Angionegative thrombosed middle cerebral artery aneurysm causing embolic phenomenon

Sunil Munakomi, Binod Bhattarai, Iype Cherian

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Case Report: Herein we report a case of an ischemic episode from a thrombosed giant aneurysm which was angiographically occult. We then discuss the management and outcome in a 32-year-old female.

Conclusion: Embolic phenomenon from an angiographically negative giant aneurysm can impose dilemma in the management plan. This differential should always be placed in mind while dealing with lesions in the vascular territory and correct algorithm should be taken in planning the correct therapeutic approach for the same.
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Keywords: Angionegative thrombosed, Giant aneurysm, Emboli, Middle cerebral artery aneurysm, Management

INTRODUCTION

Though spontaneous thrombosis within a giant aneurysm is a fairly common entity [1], the embolic phenomenon through the same and that too in an angiographically occult aneurysm is a rare epiphenomenon. Such a clinical entity would surely spin the head of anyone concerned with the management of the same. Here we report such case and review the management done for the same in a 32-year-old female.

CASE REPORT

A 32-year-old female with no significant past medical or surgical illnesses, presented to our emergency department with sudden onset of weakness on the left half of the body since 1 day duration. There was no history of trauma, transient ischemic attacks, joint pain, photosensitive rashes, shortness of breath, hematuria or chronic medication usage. GCS of the patient was 15/15 and there was left sided hemiparesis of 2/5. Systemic examination was normal. NIHSS score was 4. Contrast computed tomography (CT) scan performed showed oval shaped lesion on the right distal Sylvian region with peripheral rim enhancement and central flow void suggestive of a thrombosed aneurysm. Contrast CT scan of brain showed oval shaped lesion with peripheral enhancement and
central flow void suggestive of thrombosed aneurysm (Figure 1). There was also hypodensities in the right striatal territory indicative of infarction. Magnetic resonance imaging (MRI) scan of brain showed evidence of hypodensities on the right striatal and frontal opercular region (Figure 2). Diagnostic angiography was negative for any obvious aneurysm on the middle cerebral artery (MCA) territory. Diagnostic angiography was negative for suspected right MCA aneurysm (Figure 3). Antinuclear antibody (ANA) and erythrocyte sedimentation rate (ESR) were within normal limit. EKG and ECHO to rule out cardiac cause for embolus was negative. After explaining the disease condition, the risk of further embolic episodes as well as that of rupture, the patient was taken up for surgery. We also detailed the option of flow diverters and thrombolytic therapy had it not been due to giant aneurysm. We harvested the superficial temporal artery (STA) for probable ST-MCA bypass for flow augmentation. Intraoperatively, a giant thrombosed MCA bifurcation aneurysm was seen with multiple perforators encircling its neck. After dissecting the branches from the neck the sac was opened (Figure 4), clot evacuated and clip reconstruction securing the MCA bifurcation branches was done. Clipping of the neck securing the MCA bifurcation (Figure 5). Patency of parent vessels was confirmed with intraoperative indocyanine green (ICG) study (Figure 6). Encephalo-myo-arterio-synangiosis was also done. Postoperative computed tomography scan of brain showed no evidence of vasospasm (Figure 7). Postoperative period was uneventful and the hemiparesis improved to 4/5.

**DISCUSSION**

Intra aneurysmal thrombosis has been reported to occur in around 50% of the cases with giant aneurysm [2, 3]. This was first described by Lyell [4] during an autopsy study. The most important factor contributing to the development of the thrombosis is the critical ratio between the aneurismal volume and its neck size [5]. While some argue that the lattice-like armor of the thrombus provides the protection against the rupture [6, 7], others argue that due to vortex flow pattern, there are areas of endothelial damage alternating with the fibrocalcified areas that may be the nidus for rupture [8, 9].

The incidence of thromboembolic phenomenon from a thrombosed aneurysm has been reported to be in the range of 5–59% [10–13]. Another risk can be parent vessel occlusion.

The hallmark of the entity is the disparity in the size of the lesions in the CT scan and angiography [14–16]. Others features are target sign, Peripheral rim enhancement and calcification of the wall [17, 18].

The management of the condition varies from observation, clipping, thrombectomy, clip reconstruction and trapping after bypass. Lawton et al. [19] have described a new classification scheme with type specific
treatment strategy. They proposed that the best result was after clipping. If the neck is not clippable, then the best approach would be bypass and aneurismal occlusion. Postoperative period can also be complicated by the Coandă effect [20] and also the vasospasm.

CONCLUSION

To conclude these subsets of aneurysm are extremely difficult to treat and remains an enigma. Detailed preoperative planning is the key to success. This case was unique in the sense that the angiography was normal and also there was embolic phenomenon observed. The effect could be due to mass effect of a giant aneurysm or of a emboli from the clot within the sac.
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Sunil Munakomi – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
Binod Bhattarai – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published
Iype Cherian – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor
The corresponding author is the guarantor of submission.

Conflict of Interest
Authors declare no conflict of interest.

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