



SPINAL EXTRADURAL MENINGIOMA – A RARE ENTITY.

Radiodiagnosis

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ABSTRACT

Spinal meningiomas are mostly intradural extramedullary tumors. Extradural spinal meningiomas are extremely rare and presents as a preoperative diagnostic dilemma. Due to its aggressive nature and high incidence of post-operative recurrence an extradural meningioma can be easily mistaken for a malignant spinal tumor. Hence preoperative diagnosis carries significance. The authors present a case of spinal extradural tumor in a 46 year female who was referred to MRI with complaints of back pain, imbalance and tingling sensation in both lower limbs. Imaging showed an extradural meningioma. Histopathological findings confirmed the presence of Meningioma which was treated by surgical excision.

KEYWORDS

INTRODUCTION :-

Meningiomas account for 25 to 46% of primary spinal neoplasms [1] and spinal meningiomas represent approximately 7.5 to 12.7% of all meningiomas [2]. Common intradural extramedullary tumors are schwannomas, neurofibromas, and meningiomas while metastases form the bulk of the extradural lesions.

Extradural spinal meningiomas are more invasive and aggressive than intradural meningiomas. [3] The recurrence rate after surgery for extradural meningiomas is four times higher than that of intradural meningiomas. [4] Extradural spinal meningiomas are rare, with only a few reported cases.

A patient with intra and extradural spinal meningioma was treated and we discuss its clinical, radiological features, histopathological findings.

Case History :

A 46 year old female presented with complaints of backache since 3 weeks. Gradually she developed bilateral lower limb stiffness and difficulty in walking since 2 weeks followed by complete numbness in both lower limbs, Complaints of urgency in micturition since 2 weeks. On examination : Bilateral knee extension was found to be weak. Rombergs sign was positive. Decreased vibration noted in both lower limbs. Sensation along D4 dermatome was impaired. In view of the lower limb clinical symptoms, urgency in micturition and reduced sensations spinal involvement was suspected and she was referred for MRI dorsolumbar spine which showed.

A fairly well defined T2 isointense epidural soft tissue lesion at D3 vertebral level was noted. It was seen encasing the adjacent spinal cord and displacing it to the right. Dura was elevated from normal location by this tumor. Epidural fat sign was positive. There was no foraminal extension of this lesion. Adjacent osseous margins were normal. Subtle T2 hyperintensity was noted in cord at this level due to mass effect. On DTI imaging it showed restricted diffusion.

Sagittal T2 weighted image shows hypo intense tumor in the extradural space at D2-D4 levels indenting the cord with T2 hyperintense cord signal at this level.

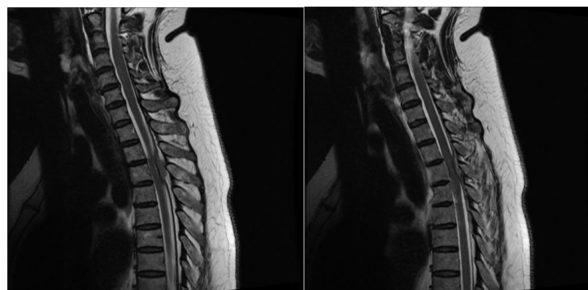


Figure 1

Figure 2

Sagittal T2 weighted image shows hypointense tumor in the extradural space at D2-D4 levels indenting the cord with T2 abnormal hyperintense cord signal at this level.

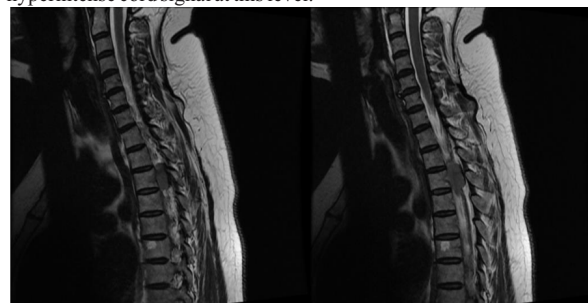


Figure 3

Figure 4

Sagittal T2 weighted images in parasagittal plane shows a T2 hypointense lesion at D2-D4 level displacing the cord.

She was referred to neurosurgery for excision of neoplasm and decompression.

On surgery tumor was confirmed to be epidural and pushing cord to opposite side. D2-D4 laminectomy was done. Tumor was excised and sent for histopathological analysis. Histopathology showed WHO Grade I tumor.

