IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 24, Issue 8 Ser. 5 (August. 2025), PP 40-42
www.iosrjournals.org

Developmental Venous Anomaly Of The Cerebellar Hemisphere: A Case Report And Literature Review

Monsif Salek[1], Aymane Bijbij[2], Habib Belamlih[3], Soufiane Belabbes[4], Taoufik Africha[5]

Department Of Diagnostic And Interventional Radiology, Military Hospital Of Meknès, Hassan II University Hospital, Fez, Morocco
Faculty Of Medicine And Pharmacy, Sidi Mohamed Ben Abdellah University, Fez, Morocco
Department Of Diagnostic And Interventional Radiology, Moulay Ismail Military Hospital, Meknes, Morocco.
Faculty Of Medicine, Pharmacy And Dentistry, Sidi Mohamed Ben Abdellah University, Fes, Morocco

Date of Submission: 12-08-2025 Date of Acceptance: 22-08-2025

I. Introduction

Developmental venous anomalies (DVAs), also referred to as venous angiomas, represent congenital variants of cerebral venous drainage and account for up to 60% of all cerebral vascular malformations [1]. They are usually discovered incidentally during neuroimaging performed for unrelated reasons. Histologically, DVAs are characterized by dilated medullary veins converging into a central collector vein, which drains into either superficial or deep venous systems.

The classic **"caput medusae"** appearance on contrast-enhanced MRI or MR venography is highly characteristic. While most DVAs occur in the supratentorial white matter, infratentorial locations, particularly the cerebellar hemispheres, have been reported in only a small proportion of cases [2].

We report an isolated hemispheric cerebellar DVA without associated cavernous malformation, with emphasis on its imaging features and a review of comparable cases in the literature.

II. Case Presentation

A 55-year-old male patient underwent brain MRI for evaluation of headache. Neurological examination was unremarkable.

MRI revealed, within the left cerebellar hemisphere, a cluster of radially oriented medullary veins converging toward a single, enlarged collector vein draining into the left petrosal vein. On axial and coronal post-contrast T1-weighted sequences, these veins exhibited marked enhancement, creating the classic **"caput medusae"** pattern (Figure 1, 2). No associated cavernous malformation, parenchymal signal abnormality, or mass effect was identified.

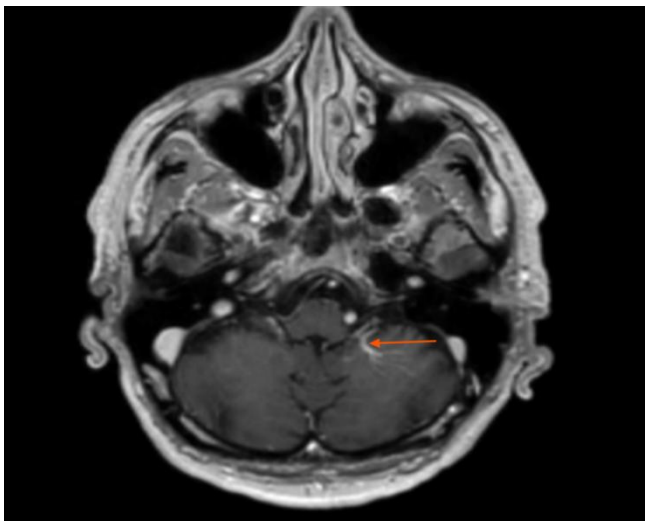

Figure 1 Left cerebellar T1 branching flow voids with vivid enhancement converge in a single vessel in a caput medusae pattern

