EXTRADURAL LUMBAR NERVE ROOT CAVERNOUS HEMANGIOMA – CASE REPORT AND SUCCESSFUL SURGICAL RESECTION

HEMANGIOMA CAVERNOSO EXTRADURAL DE RAIZ NERVOSA LOMBAR – RELATO DE CASO E RESSECÇÃO CIRÚRGICA BEM-SUCEDIDA

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ABSTRACT

Extradural lumbar spinal canal cavernous hemangiomas (or cavernomas) are rare lesions that can induce intense back pain and neurological deficit. We present a case report of a patient with a pure radicular lombar extradural cavernoma resembling a benign neurological tumor in imaging exams and a successful surgical resection.

Keywords: cavernous hemangioma, lumbosacral region, dura mater, spine

RESUMO

Os hemangiomas cavernosos do canal vertebral lombar extradural (ou cavernomas) são lesões raras que podem induzir dor intensa no dorso e déficit neurológico. Apresentamos um relato de caso de um paciente com um cavernoma extradural lombar radicular puro assemelhando-se a um tumor neurológico benigno em exames de imagem e uma ressecção cirúrgica bem-sucedida.

Palavras-chave: hemangioma cavernoso, região lombo-sacra, dura-máter, coluna

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INTRODUCTION

In 1929 Globus and Rashay described for the first time an extradural cavernous hemagioma (CH) of the spinal canal[1]. Most of these lesions occur on the upper thoracic spine, and there are few reported cases involving the lumbosacral spine[1]. Their origin is mainly from the vertebral bodies, comprising 5-12% of all spinal hemangiomas and they may invade the extradural space[2,3].

According to the literature, the symptoms caused by lumbar extradural cavernous malformations are insidious and might present as low back pain and sciatica simulating a disk herniation in some cases[4]. Purely radicular extradural cavernomas are extremely rare. We present a case of a lumbar nerve root lesion clinically presenting with radicular pain, without any deficit and mimicking a benign neoplasm on imaging exams.

CASE PRESENTATION

A 61-year-old male patient presented a one-year history of back and right leg pain. Over the last five months, it became intense, making the patient unable to walk or seat without great suffering. The pain worsened at night, accompanied by coughing. Neurological examination was normal, but the straight leg-raising test was positive at 30° on the right side.

The initial analysis of the first MRI suggested a L5 nerve root neurofibroma (Fig. 1a and 1b) and the patient was referred to our department. However, after careful review of the MRI it was suspected of a dural sac attachment. A second exam on a 3.0 T unit was ordered and revealed an extradural lesion on the right L5/S1 foramen, which also showed homogeneous contrast enhancement (Fig. 1c). There was no connection of the mass with the adjacent intervertebral disc. Extruded disk herniation or an intradural neoplasm such as neurofibroma, schwannoma or meningioma were so ruled out, although a specific preoperative imaging diagnosis could not be done.

A right hemilaminectomy and partial facetectomy of L5 revealed a well defined extradural mass involving the L5 root (Fig. 2a and 2b). With microtechnique it was possible to dissect the lesion from the L5 root, although some adherence was noted. The excision *in bloc* could be done without tearing the dural sac or L5.

Histopathological examination revealed the mass to be a cavernous hemangioma (Fig 2c).

