ENDOVASCULAR MANAGEMENT OF CRANIOSPINAL JUNCTION ARTERIOVENOUS FISTULA: CASE REPORT

Manejo endovascular de fístula arteriovenosa de unión cráneo espinal: Reporte de caso

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ABSTRACT

Introduction: Craniocervical arteriovenous fistulas are rare entities. A high index of suspicious is required for its diagnosis. Surgery, embolization or both are available treatments.
Clinical case: Herein, we present the case of a young woman who presented with syncope. Additional studies revealed the presence of a craniocervical junction AVF. Endovascular treatment was performed in two opportunities achieving the obliteration of the fistulous communication.
Conclusion: Embolization is a safe and feasible treatment in cases of craniospinal AVFs, with good clinical and radiological results.

Keywords: *Arteriovenous Fistula, Embolization, Therapeutic, Foramen Magnum. (source: MeSH NLM)*

RESUMEN

Introducción: Las fístulas cráneo espinales son entidades raras. Un alto índice de sospecha se requiere para su diagnóstico. La cirugía, embolización o ambas son tratamientos disponibles.
Caso clínico: Presentamos el caso de una mujer joven que presentó síncope. Estudios adicionales revelaron la presencia de una fístula arteriovenosa de la unión cráneo cervical. El tratamiento endovascular se realizó en dos oportunidades consiguiendo el cierre del agujero fistuloso.
Conclusión: La embolización es un tratamiento seguro y factible en casos de fístulas cráneo espinales, con buenos resultados clínicos y radiológicos.

Palabras Clave*: Fístula Arteriovenosa, Embolización Terapéutica, Foramen Magno. (fuente: DeCS Bireme)*

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Craniospinal arteriovenous fistulas (AVF) are a group of complex and rare lesions (1-2% of cranial or spinal AVF). Are defined as an anomalous communication among a dural, pial or radicular artery and a radicular vein between the foramen magnum and C2.

Craniospinal AVF have different clinical presentations: subarachnoid hemorrhage (SAH), myelopathy, brain stem syndrome, radiculopathy and cranial nerve palsy. Furthermore, they are more prone to bleed. It is reported that around a 37% to more than 60% of patients present SAH. Ten percent of patients present aneurysms in feeding arteries and up to 10% present intramedular hemorrhage.[1,2]

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CLINICAL CASE

History and examination: Previously healthy 26 year-old woman, brain and cervical magnetic resonance imaging (MRI) is performed because of syncope (Figure 1), revealing a probable vascular malformation. A digital subtraction angiography (DSA) revealed a craniospinal arteriovenous fistula with feeding vessels originating from the posterior spinal arteries of the V4 segment bilaterally. It was classified as a type V fistula (perimedular AVF) according to Hiramatsu classification (Figure 2).

Treatment: In the first embolization, Envoy 6F catheter, Headway Duo microcatheter and Hybrid 007 microwire were used to navigate through the right feeding artery, when reaching the fistula we could observe a small arterial aneurysm, so we decided to perform embolization with Squid 18 achieving a successful obliteration of the feeder (Figure 3 & 4).

In the second embolization, after 5 months, we used Envoy 6F catheter, Sonic detachable tip microcatheter an Hybrid 007 microwire, we navigated through the posterior spinal artery originating from the left V4, which is also associated with an aneurysm. We decided to perform embolization with Squid 18 and the fistulous communication was occluded (Figures 5 & 6).

At the end of this procedure occlusion of the AVF was achieved, with discrete remnant originating from the left posterior inferior cerebellar artery (PICA). After the second procedure, the patient developed transient mild hemiparesis.

Clinical Evolution: The patient evolved favorably in the postoperative period and was discharged 5 days later.

DISCUSSION

Craniospinal AVF possess unique features, and because of this, were classified in 2008 by Geibprasert according to their embriological origin in 3 types: ventral, dorsal and lateral [3]. Recently in 2017, Hiramatsu [1] details the angio-architecture in a cohort of 54 patients with craniospinal AVF and defines 5 types: I: dural AVF, II: radicular AVF, II: epidural with pial feeders AVF, IV: no pial feeders AVF and V: pial AVF.