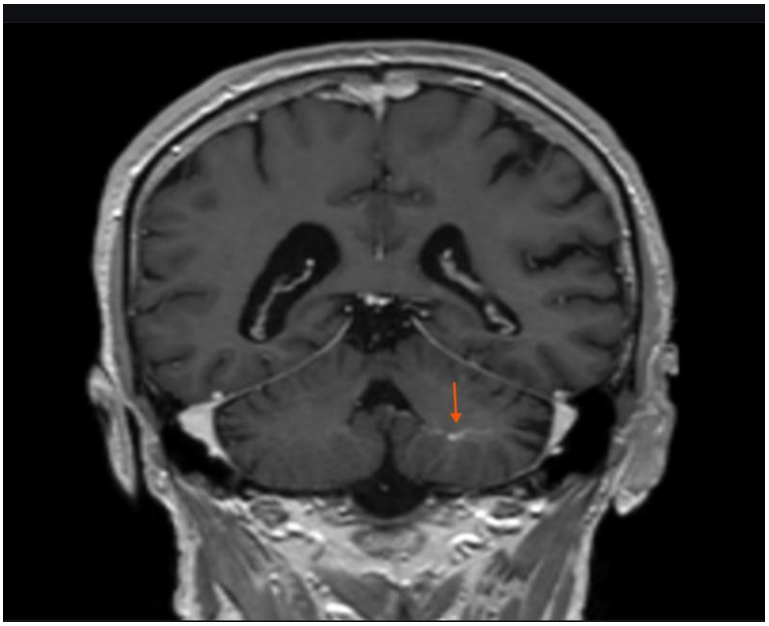

Figure 2 Left cerebellar T1 coronal view showing branching flow voids with vivid enhancement converge in a single vessel in a caput medusae pattern

Magnetic resonance venography confirmed the abnormal venous convergence and drainage pathway. No arterial component was observed. The patient remained asymptomatic, and no intervention was undertaken.

III. Discussion

DVAs are generally considered benign anatomic variants of venous drainage rather than true vascular malformations [3]. Their pathogenesis is attributed to compensatory venous development secondary to aplasia, hypoplasia, or occlusion of normal venous pathways during embryogenesis [4].

Infratentorial DVAs account for approximately 15–30% of all DVAs [5], with the cerebellar hemisphere being a relatively rare site. In our case, the lesion was hemispheric, draining into the [transverse/sigmoid] sinus without any associated cavernous malformation—an association reported in up to 20–30% of DVAs and often responsible for clinical symptoms such as hemorrhage [6]. The absence of such an association supports the benign nature and incidental discovery in our patient.

The imaging hallmark of DVA is the **"caput medusae"** pattern: multiple small medullary veins radiating toward a central dilated vein. On MRI, these vessels are best visualized on post-contrast T1-weighted images, susceptibility-weighted imaging (SWI), and MR venography. In our case, the post-contrast sequences provided optimal visualization of the venous architecture.

Comparison with literature:

- Hon et al. [7] described two cases of cerebellar DVAs presenting with vertigo, both associated with cavernous malformations.
- San Millán Ruíz et al. [8] reported that cerebellar DVAs are more often asymptomatic unless associated with hemorrhagic lesions.
- McLaughlin et al. [9] emphasized that most infratentorial DVAs, especially those without associated lesions, remain clinically silent and require no treatment.

Our case is consistent with these findings, highlighting that isolated cerebellar DVAs are typically incidental and benign.

IV. Conclusion

We present an uncommon case of a hemispheric cerebellar developmental venous anomaly without associated cavernous malformation, exhibiting the classic "caput medusae" appearance on MRI. Recognition of this imaging pattern is essential to avoid misdiagnosis and unnecessary intervention. Long-term prognosis is excellent in the absence of associated lesions or complications

References

[1] San Millán Ruíz D, Et Al. The Developmental Venous Anomaly: A Benign Entity With A Potential For Hemorrhage? AJNR Am J Neuroradiol. 2002;23(3):450–456.

[2] Lee C, Et Al. Cerebellar Developmental Venous Anomalies: MR Findings In 10 Cases. Neuroradiology. 1996;38(6):546–550.
[3] Rigamonti D, Et Al. The Natural History Of Developmental Venous Anomalies. Radiology. 1989;172(2):433–435.
[4] Lasjaunias P, Et Al. Developmental Venous Anomalies (DVA): Benign Venous Lesions With A Potential For Hemorrhage. Neuroradiology. 2000;42(9):505–512.
[5] Kwon BJ, Et Al. Cerebellar Developmental Venous Anomalies: Imaging Features And Clinical Significance. Eur Radiol. 2007;17(6):1495–1503.
[6] Ayanzen RH, Et Al. Cerebral MR Venography: Normal Anatomy And Potential Diagnostic Pitfalls. AJNR Am J Neuroradiol. 2000;21(1):74–78.
[7] Hon JM, Et Al. Cerebellar Developmental Venous Anomaly Associated With Cavernous Malformation: Report Of Two Cases. Neuroradiology. 1999;41(3):212–215.
[8] San Millán Ruíz D, Et Al. Cerebellar Venous Angiomas: MR Features And Clinical Implications. Neuroradiology. 1999;41(10):756–762.
[9] Mclaughlin MR, Et Al. The Natural History Of Developmental Venous Anomalies. J Neurosurg. 1998;89(4):391–395.