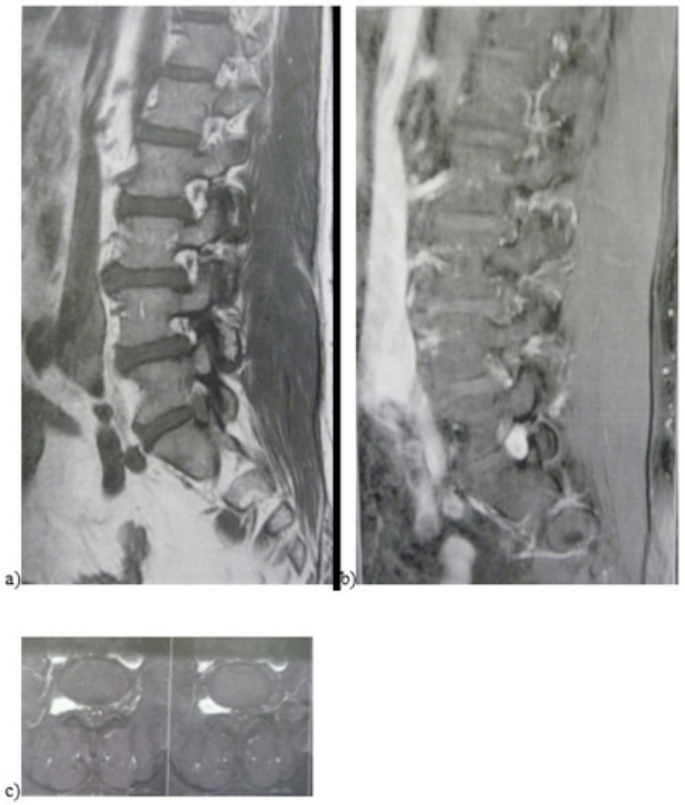

Figure 1a, b and c – MRI of lumbar spine showing lesion at L5-S1 intervertebral foramen (right side - T1). A) and B) refers to the first MRI (B), with Gadolinium contrast) and C) to the second exam (with Gadolinium contrast).

The patient was sent home two days after surgery without deficits. At second revision, two months later, and again five months after the procedure, he remained with no symptoms. A follow up MRI two months after the surgery showed no recurrence. The patient signed an informed consent authorizing the publication of the case.

DISCUSSION

Spinal cavernous hemangiomas arise from blood vessel progenitors. They are considered benign congenital malformations, composed of dilated vascular spaces with wall composed of thin endothelial cells[5]. They do not represent true neoplasms but do not regress spontaneously, instead they continue to grow[6]. This particular aspect of these lesions, that is, their capacity to keep growing, is a process of intralesional hemorrhage, thrombosis with recanalization, cyst formation and organization[6,7]. This dynamic profile of these masses contributes to alterations in size and nature of the lesion.

Cavernous hemangiomas present, histologically, vascular structures with thin and fibrous walls, forming a mass devoid of interspersed neural elements. Areas of thrombosis and calcification are observed sometimes. The vessels are intensely congested, of varying diameters and