The diagnosis is based on imaging studies and the DSA is the gold standard, also are of utility the brain computed tomography (CT) (sensibility 80%) and MRI (sensibility 90%).[4]

Treatment in this lesions can be surgery, endovascular or a combination of both: the main objective is to occlude the fistulous communication. Endovascular treatment was used more frequently (67%) in Hiramatsu type V, as in the reported case [1].

One of the limitations of endovascular treatment is the repermeabilization of the lesion (44% of cases). Case reports about surgical treatment describe minimum recurrence (2% of cases). [5]

CONCLUSION

As reported in the literature, the experience at our center supports endovascular management of complex craniospinal AVFs because of encouraging results: clinical and radiological. Is mandatory to perform a control angiogram with the aim to prove if long term treatment is still effective.

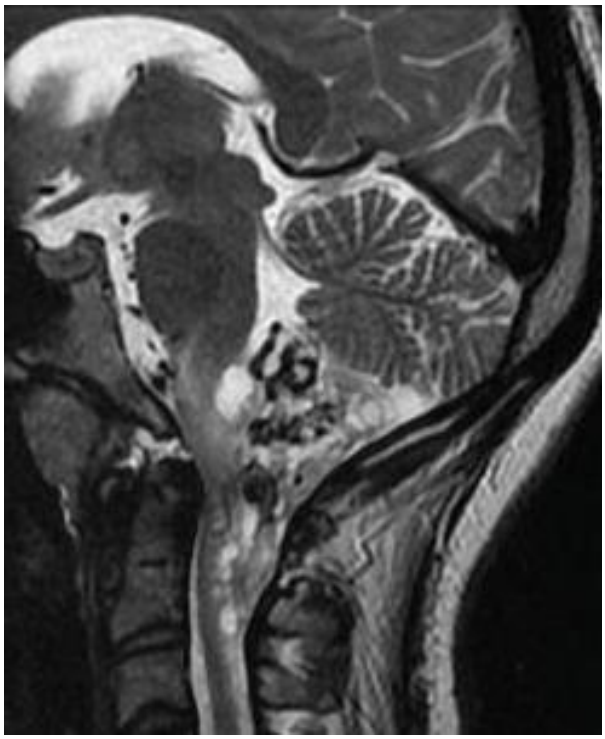

Fig 1. T2 brain MRI shows a dorsal perimedular craniocervical arteriovenous fistula (AVF).

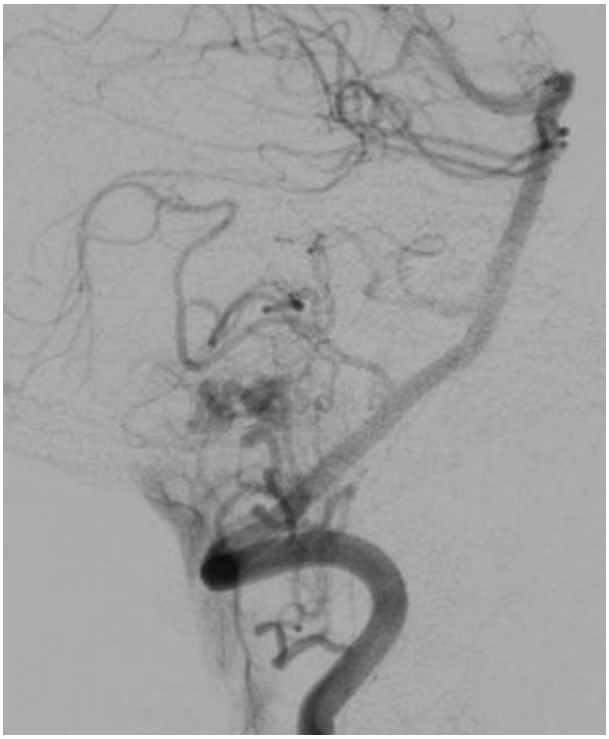

Fig 2. Digital Subtraction Angiography (DSA) in lateral view revealing AVF and feeders.

