Arachnoid webs: preoperative differential diagnosis and surgical exploration

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Arachnoid webs contemporary management: particular care for preoperative differential diagnosis and surgical exploration!

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Dear Editor,

We read with great interest the recent article by Nisson[6] et al., discussing the rare presence of spine arachnoid webs, while performing a systematic review of the literature, including 43 patients. Almost half of the cases presented symptoms for more than 1 year before surgery. Arachnoid web excision was performed in 86% of cases. Following surgery, 91% reported improvement in neurological symptoms. Several aspects warrant for further consideration in this uncommon spinal pathology.

Firstly, there is a need for a better preoperative diagnosis. The anamnesis might reveal red flags in the context, including trauma, infections, previous surgery and subarachnoid hemorrhage. Preoperative MRI could be inconclusive. First neuroimaging attempts have focused on the use of direct visualization of arachnoid membranes using 3D constructive interference in steady state (CISS) sequences[5]. More recently, cardiac-gated phase-contrast (CINE) MRI in multiple axial planes has been suggested, which usually correctly localizes the SAW and demonstrates a one-way valve like the flow of CSF because of the web[3].

Secondly, the clinical and radiological diagnosis should exclude other pathologies, which might mimic an SAW, in particular thoracic intradural spinal cord herniation (ISCH). Both are uncommon conditions and can result in significant neurological morbidity if left untreated[7]. The main aspect is related to the evaluation of the nature of the dorsal cord indentation, as well as the integrity of ventral subarachnoid space at the level of spinal cord deformity. The « scalpel sign » is usually referred as pathognomonic for SAW, consisting in dorsal spinal cord indentation and anterior cord displacement. More recently, the « C-shape dorsal indentation» has been further reported for spinal cord herniation[7]. In practice, differentiating between these 2 separate entities is of crucial importance from a surgical perspective and not always straightforward preoperatively[7]. Their management is different. The SAW is treated by laminectomy with intradural lysis of adhesions and resection of arachnoid bands, while the ISCH repair includes reduction of the herniation and restoring of the spinal cord to its normal position.

Thirdly, if surgical exploration is performed for SAW with no major intraoperative findings, one should also consider ISCH and further explore the presence of such condition.

Fourthly, the « wait-and-scan » strategy versus proactive treatment is, in our experience, quite clear. Conservative treatment with clinical assessment and serial imaging can be offered to asymptomatic cases. At the opposite, in symptomatic patients, treatment is always surgical.

Lastly, some of the authors consider arachnoidolysis as curative[2]. However, we do believe that there is a small risk of readhesion, which should be considered and explained to the patient preoperatively. Approaches with arachnoid dissection and decompression have been reported, including by our group[1]. In this context, laminectomy and intradural exploration became a standard of care, although minimally invasive techniques were also recently described, and propose either expandable tubular retractors[8] or fibroscopic visualization after classical arachnoid opening[4].

The systematic review by Nisson et al.[6] nicely fulfills a gap of acknowledge, towards a better understanding of this uncommon entity which is the arachnoid web.

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