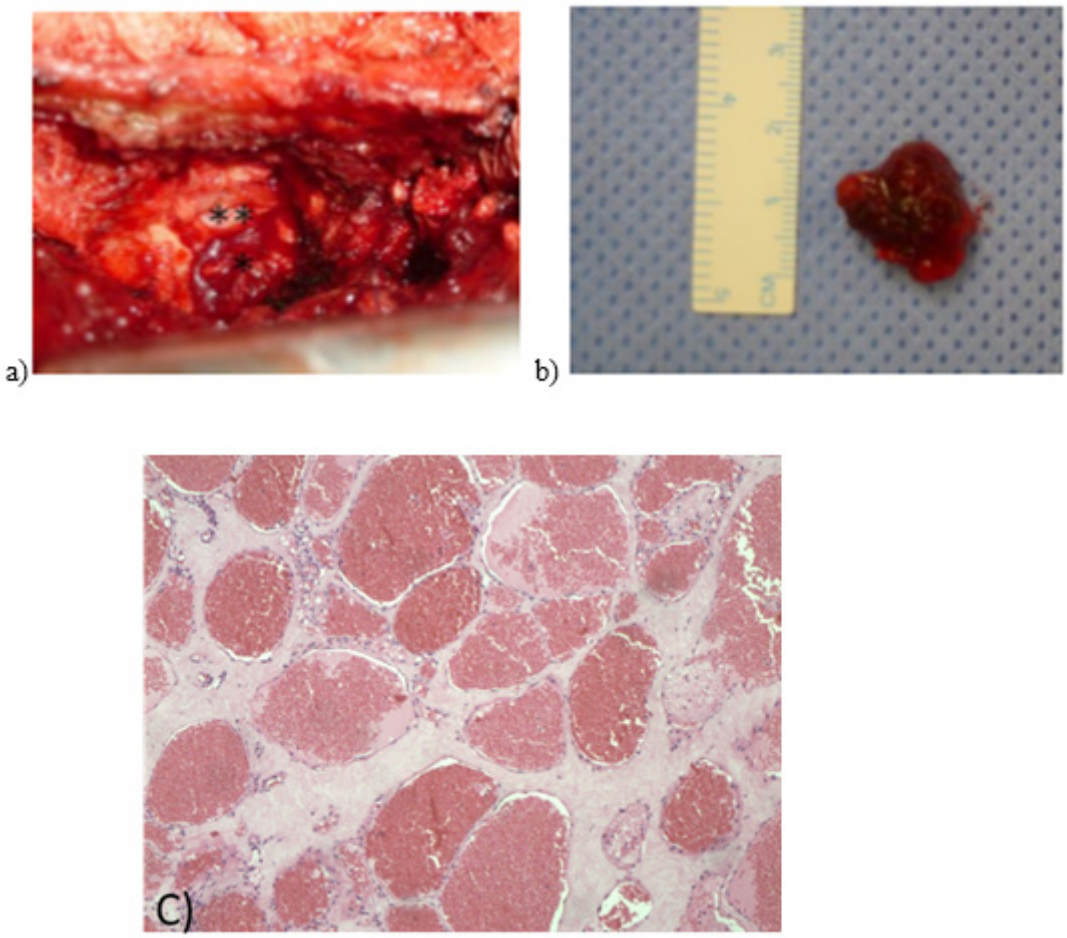

Figure 2a – Surgical photograph showing the lesion (*) and part of L5 right root (**) after laminectomy and partial L5 facetectomy.
Figure 2b – Surgical specimen after complete ressection. Macroscopically the tumor was encapsulated and dark red. It was possible to observe tiny vessels on its surface penetrating the mass.
Figure 2c – Histopathological examination reveals vascular structures with thin walls and flattened endothelial lining, very congested. They are predominantly quite distended and have varying diameters. The connective stroma shows slightly hyalinized areas beside edematous ones. Hematoxylin-Eosin sections, 400x.

predominantly quite distended[5].

Spinal epidural cavernous hemangiomas may occur anywhere along the spinal canal but there is a predilection for the thoracic spine. According to the literature 58% are in the thoracic, 26% in the cervical, 16% in the lumbar and none or almost none in a sacral location. Foraminal or extraforaminal location, like our case, is exceedingly rare and usually these lesions have a round or ovoid appearance[6,8]. They may extend through the intervertebral foramen, and there is no direct anatomic relation with both the intervertebral disc and the nerve root.

Purely extradural cavernous hemangiomas are extremely rare and by definition arise solely in the extradural space without invading the bone. Because of its rarity (they represent less than 4% of all extradural based intraspinal tumors) it may be difficult to make the right diagnosis preoperatively with neuroimaging. Even angiography may not reach the diagnosis since shunting is most of the time absent[9].

The first imaging exam performed by the patient, an MRI with paramagnetic contrast (gadolinium), showed tissue located in the right neural foramen of L5/S1 close to the corresponding nerve root, which is heavily permeated by the contrast agent and was suggestive of neurofibroma. This exam was repeated five months after the first one and the lesion had the same characteristics as the previous one, but the presumptive diagnosis was meningioma, since it was possible to determine without doubt that the lesion was extradural.

Sometimes, a sudden onset of symptoms with neurological deficits is recognized. This clinical picture is attributed to hemorrhages within the lesion and to venous outflow obstruction that will eventually lead to enlargement of the mass and compression of the spinal cord or the conus medullaris. The literature points out that this kind of catastrophic presentation is not recognized or reported for

extradural lumbar CH[3,10].

This particular subset of CH, namely extradural lumbar root cavernoma, was well delineated and its pseudo-capsule helped the surgeon to isolate and resect it from the L5 root. We found remnants of a previous hemorrhage into the lesion and this kind of observation was also done by Petridis et al[6]. Some investigators point out that these lesions contain more hemosiderin deposits compared to intradural lesions, maybe because of the easier removal of blood products in areas outside the blood-brain barrier[10]. It is possible that repeated bleeding inside the matrix of the mass might explain its enlargement and periods of extremely pain as observed in our patient.

CONCLUSIONS

Imaging tests, by themselves, have difficulty in providing the correct diagnosis once different lesions present with similar MRI findings. It is possible to resect completely this type of lesion using surgical microtechnique.

CONFLICT OF INTEREST

The authors declares that there is no conflict of interest.

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