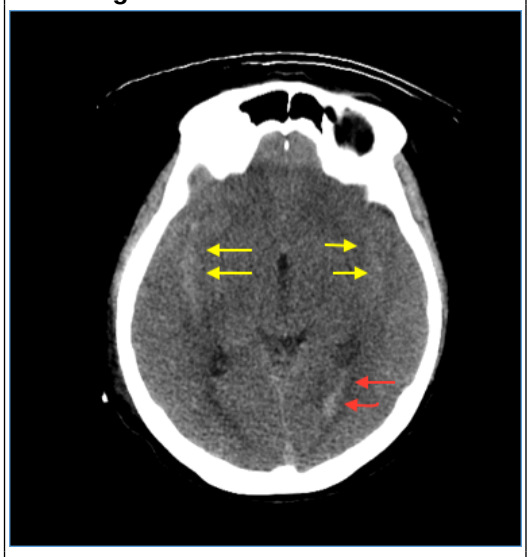
Introduction

Posterior fossa arteriovenous malformations (pAVM) are rare neurovascular lesions that have an increased risk of rupture in comparison to their supratentorial counterparts. They also tend to develop flow-related aneurysms along the course of their main arterial supply, imposing a further risk of bleeding. Most of these vascular lesions were observed in the territory of PICA while the involvement of AICA is extremely rare. Herein, we present an unusual case of a cerebellar AVM supplied by AICA with a proximal aneurysm on the same artery. This specific combination of vascular lesions was described only in four cases previously, with no clear consensus, among the previous studies, about best therapeutic interventions.

Case Presentation:

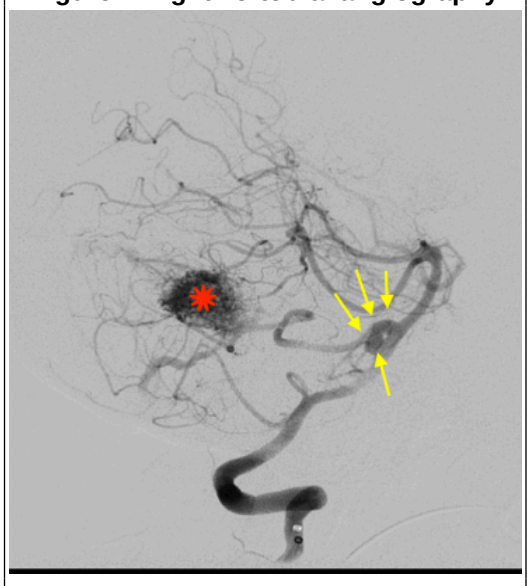
A 59 year old female presented with a compromised level of consciousness following two days of a severe headache and vomiting. A non-enhanced CT revealed SAH with blood seeding into the ventricular system (figure 1). DSA revealed an AVM located on right cerebellar hemisphere (14×20 mm), draining superficially to sigmoid and transverse sinuses (SpitzlerMartin grade II). The arterial supplier was AICA, with a proximal aneurysm (7×3mm). The anurysm was the source of bleeding. (figure2)

figure 1: CT non-enhanced



sulcal effacement and the SAH in both Sylvian fissures (yellow arrows) seeding into ventricular system (red arrows).

Figure2: Right vertebral angiography



Ruptured aneurysm(yellow arrows). AVM(red star)

Approach Considerations:

- **Which lesion to target first?**

The hemodynamic interaction betwen the AVM and an associated pernidal aneurysm would shift the stress to remianing lesion if one of them is oblitrated first. in this case, the priority was given to already ruptured aneurysm to alleviate the risk or rebleeding.

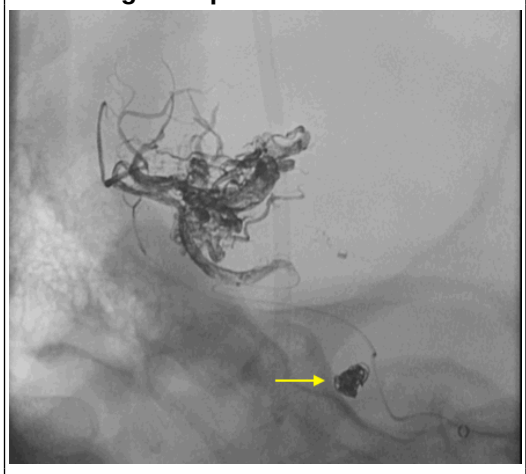
- **To coil or to clip?**

The proximal location of the aneurysm made it more easier to be accessed by endovascular catheter rather than a retrosigmoid craniotomy. Furthermore, endovascular approach can access both lesions and aovids the surgical-related morbidity in such a case of cerebellar edema and impending vasospasm.

Treatment:

Endovascular intervention was decided for this patient. The aneurysm was coiled first, then 70 percent of AVM was obliterated in the same session. The remaining 30 percent was obliterated 6 months later (figure 3). Subsequent angiography confirmed successful resolution of both lesions. The patient maintained uneventful course at 6-month follow up.

figure3: post intervention



coils (yellow arrow) and Onyx in place

Discussion:

The endovascular intervention adopted for this patient was less invasive and associated with a good clinical outcome. In comparison, all previously reported cases with exactly similar lesions were managed surgically, with highly variable outcomes.[1-3] Current literature suggests that lower cranial nerve palsies are common with similarly located lesions, either pre/post intervention. However, the index case maintained normal neurological examination at 6 months follow up. The presented data in this report are aimed to help in the decision -making process for managing such cases until more data are avialable.

References:

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