

Spinal Meningiomas: A Diagnostic Challenge

¹Shraddha K Singhania, ²Sohael M Khan, ³Shirish Vaidya, ⁴Bhushan Patil, ⁵Varun Gupta, ⁶Pradeep K Singh

ABSTRACT

Spinal meningiomas are rarely reported as pure epidural tumors, and when present may cause diagnostic dilemma preoperatively. The unique combination of a wholly epidural tumor causing neural foraminal widening has not been previously described. We describe a case of pure epidural tumor in a 25-year-old female who presented with back pain. An apparent complete resection was performed. Intraoperatively, the surgeon observed an entirely epidural tumor with no dural attachment. Histological examination confirmed that the tumor was meningioma. In this study, we describe a case of extradural meningioma affecting the thoracic spine and present their clinical profiles, radiological findings, operative management, and follow-up data, along with discussion over its differential diagnosis.

Keywords: Differential diagnosis, Spinal meningiomas, Tumor.

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INTRODUCTION

Twenty-five percent of primary spinal neoplasms are spinal meningiomas.¹ Tumors of the spinal column and spinal cord are classified as either extradural or intradural. Intradural tumors are further divided into intramedullary or extramedullary. Spinal meningiomas are uncommon at epidural location accounting for only 3.5 to 7.0% of all spinal meningiomas.^{2,3} We report a rare case of a purely extradural thoracic spine meningioma in a 25-year-old female with discussion regarding its differential diagnosis and treatment.

CASE REPORT

A 25-year-old female with no significant medical history was admitted in the Department of Orthopedics with the complaints of back pain and sensory changes in both lower limbs since 1 year with slowly losing the ability to walk. She did not present with sphincter disturbances and seemed to be healthy before the onset of the symptoms.

On admission, the patient's neurological examination revealed paraparesis with spasticity and zero power in both lower limbs and exaggerated knee and ankle reflexes along with extensor plantar response in both sides. There was no bowel or bladder dysfunction.

Magnetic resonance imaging (MRI) revealed an extradural space occupying lesion extending from T2 to T4 level resulting in marked compression of the spinal cord. The lesion was isointense to slightly hypointense to the spinal cord on T1-weighted images, isointense on T2-weighted images, and short-tau inversion recovery, with intense postcontrast enhancement after gadolinium injection. On axial T2-weighted images, there was widening of the right-sided neural foramina (Figs 1 to 3).

The MRI findings were suggestive of an extradural aggressive mass lesion with neural element. The patient underwent a posterolateral approach in emergency. An anterior lateral, purely extradural, gray tumor was found intraoperatively which was completely excised (Fig. 4). The definitive histological diagnosis was meningioma [World Health Organization grade I].

The patient's immediate postoperative course was uneventful, and she recovered quickly. Her neurological

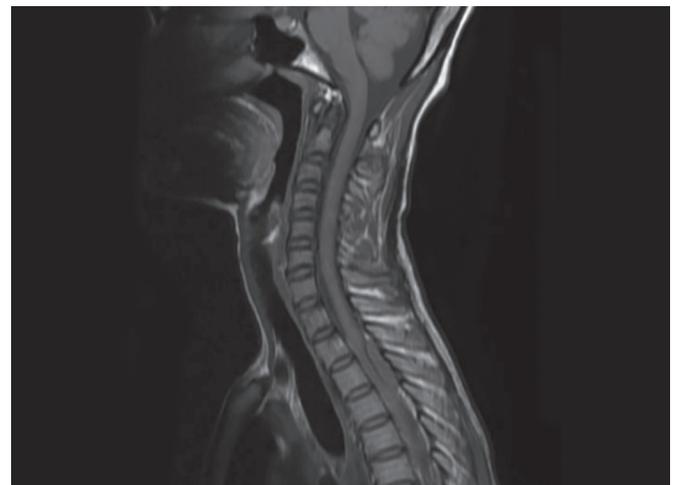


Fig. 1: Isointense to slightly hypointense extradural lesion seen from T2 to T4 vertebral body level

¹Consultant, ^{2,3}Assistant Professor, ⁴Junior Resident, ⁵Junior Consultant, ⁶Professor and Head

^{1,3}Department of Radiodiagnosis, Acharya Vinoba Bhave Rural Hospital, Wardha, Maharashtra, India

^{2,4,6}Department of Orthopedics, Acharya Vinoba Bhave Rural Hospital, Wardha, Maharashtra, India

⁵Department of Orthopedics, LH Hiranandani Hospital, Mumbai Maharashtra, India

Corresponding Author: Sohael M Khan, Assistant Professor Department of Orthopedics, Acharya Vinoba Bhave Rural Hospital, Wardha, Maharashtra, India, e-mail: drsohaelkhan@hotmail.com

