

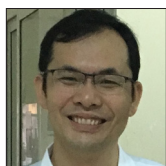
Case Report

Cavernous malformation in the lumbar nerve rootlet

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ABSTRACT

Background: Intradural extramedullary (IDEM) cavernomas are rare vascular lesions that sometimes needs surgery. However, there has been little information about the surgical strategy for these lesions.

Case Description: A 39-year-old male presented with 1 month of left lumbosciatalgia. The magnetic resonance imaging was consistent with either an L4 IDEM neurofibroma or a meningioma. At surgery, we encountered a red-oval encapsulated lesion firmly adhered to the L4 nerve root, which was totally excised along with the root itself. Notably, postoperatively, the patient exhibited no new neurological deficit.

Conclusion: IDEM cavernoma is rare but should always be a differential diagnosis for other common IDEM lesions. A total excision of an IDEM cavernoma and sacrifice of the involved nerve root seem to be a reasonable option.

Keywords: Cavernoma, Extramedullary, Intradural, Nerve root, Surgery

INTRODUCTION

Spinal cavernous malformations account for 5–12% of all spinal vascular abnormalities.^[1,6] Intradural extramedullary (IDEM) cavernomas involving nerve roots of the cauda equina are even less frequently encountered.^[4,5] IDEM lumbar root cavernomas present with clinical symptoms and signs reflecting their size and location. There has been few reports about the surgical outcome of these lesions. Here, we present a 39-year-old male undergoing gross total excision of a L4 spinal nerve root cavernoma and sacrifice of the involved nerve root without incurring a new postoperative neurological deficit.

CASE REPORT

A 39-year-old male presented with 1 month of severe right lumbosciatalgia but without any focal neurological deficit. The lumbar magnetic resonance imaging showed a well-circumscribed, T2 hypointense IDEM (i.e., 5 × 5 × 10 mm) involving a L4 nerve root that enhanced homogeneously after gadolinium injection. The differential diagnoses included neurofibroma versus meningioma [Figure 1]. Following a L4 laminectomy, on opening the dura, we encountered a red oval-shaped, encapsulated mass (i.e., 8 × 8 × 10 mm) that arose from and adherent to an L4 nerve root; both the tumor and root were resected [Figure 2]. Postoperatively, the patient had no neurological

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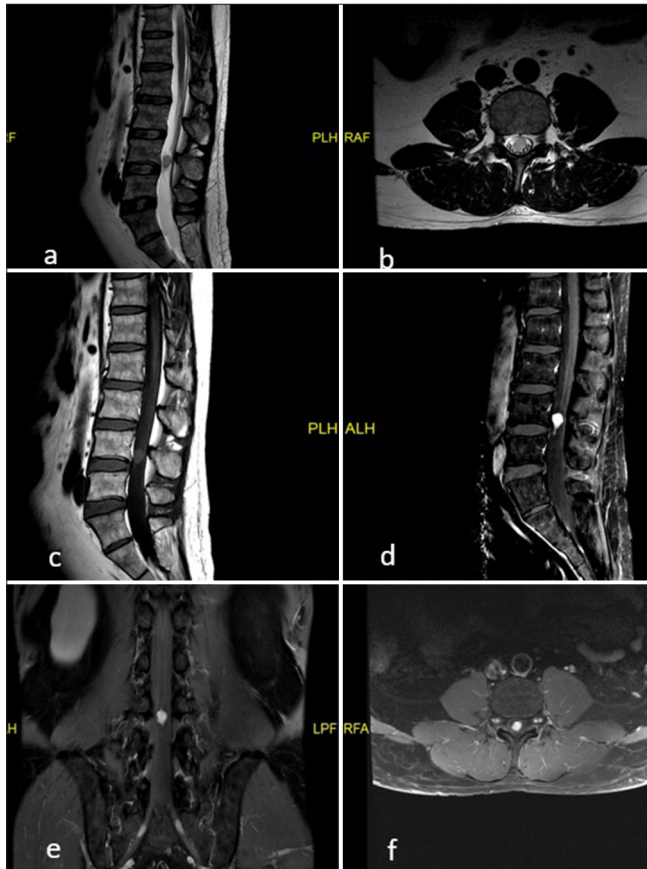


