Intracranial Dural Arteriovenous Fistula Presenting with Isolated Astereopsis

Tanushree Chawla, Anshu Mahajan[1], Gaurav Goel[1], Vinay Goyal

Departments of Neurology, [1]Neurointervention Surgery, Institute of Neurosciences, Medanta, The Medicity, Gurugram, Haryana, India

This 29-year-old male, without any comorbidities, presented with abnormal depth perception for 2 years. There was no history of headaches or any local eye symptoms or constitutional symptoms. On examination, he had an enlarged blind spot bilaterally without any other positive neurological sign. Optical coherence tomography showed progressive thinning of the retinal fiber layer (RFL) bilaterally. Magnetic resonance imaging (MRI) of the brain showed dilated tortuous vascular channels [Figure 1a and b] suggestive of an arteriovenous malformation. Digital subtraction angiography (DSA) confirmed the presence of a superior sagittal sinus (SSS) DAVF [Figure 1c].

Embolization was done in two settings, resulting in complete occlusion of the DAVF. The patient improved symptomatically.

Intracranial SSS DAVFs are rare and constitute 8% of all intracranial DAVFs.[1] SSS dAVFs commonly present with intracranial hemorrhage, cognitive impairment, headaches with diplopia or tinnitus, chemosis, proptosis, gait ataxia, and paraparesis. Symptoms are secondary to either the arterial steal phenomenon, rupture of the fragile blood vessels, or venous hypertension. Isolated astereopsis has not been described in the literature. Patients' symptoms were suspected to be consequential to venous congestion secondary to the DAVF leading to ischemia of the RFL.

The bilateral/unilateral middle meningeal artery is the most important and common feeding artery, followed by the occipital or superior temporal artery. Rarely, pial supply from the cerebral arteries can also be involved.[2]

MRI shows dilated cortical veins without a parenchymal nidus, thickened dural leaflet, hypertrophied pachymeningeal arteries, dilated, tortuous, variceal venous channels, and thrombosed or stenosed dural venous sinus.[3]

Endovascular therapy (transarterial/transvenous embolization or a combination) is the first line of treatment for SSS

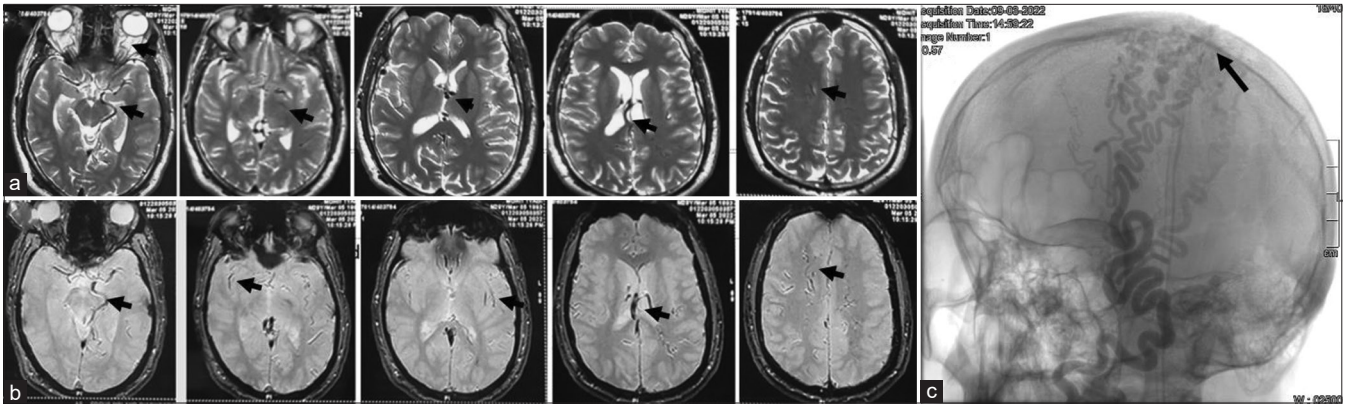

Figure 1: MRI of the brain (a) T2 weighted images (b) FLAIR images) revealed multiple dilated tortuous vascular channels (black arrows) with preserved flow voids in the subependymal region of both lateral ventricles along the frontal and parietal sulci bilaterally, the left ambient cistern, and the right temporal convexity. Dilated right superior ophthalmic vein with a prominence of the left superior arrow). (c) DSA revealed dural Arteriovenous Fistula (dAVF) at the level of the superior sagittal sinus (SSS) (black DSA revealed dAVF at the SSS with feeders from bilateral occipital, middle meningeal, and superior temporal arteries draining into large multiple dilated venous channels, which in turn drain into the SSS, predominantly the right transverse and sigmoid sinus

DAVFs. Microsurgery or stereotactic radiosurgery are not preferred.[2]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

References

1. Maruyama K, Shin M, Kurita H, Tago M, Kirino T. Stereotactic radiosurgery for dural arteriovenous fistula involving the superior sagittal sinus. Case report. J Neurosurg 2002;97:481-3.
2. Hou K, Ji T, Guo Y, Xu B, Xu K, Yu J. Current status of endovascular treatment for dural arteriovenous fistulas in the superior sagittal sinus region: A systematic review of the literature. World Neurosurg 2019;122:133-43.
3. Gupta AK, Periakaruppan AL. Intracranial dural arteriovenous fistulas: A review. Indian J Radiol Imaging 2009;19:43-8.

Address for correspondence: Dr. Vinay Goyal,
Room No. 11, 6th Floor Institute of Neurosciences,
Medanta, The Medicity, Sector 38, Gurugram, Haryana, India.
E-mail: drvinaygoyal@gmail.com

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