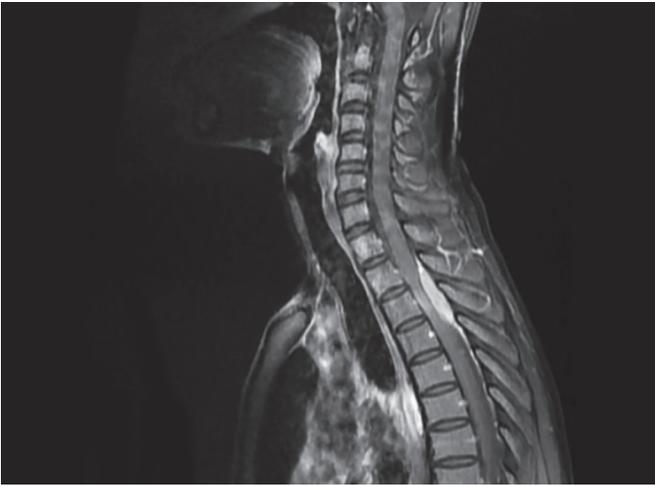


Fig. 2: Lesion is showing intense postcontrast enhancement

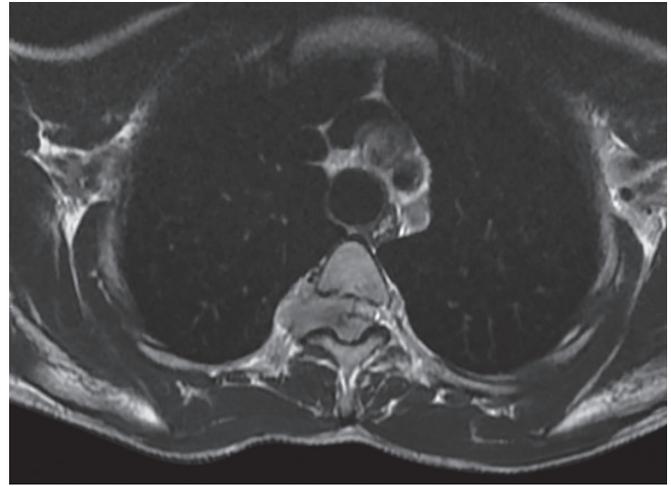


Fig. 3: Widening of right-sided neural foramina due to the mass at D3-D4 level

condition improved continuously, and follow-up examinations showed grade 3/4 power with absent spasticity and normal reflexes.

DISCUSSION

Meningiomas are the second most common intraspinal tumors. Nearly about 80% of them are located at the thoracic level, affecting women more commonly than men (4:1), with a peak incidence during the 5th to 6th decades of life.⁴ It is uncommon for a spinal meningioma to have an epidural location as commonest ones occur as intradural extramedullary.^{5,6} At extradural space malignant neoplasms are commonly found, such as metastases or lymphoma, but more often in the elderly. In cases like ours, with a negative metastatic evaluation and from a comparatively younger age group, a wider differential diagnosis to meningiomas can be kept, like schwannoma, neurofibromas, and infectious processes.⁷ Although the mass was extradural and was giving features of meningioma, radiologically it was still difficult to differentiate it from nerve sheath tumor as neural exit foraminal widening is more commonly seen with nerve sheath tumors.

When patient presents typically with characteristics of extradural meningioma but with neural elements, intraoperative diagnosis of meningioma needs to be confirmed for an extradural spinal lesion and the surgeon should consider gross total excision of the tumor as prognosis depends on the extent of the tumor and excision. Hence, an important aspect that needs to be considered is the treatment plan for the underlying dura as the invasion of the dura makes it more difficult for the surgeon in such cases to achieve complete excision or resection. The pathogenesis of extradural spinal meningiomas suggests that these tumors arise from the dural root sleeve and not from the external surface of



Fig. 4: Intraoperative picture of excision of meningioma

the spinal dura. As seen in our case, the tumor can be stripped off from the spinal dura, without the need to excise the dura.

But still as a part of management even if there is no requirement for the dura to be excised, it is advised that the dura be opened so that the intradural extension of the meningioma can be ruled out.⁵

Normally, these tumors behave in a benign manner, but taking into consideration the literature review, it would be wise to keep these patients under long-term clinical and radiological follow-up as they also have a high frequency of recurrence.

CONCLUSION

Extradural spinal meningiomas though considered as rare should be kept in mind as they imitate schwannoma and nerve sheath tumors and can present with widening of neural foramina. Surgery should be the first treatment of choice. Intraoperative pathology support is essential in establishing the diagnosis of this uncommon entity. It assumes importance as total excision undertaken for

this uncommon benign entity can significantly affect the patient outcome.

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