Figure 1: (a and b) Magnetic resonance imaging of the lumbar spine with sagittal, axial plane T2-weighted pulse sequences; (c and d) Sagittal T1 weighted (T1W) pulse sequence before and after injection, (e and f) coronal and axial T1W image after injection. A space-occupying lesion of a nerve root in cauda equina at the L4–L5 level, oval-shaped, well-defined margin, showing mildly increased signal on T2-weighted sequence with a surrounding hemosiderin rim, mildly increased signal on pre-contrast T1W pulse sequence, and contrast enhancement on post-contrast T1-weighted sequences. The lesion creates a mass effect, displacing adjacent cauda equina nerve roots.

deficit. The histopathology confirmed that the lesion was a cavernous hemangioma (i.e., comprised of vascular spaces of different sizes surrounded by a single layer of endothelial cells) [Figure 3].

DISCUSSION

Cavernomas account for 5–15% of brain and spine vascular malformations.^[3] IDEM cavernomas are rare, with only about 60 cases being reported in the literature and with most being found in the lumbar region.^[2,4,5] Histologically, cavernomas consist of sinusoidal vascular channels without interposed neural tissue that are typically encircled by hemosiderin and

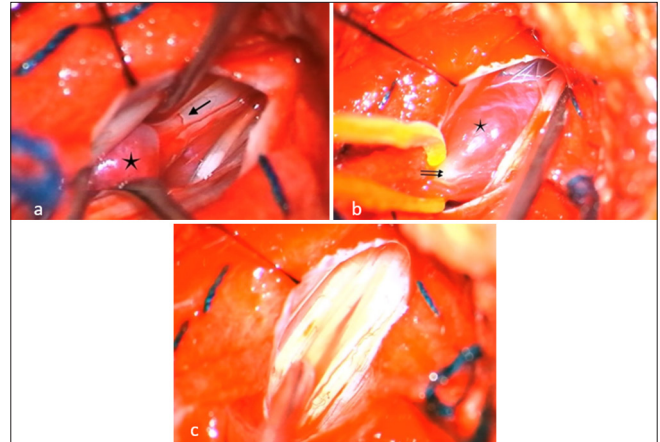


Figure 2: (a and b) Intraoperative photographs showing a well-circumscribed, reddish lesion (star) that tightly adhered to the involved nerve root (arrow and double-arrow). (c) The cauda equina was totally free after resection of the lesion.

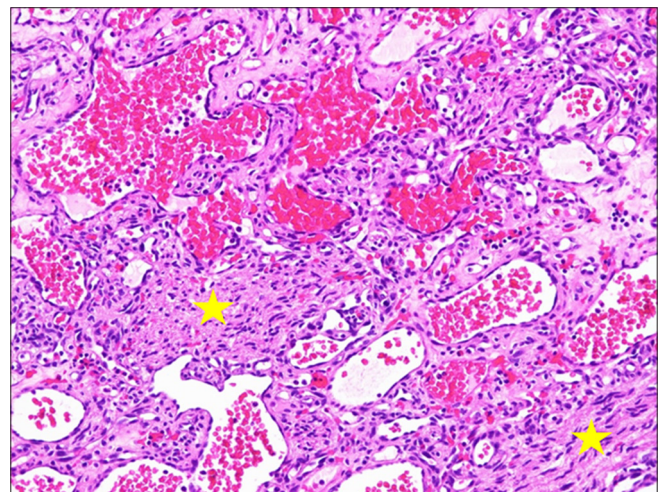


Figure 3: Intraneural cavernous hemangioma showed nerve tissue (star) with dilated vessels in the background of fibrous connective tissue (hematoxylin and eosin stain, ×200) (23-SGB-2670-×20).

gliosis.^[10] Here, the dense adhesions between the cavernoma and the nerve root warranted gross total tumor with nerve root excision. The absence of a new postoperative deficit likely reflected the long-standing nature of the cavernoma that likely had promoted adjacent roots to subsume the L4 nerve root's functions (i.e., “plasticity”).^[7-9,11] While there has been little information about the surgical strategy for patients with cavernoma lumbar nerve root let, total resection of the lesion and sacrifice of the involved nerve root seems to be safe.

CONCLUSION

IDEM cavernoma is rare, but it should be a differential diagnosis for other common IDEM lesions such as

meningioma or neurinomas. Gross total excision is the treatment of choice and can include nerve root sacrifice in selected cases where there are dense adhesions between the nerve root and tumor.

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