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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

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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

Sunil Munakomi¹, Binod Bhattarai², Iype Cherian³

Affiliations: ¹MCh Resident, Department of Neurosurgery, College of Medical Sciences, Bharatpur, Nepal; ²Associate Professor, Department of Neurosurgery, College of Medical Sciences, Bharatpur, Nepal; ³Head of the Department, Department of Neurosurgery, College of Medical Sciences, Bharatpur, Nepal.

Corresponding Author: Sunil Munakomi, MCh Resident, Department of Neurosurgery, College of Medical Sciences, Bharatpur, Nepal; E-mail: sunilmunakomi@gmail.com

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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 aneurysmal 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 fibro-calcified 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

Figure 1: Contrast computed tomography scan of brain showing oval shaped lesion with peripheral enhancement and flow void suggestive of thrombosed aneurysm.

Figure 2: Magnetic resonance imaging scan of brain showing evidence of right sided posterior striatal infarction and frontal opercular hypodensities.

Figure 3: Diagnostic angiography was negative for middle cerebral artery aneurysm.

Figure 4: Opening of the thrombosed aneurysmal sac.

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 aneurysmal 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.

Figure 5: Clipping of the middle cerebral artery aneurysm securing the bifurcating branches.

Figure 6: Intraoperative indocyanine study showing patency of the parent vessels.

Figure 7: Postoperative computed tomography scan of brain showing no evidence of vasospasm.

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Author Contributions

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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REFERENCES

1. Whittle IR, Dorsch NW, Besser M. Spontaneous thrombosis in giant intracranial aneurysms. *J Neurol Neurosurg Psychiatry* 1982 Nov;45(11):1040–7.
2. Whittle IR, Williams DB, Halmagyi GM, Besser M. Spontaneous thrombosis of a giant intracranial aneurysm and ipsilateral internal carotid artery. Case report. *J Neurosurg* 1982 Feb;56(2):287–9.
3. Schubiger O, Valavanis A, Hayek J. Computed tomography in cerebral aneurysms with special emphasis on giant intracranial aneurysms. *J Comput Assist Tomogr* 1980 Feb;4(1):24–32.
4. Lyell A. Large aneurysm of the circle of Willis with cure by spontaneous thrombosis. *Br Med J* 1936;2:282.
5. Black SP, German WJ. Observations on the relationship between the volume and the size of the orifice of experimental aneurysms. *J Neurosurg* 1960 Nov;17:984–90.
6. Sadik AR, Buzilovich GN, Shulman K. Giant aneurysm of middle cerebral artery : A case report. *J Neurosurg* 1965 Feb;22:177–81.
7. Jain KK. Surgery for intracranial berry aneurysm: a review. *Can J Surg* 1965 Apr;8:172–87.
8. Drake CG. Giant intracranial aneurysms: experience with surgical treatment in 174 patients. *Clin Neurosurg* 1979;26:12–95.
9. Hosobuchi Y. Direct surgical treatment of giant intracranial aneurysms. *J Neurosurg* 1979 Dec;51(6):743–56.
10. Sutherland GR, King ME, Peerless SJ, Vezina WC, Brown GW, Chamberlain MJ. Platelet interaction within giant intracranial aneurysms. *J Neurosurg* 1982 Jan;56(1):53–61.
11. Sakaki T, Kinugawa K, Tanigake T, Miyamoto S, Kyoji K, Utsumi S. Embolism from intracranial aneurysms. *J Neurosurg* 1980 Sep;53(3):300–4.
12. Auld AW, Shafey S. Transient ischemic attacks not produced by extracranial vascular disease: a plea for complete and early angiographic investigation. *South Med J* 1976 Jun;69(6):722–4.
13. Mehdorn HM, Chater NL, Townsend JJ, Darroch JD, Perkins RK, Lager R. Giant aneurysm and cerebral ischemia. *Surg Neurol* 1980 Jan;13(1):49–57.
14. Schubiger O, Valavanis A, Hayek J. Computed tomography in cerebral aneurysms with special emphasis on giant intracranial aneurysms. *J Comput Assist Tomogr* 1980 Feb;4(1):24–32.
15. O'Neill M, Hope T, Thomson G. Giant intracranial aneurysms: diagnosis with special reference to computerised tomography. *Clin Radiol* 1980 Jan;31(1):27–39.
16. Golding R, Peatfield RC, Shawdon HH, Rice Edwards JM. Computer tomographic features of giant intracranial aneurysms. *Clin Radiol* 1980 Jan;31(1):41–8.
17. Fodstad H, Liliequist B, Wirell S, Nilsson PE, Boquist L, Abdul-Rahman A. Giant serpentine intracranial aneurysm after carotid ligation. Case report. *J Neurosurg* 1978 Dec;49(6):903–9.

18. Segal HD, McLaurin RL. Giant serpentine aneurysm. Report of two cases. J Neurosurg 1977 Jan;46(1):115–20.
19. Lawton MT, Quiñones-Hinojosa A, Chang EF, Yu T. Thrombotic intracranial aneurysms: classification scheme and management strategies in 68 patients. Neurosurgery 2005 Mar;56(3):441-54; discussion 441–54.
20. Robinson JL, Roberts A. Operative treatment of aneurysms and Coanda effect: a working hypothesis. J Neurol Neurosurg Psychiatry 1972 Dec;35(6):804–9.

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