Case Report

Spinal extradural meningioma: Report of two cases

ABSTRACT

Purely extradural spinal meningiomas are rare and often confused with metastases and schwannomas. Only a few cases have been described in the literature, and they are located mainly in the cervical and dorsal regions. We present two cases of extradural meningiomas, one well-defined nodular growth present at a cervicodorsal junction that was confused with schwannoma preoperatively and the other typical meningioma extending both intra and extradurally in the upper dorsal spine.

Keywords: Extradural meningioma, metastases, schwannoma

INTRODUCTION

Most spinal meningiomas are extramedullary intradural lesions that are positioned ventral or ventrolaterally to the cord. In about 10% of instances, they may contain an extradural component; however, a purely extradural meningioma is a rare phenomenon. Given that extradural spinal lesions most frequently represent metastatic tumors, including lymphoma, this entity assumes relevance. As a result, accurate intraoperative identification is essential for implementing the best treatment plan.

Here, we describe two cases of extradural meningioma, first present at the cervicodorsal junction was confused with schwannoma on radiology, and the second one was diagnosed as extradural during surgery only.

CASE REPORTS

Case 1

A 45-year-old woman presented with a 1-year history of progressive weakness and paraesthesia of both lower legs. No sphincter dysfunction was noted. T2 sagittal magnetic resonance imaging (MRI) demonstrated a well-circumscribed hyperintense lesion extending from C7 to D2, compressing the cord [Figure 1]. On the axial T1 image, the lesion can be seen extending into extraspinal space with widening of the foramen mimicking schwannoma and pushing the cord to the left [Figure 2]. The lesion was isointense on T1-weighted images (WI) and hyperintense on T2-WI. Contrast MRI could not be done because the patient was allergic to it. She was scheduled for laminectomy and tumor excision. The tumor was firm and adherent to dura pushing the cord to the left. The tumor also exhibited a plaque-like extension ventral to the dura and was entirely extradural. The patient's strength in all four limbs began to improve postoperatively and the patient started ambulating on her own after 2 months of surgery. Postoperative plain MRI done after 3 months showed complete resection of the tumor and relief of compression over the cord [Figure 3]. Histopathological examination showed Grade 1 meningioma and the diagnosis was confirmed using immunohistochemistry.

Case 2

A 50-year-old female presented with progressive weakness and numbness in both lower limbs. Gradually, she developed

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a loss of bladder and bowel control as well. MRI of the dorsal spine showed contrast-enhancing nodular lesion with the dural tail present at the D2–3 level, causing severe cord compression [Figures 4 and 5]. Urgent laminectomy and excision of the lesion were planned. Intraoperatively, a firm and vascular lesion present extradurally was noted, which was attached to the dura inseparably, and also, a small component was seen extending intradurally. Near total excision of the lesion was done. The patient improved in her symptoms partially over the months. Postoperative MRI showed complete excision of the lesion and cord signal changes indicative of myelomalacia [Figure 6]. Histopathological diagnosis confirmed psammomatous meningioma, which on low power showed lobulated architecture of meningothelial whorls [Figure 7] and under high power shows round uniform syncytial cells and psammoma bodies [Figure 8]. Four years after surgery, the patient again started having deterioration in her neurological status and a repeat MRI showed a recurrence of the lesion with severe cord compression and myelomalacia. The patient was taken for repeat surgery and excision of the recurrent meningioma. Recurrent plaque like meningioma was infiltrative in nature and extreme precaution was taken while resecting the tumour. The tumor at this time was purely extradural. Histopathology again confirmed the diagnosis of meningioma. The patient slightly improved in her neurological status and is doing well at 6 months of follow-up.

DISCUSSION AND LITERATURE REVIEW

Meningiomas account for 25%–46% of primary spinal tumors,[1] with a peak incidence during the fifth to sixth decades of life, a female predominance, and the most common site in the thoracic spine. Extradural spinal meningiomas are extremely rare, constituting about 2.5%–3.5% of all spinal

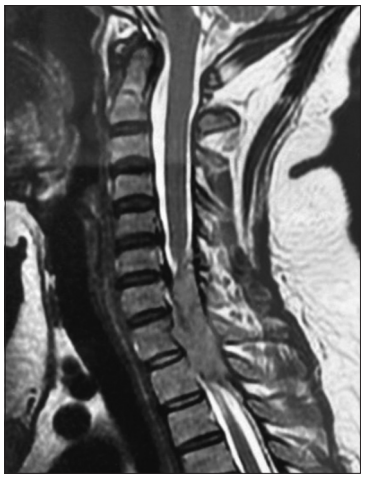

Figure 1: T2 sagittal magnetic resonance imaging demonstrated a well-circumscribed hyperintense lesion extending from C7 to D2 compressing the cord

