Spinal Dural Arteriovenous Fistulas (FAVDR) with Peri-Medullary Venous Drainage: Clinical, Radiological and Therapeutic Aspects (Case Report and Literature Review)

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ABSTRACT

Spinal dural arteriovenous fistulas are rare and often unrecognized, they occur predominantly in men, with an initial clinical picture most often misleading made of chronic myelopathy in the absence of treatment, the evolution is slowly towards a definitive paraplegia. We report the case of a patient referred for a table of spinal cord compression revealing a spinal dural fistula with perimedullary venous drainage treated urgently, due to the worsening of the clinical picture. The standard treatment consists of surgical or endovascular exclusion of the fistula (in our case the fistula was surgically excluded). From this case and based on the literature, we will specify the a, clinical, radiological characteristics as well as the prognosis of these malformations, and we will discuss the possibilities of therapeutic management.

Keywords: Case report, fistula arteriovenous, magnetic resonance, spinal dural fistula, spinal cord, spinal cord ischemia.

I. INTRODUCTION

Spinal dural arteriovenous fistulas (AVFs) can be defined as abnormal connections between a root supply artery and the coronal venous plexus of the spine without an intermediate capillary bed. The dural nerve root sleeve is the actual site of the fistula, the underlying pathophysiology of the symptoms and neurological signs is well understood.

Arterial blood flow is shunted into the venous plexus, under arterial pressure. The venous plexus then becomes “arterialized” and the obstruction of the venous flow leads to venous congestion, venous hypertension and progressive ascending myelopathy [1].

II. CLINICAL CASE

A. Anamnesis

Submit your manuscript electronically for review. This was a 39-year-old patient, with no notorious medical-surgical history, who had presented paresthesias of both lower limbs for 1 year associated with walking disorders, after which the patient did not consult until the worsening of his condition by the installation 3 months ago of heaviness in both lower limbs associated with sphincter disorders such as dysuria.

B. Physical Examination

Clinically, the patient was conscious, with paraplegia rated at 2/5 and Babinski's sign in both lower limbs without upper limb involvement. In addition, the patient presented with acute urine retention that had progressed for several hours and required bladder catheterization.

C. Paraclinical Examination

This clinical picture led to the realization of an emergency spinal cord MRI (Fig. 1A and 1B) showing the existence of a hypersignal in T2 without enhancement after injection of gadolinium extended from D6 to the terminal cone in favor of a dural AVF, the patient was transferred to the vascular and interventional radiology department, with a view to performing a medullary arteriography (Fig. 1C and 1D) objectifying a vascular.

Malformation such as arteriovenous fistula, fed by the posterior radicular branch resulting from the 6th right intercostal, whose posterior and median topography shunt, projects opposite the spinous process of T6 with a venous drainage towards the posterior and anterior epidural plexus.

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The repetition of MRI, the use of certain sequences or even early arteriography make it possible to make the diagnosis before the onset of irreversible lesions. The management is multidisciplinary. The aim of the treatment is to definitively exclude the arteriovenous shunt to allow the normalization of the pressure in the perimedullary venous network. The treatment of FDSV can be based on 2 procedures: the first is the surgical occlusion of the intradural vein which received blood from the shunt area, which is a relatively simple and safe procedure but with a risk of sacral fistulas [5]; the second is endovascular therapy which uses a liquid embolic agent after performing a selective catheterization of the radiculo-meningeal nourishing artery [6]. It should be noted that a recent meta-analysis suggested complete occlusion of the fistula after surgery in 98% of cases. While Endovascular treatment success rates vary between 25% and 75% [7] in our case, we opted for surgical treatment thus avoiding the risk of neurological worsening and re-permeabilisation which includes endovascular treatment [8].

IV. CONCLUSION

The diagnosis of FADS is often difficult with too long a delay between the first symptom and the treatment which results in severe neurological sequelae despite a well-conducted treatment, appropriate procedures must be adopted to shorten this delay.

Perimedullary venous return RDFs should be considered in front of any atypical medullary or radicular picture in elderly subjects, the functional prognosis depending on the duration of the spinal cord suffering.

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