Distal Anterior Choroidal Artery Dissecting Aneurysm Presenting as Ischemic Stroke— Imaging and Management

Sir,

Anterior choroidal artery (AChA) aneurysms comprise around 2–5% of all aneurysms.[1] Most of them originate from AChA and are of saccular variety. Distal AChA aneurysms are rare. Most of the distal aneurysms present with hemorrhage and very few cases are reported with ischemic stroke. These aneurysms present a distinctive therapeutic challenge in view of the high density of perforators, supply to an extremely eloquent area, and small size of the artery. We present a rare case of a distal AChA aneurysm with sequential imaging suggestive of a dissecting nature and discuss the imaging and management issues.

CASE REPORT

A male patient in his youth presented to an outside facility with sudden onset right hemiparesis. Magnetic resonance imaging (MRI) of the brain revealed a diffusion restriction in the posterior limb of the internal capsule with a well-defined, oval lesion in the left medial temporal lobe. It was isointense on T1 weighted and hypointense on T2 weighted images, had avid enhancement on post-gadolinium images, and exhibited blooming on gradient sequence.

The lesion was initially diagnosed as neurocysticercosis and was treated with antiepileptics. Follow-up MRI brain after six months revealed an enlarging lesion along the medial temporal lobe which was hyperintense with central hypointense on T1 weighted, hyperintense on T2 weighted images, and blooming on gradient sequence which was consistent with blood components [Figure 1]. Cerebral angiogram and 3D angiogram with angioCT revealed a broad-base left AChA aneurysm distal to the plexal point suggestive of a partially thrombosed dissecting aneurysm.
Occlusion of the parent vessel was planned. The procedure was performed under general anesthesia. A microcatheter headway due 1.6F (Microvention-Terumo, Tustin, CA, USA) was navigated over a microguide wire mirage 0.008 (ev3 Inc., Irvine, California, USA). Aneurysm along with short proximal arterial segment was occluded with detachable coils (Target coils - 1.5 × 2 and 1 × 2 mm: Stryker neurovascular) [Figure 2]. The patient was extubated with no neurological deficit. He was started on anticoagulation for two days followed by aspirin (75 mg) for six weeks. Follow up MRI brain at nine and 18 months showed near-complete resolution of the aneurysmal mass with no evidence of new ischemic focus.

**Discussion**

Distal AChA aneurysms usually present as medial temporal hematoma with intraventricular hemorrhage.[2] Dissecting AChA aneurysm are very rare. At present, there exists a dearth of published data in the literature regarding detailed imaging (MRI, DSA, and vasoCT) and endovascular treatment of AChA dissecting aneurysms.

A dissecting AChA aneurysm presenting as an ischemic stroke is a rare entity and to our knowledge, only three cases have been reported. Lewis et al. postulated that either an intraaneurysmal thrombus may have predisposed to the ischemic event or stroke because of stenosis and poststenotic dilatation may have led to aneurysm formation.[3] The dissecting aneurysm usually presents as a perforator infarct or thrombus causing large vessel occlusion leading to stroke.

In the current literature, three cases of AChA aneurysms presenting with stroke have been published.[3-5] [Table 1]

| No. | Age (years) | Sex | Clinical Features | Imaging | DSA | Treatment | Follow up |
|-----|-------------|-----|------------------|---------|-----|-----------|-----------|
| 1   | 33          | Male| Seizure          | Acute infarct in posterior limb of internal capsule | 3×3 mm aneurysm about one third of the way out from origin of ACHA | Conservative | Definite reduction in aneurysm diameter |
| 2   | 42          | Male| Right hemiparesis and dysarthria | A small low-density area in the posterior limb of internal capsule | Aneurysmal dilatation and stasis of dye in venous phase at anterior choroidal artery | Anticoagulation | Disappeared four months later |
| 3   | 9           | Male| Right hemiparesis, dysarthria, and urinary incontinence | Acute infarct in left globus pallidus | Partially thrombosed aneurysm in left choroidal artery | Surgical clipping | No residual aneurysm |

Figure 1: (a-c) Well-defined, T2 hypointense, avidly enhancing lesion in the left medial temporal lobe with diffusion restriction in the posterior limb of internal capsule. (d-f) MRI after 6 months showing enhancing surface lesion along the medial temporal lobe in proximity to the perimesencephalic cistern which was hyperintense on T2 weighted images with blooming
In our case, in the first MRI, the presence of small infarcts associated with enhancing lesions could have been used as an indication for a detailed neurovascular study. The best imaging modality to diagnose a dissecting aneurysm requires a DSA or CT angiography as it can be missed on routine MR imaging. A follow-up MRI brain at six months revealed an enlarging enhancing lesion consistent with the presence of blood components. DSA revealed a left AChA partially thrombosed dissecting aneurysm with circumferential arterial involvement. Although unusual, an enlarging surface lesion in the medial temporal lobe showing avid enhancement with ischemia in AChA territory should always raise the possibility of a dissecting pseudoaneurysm.

Endovascular treatment of dissecting aneurysms involves either parent artery occlusion (destructive) or arterial conservative approach involving luminal reconstruction using stents or flow diverters. The small size of AChA aneurysms precludes the latter treatment. High-density perforators along the proximal aspect of AChA make it mandatory to occlude the artery beyond the plexus point. Marincovic et al. pointed out that, embolization beyond the plexal point is safe as the main branches arise before that point. For short segmental occlusion of distal AChA, small-profile microcatheters with ultrasoft small coils were used. He had no further ischemic manifestation with significant shrinkage of the lesion on follow-up MRI.

**Conclusion**

Dissecting distal AChA aneurysm is a rare entity. The pattern of ischemia involving anterior choroidal artery infarct with partially thrombosed dissecting aneurysm can help in diagnosing dissecting aneurysm. Using low-profile catheters for short segmental occlusion beyond the plexal point is a safe and effective treatment in this case.

**Ethics committee approval**

Consent for publication of this case report was obtained from both patients and also approval from the Ethical Committee of Artemis Hospital, Gurgaon.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

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Letters to the Editor

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Submitted: 26-Nov-2020  Revised: 11-Dec-2020  Accepted: 14-Dec-2020

Published: 05-Mar-2021

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DOI: 10.4103/aian.AIAN_1202_20