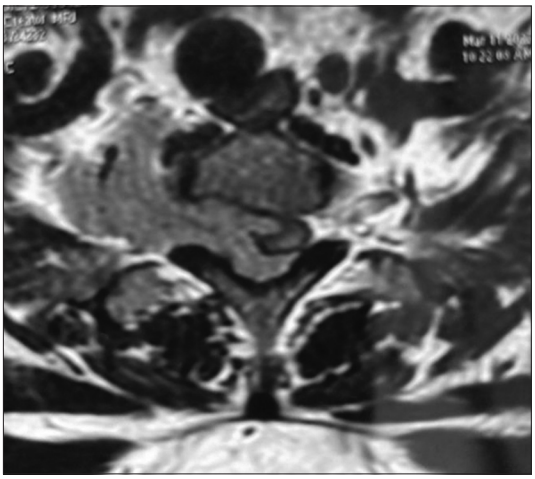

Figure 2: Axial T1 image the lesion can be seen extending into extraspinal space with widening of the foramen mimicking schwannoma and pushing the cord to the left

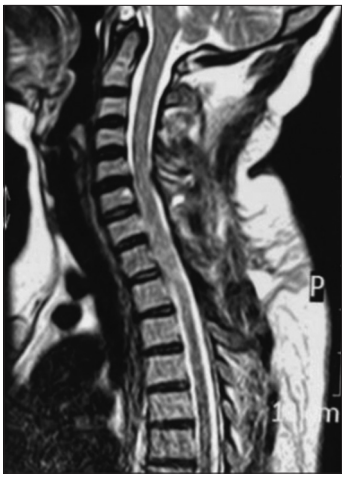

Figure 3: Postoperative plain magnetic resonance imaging done after 3 months showed complete resection of the tumor and relief of compression over the cord

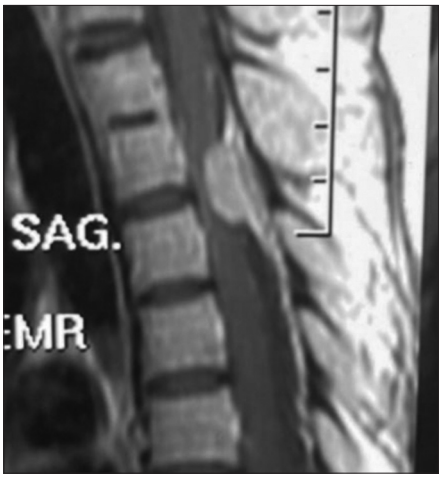

Figure 4: Magnetic resonance imaging dorsal spine showed contrast-enhancing nodular lesion with dural tail present at D2-3 level causing severe cord compression

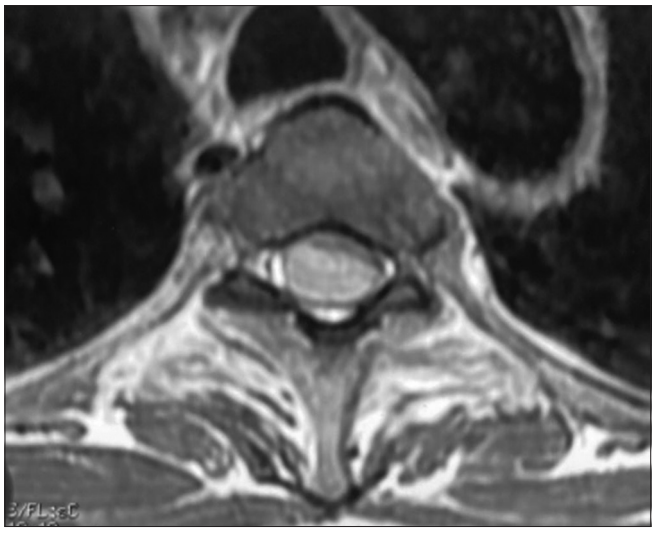

Figure 5: Axial image showing tumor compressing the cord anteriorly

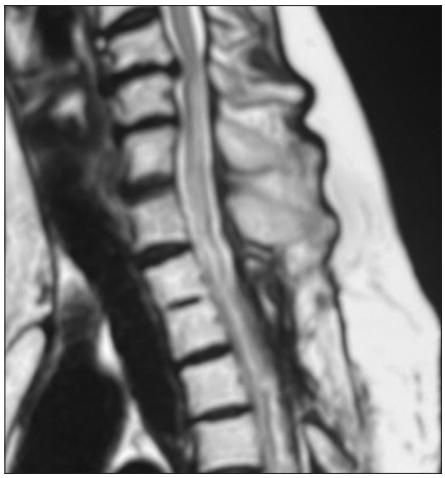

Figure 6: Postoperative magnetic resonance imaging showed complete excision of the lesion and cord signal changes indicative of myelomalacia

