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Case Report

A case of lumbar spinal solitary fibrous tumor or hemangiopericytomas

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ABSTRACT

Background: Solitary fibrous tumors (SFTs) account for 3.7% of all soft-tissue sarcomas, with an annual incidence of 0.35/100,000 individuals. Notably, although 20% involve the central nervous system, only one in 10 occurs in the spine versus the brain.

Case Description: A 46-year-old female presented with 18 months of left lower extremity sciatica. On examination, she had a 60° limitation of straight leg raising but was otherwise neurologically intact. The lumbar magnetic resonance revealed a dumbbell tumor at the L4–L5 level filing the canal, causing cauda equina compression and extending into the left L45 foramen. The patient successfully underwent a L4 left hemi-laminectomy for tumor resection. The postoperative World Health Organization (WHO) histopathology was consistent with a SFT/WHO Grade I hemangiopericytoma (HPC).

Conclusion: A 46-year-old female with a lumbar L4 SFT with the left L45 foraminal extension successfully underwent a left hemilaminectomy for GTR of an SFT/WHO Grade I HPC.

Keywords: Hemangiopericytoma, Lumbar solitary fibrous tumor, Solitary fibrous tumor, Spinal solitary fibrous tumor, Spinal tumor

INTRODUCTION

Solitary fibrous tumors (SFT) or hemangiopericytomas (HPCs) account for 3.7% of all soft-tissue sarcomas with an annual incidence of 0.35/100,000 individuals.[6] Notably, 20% develop in the central nervous system (CNS), with one in ten cases involving the spine.[2] The World Health Organization (WHO) grading for CNS SFTs based on their mitotic activity/necrosis and Grades I–III are correlated with prognosis.[7] The WHO Grade III lesions demonstrate higher recurrence rates despite the administration of adjuvant chemotherapy and/or radiotherapy.[9] Here, a 46-year-old female with a lumbar L4 SFT with the left L45 foraminal extension was treated successfully with a left-hemilaminectomy. The lesion proved to be a WHO Grade I SFT/HPC.

CASE PRESENTATION

Clinical data

A 46-year-old female presented with 18 months of left lower extremity pain and positive left-sided straight leg at 60°; otherwise, she was neurologically intact. The lumbar magnetic resonance revealed a dumbbell-shaped, L4 extradural, and solid mass (i.e., 2.2 × 2.1 cm axial diameter) compressing the cauda equina and extending into the left L4–L5 neural foramen [Figure 1]. The initial differential diagnosis was schwannoma versus neurofibroma.

Surgery and postoperative course

The patient underwent a L4 left hemilaminectomy. A clear plane was created between the tumor and the thecal sac; ultimately, the tumor was removed using the cavitron ultrasonic surgical aspirator, dissecting it free from a somewhat adherent nerve root. The frozen section revealed a moderately vascular lesion. No intraoperative complications occurred, and once postoperatively, the radicular symptoms improved significantly. Day-1 postoperatively, gadolinium-enhanced magnetic resonance imaging demonstrated no evidence of residual tumor [Figure 2].

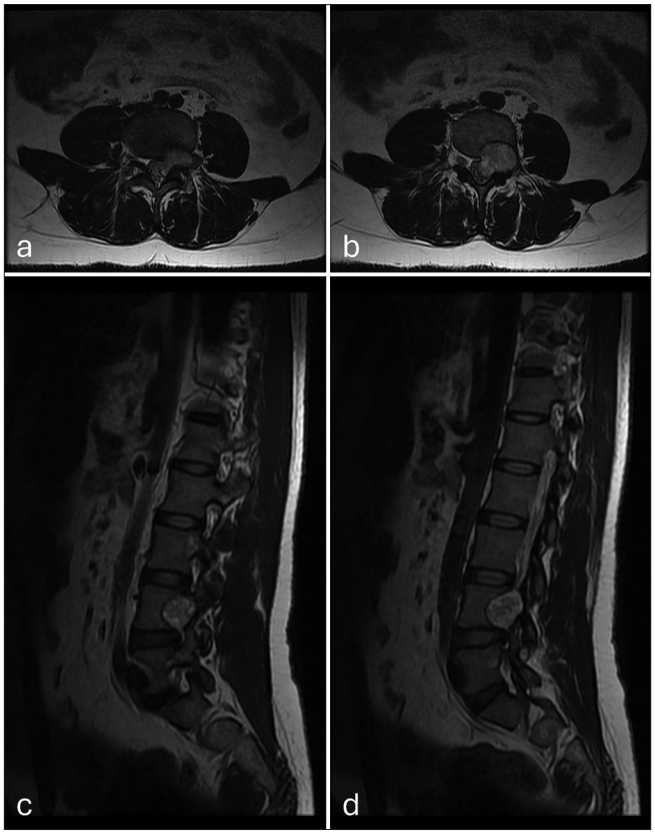

Figure 1: Preoperative axial (a and b) and sagittal (c and d) T2-weighted magnetic resonance imagings demonstrate a dumbbell-shaped extradural solid mass at the level of L4–L5 neural foramen, causing spinal canal stenosis and compression on the thecal sac and cauda equina nerve roots.

