

Combined treatment for a hemispheric cerebellar AVM

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Posterior fossa arteriovenous malformations (AVMs) can be a challenging disease, especially those large in size. AVMs can be treated with a combination of endovascular treatment and microsurgery. Here, the authors present the case of a 16-year-old female patient with progressive dizziness and episodic syncope. The workup of the patient showed a hemispheric cerebellar AVM, Spetzler-Martin grade IV. She underwent combined treatment (endovascular and microsurgery) with no complications and cure of the malformation.

The video can be found here: https://youtu.be/rNw_Kyd76Mg

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KEYWORDS cerebellar AVM; arteriovenous malformation; endovascular treatment; microsurgical treatment

Transcript

0:22 Clinical Presentation. This is a case of a 16-year-old female patient who presented progressive dizziness and episodic syncope.

0:28 Radiological Findings. Further MRI investigation showed a diffuse left paramedian Spetzler-Martin grade IV cerebellar AVM,¹ associated to a large vein of drainage.

The digital angiography demonstrated the main arterial feeders from the enlarged left PICA, which presented some aneurysms along its distal part. The right vermian branch arises from the left PICA.² There were several intranidal fistulas. The venous drainage was toward the great vein of Galen and the tentorial sinuses.³

1:06 Endovascular Treatment. She was submitted to three preoperative sections of embolization with the embolic liquid PHIL, with near-total occlusion of the AVM, remaining only a partial portion on the tentorial surface. This is the final endovascular treatment cast.

PHIL is a novel liquid embolic agent composed of a nonadhesive copolymer dissolved in DMSO with an iodine component. The potential advantages of PHIL are faster

plug formation, more consistent visibility, fewer artifacts in postinterventional imaging, lower volumes required of liquid agent embolic. Considering these peculiarities in our present case, the extensive nidus represents a good indication for PHIL use, as an embolic agent.

1:59 Positioning and Opening Technique. The patient was operated in a semisitting position, and a wide far-lateral approach was performed.⁴

2:06 Corticectomy and Dissection of the AVM. After dural opening, microsurgical corticectomy was started laterally to the AVM, and then surrounding the nidus. Now we see the left and right PICA with the differences between them caused by the embolic agent.

The inferior part of the AVM included the left cerebellar tonsil, and the previously tonsillomedullary and telovelotonsillar segments of PICA⁵ were cut. Because of this embolic material, PHIL, the dissection of the AVM became easier, and the soft consistency of the cast facilitate the dissection.

The dissection continues in the superior part of the AVM, at the tentorial surface of the cerebellum, once there are located the drainage veins.⁶

The anterior aspect of the AVM was then dissected⁷ and

the fourth ventricle cavity exposed. Choroidal branches, feeders, and the left vermian branch be coming from the right PICA were found and cut, and the AVM was finally removed.

This is the final surgical cavity and the measure of the AVM.

4:06 Postoperative Images and Final Considerations. Postoperative MRI showed no residual nidus and preserved medullary parenchyma. The digital angiography confirmed the complete resection. The patient was discharged with no deficits.

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Disclosures

The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this publication.

Author Contributions

Primary surgeon: Chaddad-Neto. Assistant surgeon: de Campos Filho. Editing and drafting the video and abstract: Silva da Costa, Loof de Amorim, Wainberg, Paz-Archila, Lessa, Bustamante Vargas, Campos. Critically revising the work: Silva da Costa, Bocca, Chaddad-Neto. Reviewed submitted version of the work: Silva da Costa, Bocca, Chaddad-Neto. Approved the final version of the work on behalf of all authors: Silva da Costa. Supervision: Silva da Costa, Chaddad-Neto.

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