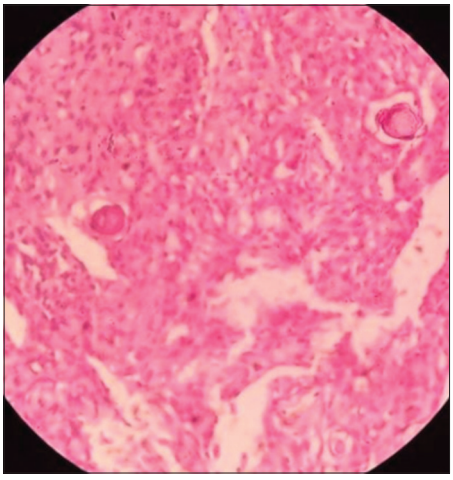

Figure 7: Histopathological Examination (HPE) under low power showing lobulated architecture of meningothelial whorls

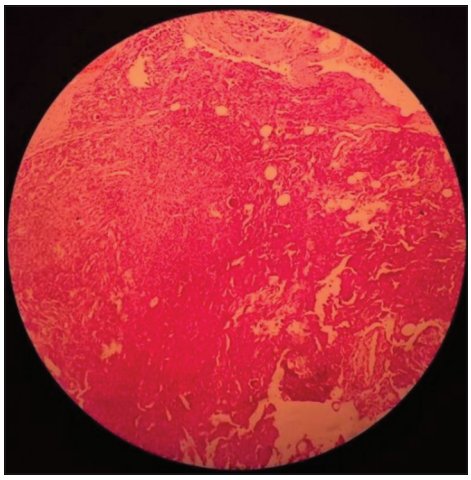

Figure 8: HPR under high power shows round uniform syncytial cells and psammoma bodies

meningiomas.[2] Most likely, they arise from the ectopic or separated arachnoid tissue around the periradicular nerve root sleeve, where the spinal leptomeninx merges directly into the dura. In addition, it has been hypothesized that the periradicular dura, which is thinner, may hold traces of the embryonal arachnoid mater and villi in its superficial layer. This phenomenon might give rise to the extradural location and root proximity of some meningiomas. Another hypothesis contends that the origin of these meningiomas may be islands of arachnoidal tissue that may have moved into the extradural area.[3]

A literature review pertaining exclusively to extradural meningioma reveals 49 reported cases in different locations. One characteristic in which extradural meningiomas differ from their intradural counterparts is their high invasiveness.[4] They manifest with long-term symptoms, the most prevalent of which is pain, followed by motor impairments, sensory complaints, and in rare cases, sphincter disruption.[5] The most prevalent histological variations are meningothelial, fibroblastic, transitional, and psammomatous, with meningothelial and psammomatous being the most common.[6] In cases where the preoperative diagnosis is not confirmed by radiology alone, intraoperative histology can help in making decisions regarding the extent of surgical resection.[7]

The best imaging modality for diagnosing spinal meningiomas is MRI. It delineates the location and extent of the tumor, guiding the surgical plan. Extradural spinal meningiomas, on the other hand, are uncommon and can be misdiagnosed as other pathologies. Because the extent of the surgery and the patient's outcome are affected, the diagnosis of the extradural spinal mass must be done carefully. MRI with and without contrast is the investigation of choice for the identification of these tumors. On MRI, spinal meningiomas display typical characteristics. The mass frequently

displays signal intensity similar to that of the spinal cord on T1-weighted imaging and has mildly elevated signal intensity on T2-WI. Furthermore, the pattern of contrast enhancement is powerful and consistent. Foraminal extension does not favor meningioma diagnosis over schwannoma or neurofibroma diagnosis. On T2-WI, the latter two lesions typically show high signal intensity with cystic change and inhomogeneous enhancement.[8] Because these lesions are extradural, they frequently have a foraminal and paravertebral extension, which leads to further malignant diagnoses such as spinal metastases, extradural lymphoma, or a malignant nerve sheath tumor.

The therapy of choice for these tumors is surgical resection. In cases when the cancer is anterolateral to the cord, the majority of them can be addressed from the back by facet or medial rib excision. Except in cases when the entire facet joint had to be removed for access to the tumor, spine fixation is rarely required.[9] Tumors that cannot be entirely resected can be treated with Gamma Knife therapy or radiotherapy.

Two factors which play an important role in prognosis are, the extend of surgical excision and the invasiveness of the tumor on histopathological examination.[10] Long-term outcomes of these tumors are excellent and the majority of them showed no progression even after long follow-ups.

CONCLUSION

Spinal extradural meningiomas, once thought to be very rare, are being reported increasingly.

Distinguishing them from nerve sheath tumors can be very difficult preoperatively and a high degree of suspicion should be kept in mind for their presence. Surgical resection is the treatment of choice and long-term prognosis is excellent like intradural meningiomas.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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