Histopathology

The specimen aggregates included 3.5 × 2.5 × 0.3 cm fragments of heterogeneous tan soft-tissue ranging in color from gray to red. The microscopic examination revealed neoplastic proliferation with spindled to ovoid monomorphic cells arranged in an arbitrary manner, interspersed with hyalinized and dilated, thin-walled, branching blood vessels (i.e., staghorn appearance). The mitosis rates were below 5/10 per high-power field, and there was no accompanying necrosis. Target cells were immunohistochemically positive for STAT6 (nuclear), CD34, and B-Catenin (membranous) but negative for EMA, S100, SOX10, SMA, Desmin, CK PAN, P63, chromogranin, synaptophysin, and neurofilaments.

DISCUSSION

SFT/HPCs account for 3.7% of all soft-tissue sarcomas. An annual incidence is 0.35/100,000 individuals.[6] Notably, although 20% involve the CNS, only one in ten occurs in the spine versus the brain.[2] Spinal SFT neurological findings typically include varying rates of pain, motor, sensory, and/or sphincter dysfunction; our patient solely had radiculopathy (i.e., present in 36% of spinal SFT cases). The duration of

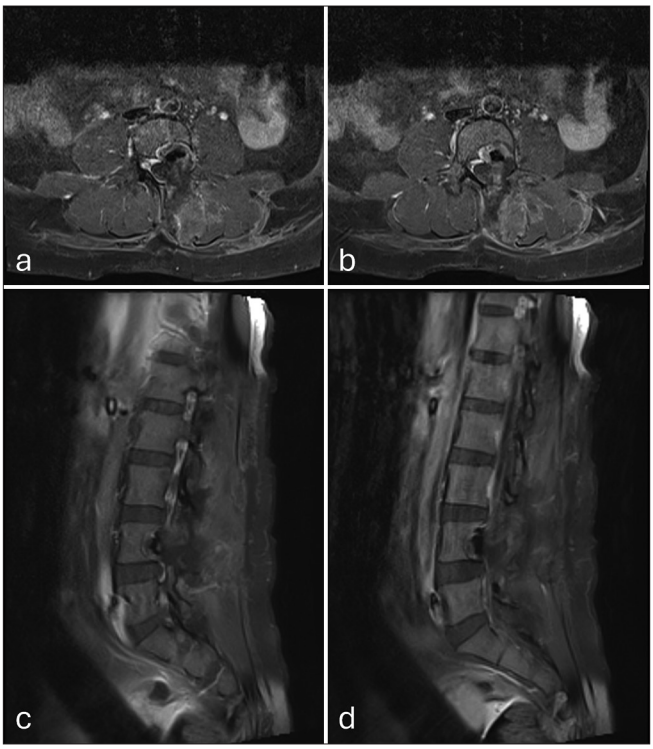

Figure 2: Postoperative axial (a and b) and sagittal (c and d) gadolinium-enhanced magnetic resonance imaging demonstrate no evidence of residual tumor.

symptoms in spinal SFT cases ranges from 8 to 26 months, with a mean of 18 months; our patient was symptomatic for 18 months.[2] Further, our 47-year-old female successfully underwent lumbar surgical gross total resection of a SFT/WHO Grade I HPC. As the long-term prognosis typically correlates with the original WHO tumor grade, our patient likely has a good long-term prognosis. However, patients with higher Grade III SFT/HPCs have an increased 35–45% potential for metastatic spread, likely substantially reducing long-term survival rates.[5,8]

Treatment options

Gross-total SFT/HPC resection is the "gold standard." Notably, adjuvant chemotherapy and/or radiotherapy therapy are typically unnecessary for patients with low-grade SFT undergoing GTR. In Apra *et al.*, 29 patients had either GTR or subtotal SFT tumor resections (i.e., due to spinal cord invasion and/or excessive hemorrhage).[2] Cardillo *et al.*, found that for localized disease, complete *en bloc* surgical resection with negative margins (R0) resulted in the best outcomes.[3] In contrast, malignant SFT has an extremely poor prognosis irrespective of the type of intervention (i.e., surgery, radiation, or chemotherapy: De Bernardi *et al.* limited efficacy of chemotherapy).[1,4]

CONCLUSION

A 46-year-old female with a lumbar L4 SFT with the left L45 foraminal extension successfully underwent a left hemilaminectomy for GTR of an SFT/WHO Grade I HPC.

Ethical approval

The Institutional Review Board approval is not required.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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