Teaching NeuroImages: MRI Abnormalities of Spinal Dural Arteriovenous Fistula in the Absence of Flow Voids

Andre Miguel Miranda, MD PHD¹; Marta Gomes Rodrigues, MD¹; Andre Araujo, MD¹; Manuel Queiros Ribeiro, MD¹; Henrique Costa, MD²; Sergio Castro, MD¹

Corresponding Author:
Sergio Castro
snacastro@gmail.com

Affiliation Information for All Authors:
1. Department of Imagiology, Neuroradiology Unit, Centro Hospitalar Vila Nova de Gaia/Espinho, Vila Nova de Gaia, Portugal; 2. Department of Neurology, Centro Hospitalar de Vila Nova de Gaia/Espinho EPE, Vila Nova de Gaia, Portugal

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Andre Miguel Miranda: Drafting/revision of the manuscript for content, including medical writing for content; Major role in the acquisition of data; Analysis or interpretation of data
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Andre Araujo: Drafting/revision of the manuscript for content, including medical writing for content
Manuel Queiros Ribeiro: Drafting/revision of the manuscript for content, including medical writing for content; Major role in the acquisition of data; Analysis or interpretation of data
Henrique Costa: Drafting/revision of the manuscript for content, including medical writing for content; Major role in the acquisition of data; Analysis or interpretation of data
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A 66-year-old woman presented with progressive spastic paraplegia and lumbar pain. Physical examination revealed hyperreflexia in lower extremities, reduced pinprick and vibration up to T12 and impaired hallux proprioception. Spinal MRI revealed multilevel centromedullary T2 hyperintensity and diffuse contrast enhancement except for abrupt intralesional segment (missing-piece).

Unremarkable blood and CSF workup and persistent imaging findings at 6-month follow-up prompted selective angiography, which confirmed a spinal dural arteriovenous fistula (sDAVF) at L1. Successful endovascular embolization improved imaging and functional status. In the appropriate clinical scenario, absence of flow-voids does not exclude sDAVFs. The unique missing-piece enhancement pattern may expedite differential diagnosis.

Teaching Slides-http://links.lww.com/WNL/B375

References

Figure 1 – Title: MRI assessment of progressive myelopathy.

T1WI (A) demonstrates isointense conus medullaris. T2WI (B) reveals diffuse multilevel hyperintensity from D7-L1 with hypointense signal at D11-D12. No prominent tortuous flow-voids are present. Post-gadolinium T1WI (C) shows diffuse contrast enhancement with abrupt isointense segment (missing-piece sign) (arrowhead). Axial T2WI (D) shows centromedullary hyperintensity.

Figure 2 – Title: Angiographic diagnosis of spinal dural arteriovenous fistula.

MR angiography (A) reveals dorsal subarachnoid vascular conglomerate. Selective angiogram (B) shows spinal dural arteriovenous fistula at left L1 level (arrowhead) and engorged ascending perimedullary vein (black arrowhead). Endovascular embolization was successful (C, arrowhead) and decreased spontaneous spinal T2 hyperintensity (D).
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