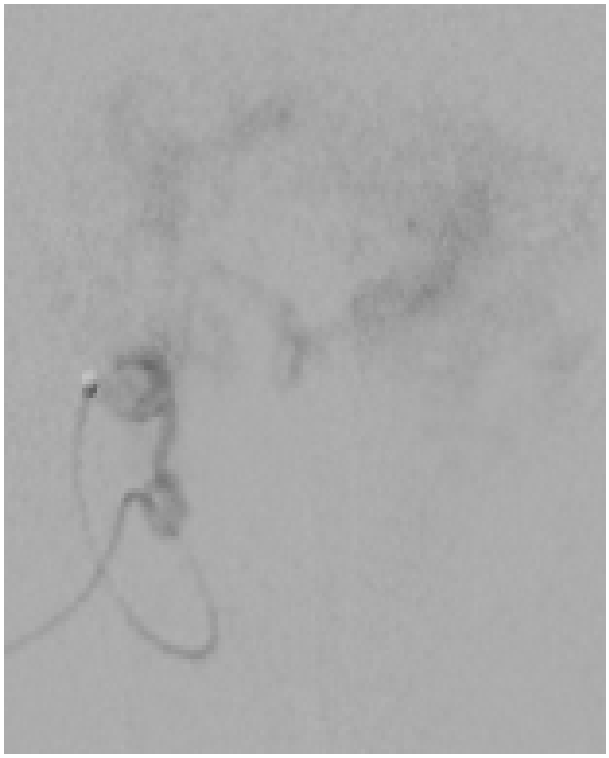

Fig 3. DSA in AP view showing microcatheterization of right V4 feeder.

Fig 4. DSA in AP view: angiographic control shows obliteration of right feeder.

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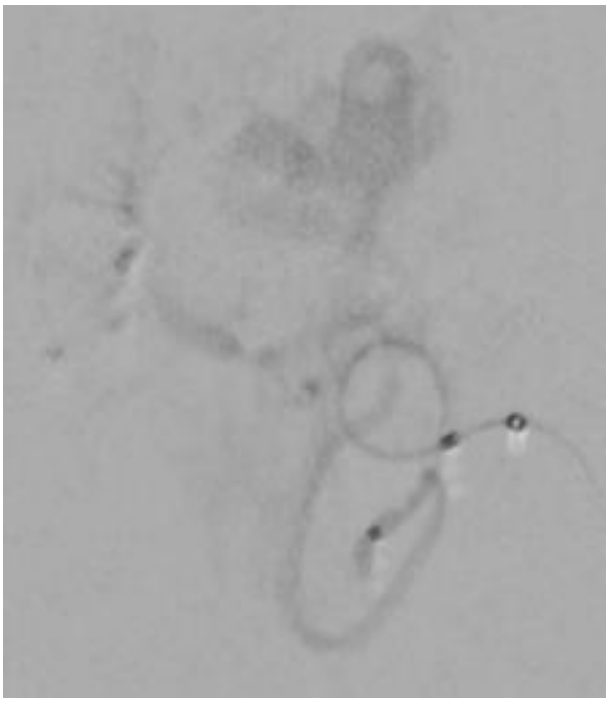

Fig 5. DSA in AP view: microcatheterization of left V4 feeder.

Fig 6. DSA in AP view: angiographic control shows fistula occlusion, with discrete remnant of left PICA(*).

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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 paper.

Author Contributions
Conception and design: All the authors. *Drafting the article:* Lizana. Critically revising the article: Rodriguez R. *Reviewed submitted version of manuscript:* Lizana. *Approved the final version of the manuscript on behalf of all authors:* Lizana.

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