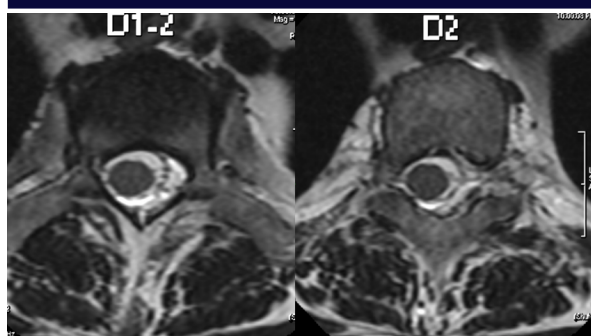


Figure 5

Figure 6

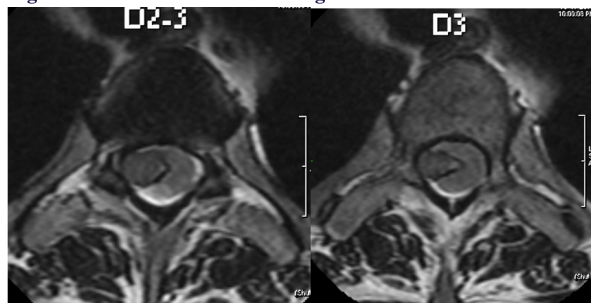


Figure 7

Figure 8

Axial T2 weighted images at D2 – D4 levels shows isointense tumor seen in extradural location, displacing the cord to opposite side.

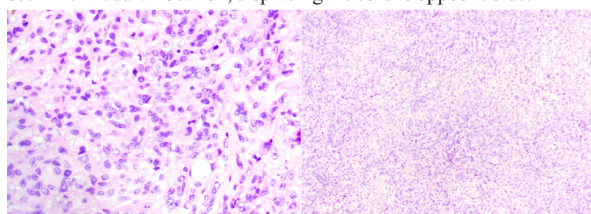


Figure 9

Figure 10

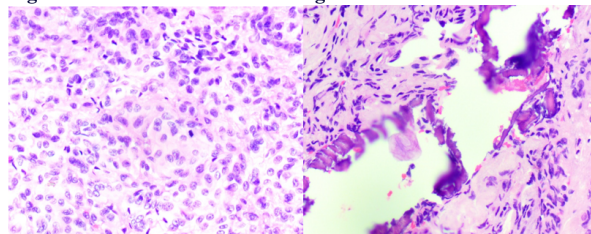


Figure 11

Figure 12

Histopathological section showed meningothelial tumor arranged in whorls and sheets. Focal hypercellularity and atypia was seen. The sections were positive for psammoma bodies and calcification. Findings confirmed a diagnosis of Transitional Meningioma WHO grade I.

DISCUSSION:

Meningiomas constitute for 25-46% of intraspinal tumors. They are commonly extramedullary intradural tumors. Extradural meningiomas in spine are very uncommon constituting 2.5- 3.5 % of all spinal neoplasms(1).

Literature suggests different hypotheses to the origin of Meningiomas.

- (I) By the point of contact in the nerve root segments of arachnoid cells with the dura [5].
- (II) From ectopic arachnoid cells in the epidural spaces [6].
- (III) Origin directly from external surface of dura mater [7].

There is usually a lag period between symptom onset and diagnosis. Patients commonly present with sensorimotor complaints, pain, sphincter weakness. Pain and paraesthesia's occur early followed by late appearance of sphincter issues.

On imaging also extradural meningiomas show more features of an

aggressive lesion with compression of cord, involvement of adjacent soft tissues and bones. They may be n-plaque, fusiform or dumbbell shaped.

On MRI Meningiomas show T1W isointense signal with iso to hypointense signal on T2W. This is in contrast to most extradural tumors which are T2 hyperintense.

Homogeneous contrast enhancement is noted. [9]. Post contrast some tumors may show a dural tail sign. Calcification may be seen in some cases.

Recurrence is common in extradural meningiomas. Rutherford et al [10] reported multiple recurrences in a patient. Yao et al [11] reported a case of recurrence 6 years after surgery.

Differentials of extradural meningiomas include angioliopoma, metastatic tumor, and neurogenic tumors, spinal lymphoma and ossification of ligament (table1).

Differential diagnoses table for extradural spinal meningioma.

Table 1:

Differential diagnosis	MRI	Helpful distinguishing features
Extradural meningioma	T1W iso T2W iso to hypo T1W +C immediate, homogeneous enhancement	Calcification is seen in 4% cases.
Lymphoma	T1W iso T2W iso to hypo T1W +C avid homogeneous enhancement DWI/ADC Restricted diffusion	T2 hypointense due to dense cellularity.
Angiolipoms	T1 – Hyperintense similar to fat T2 hyperintense T1+C – heterogenous enhancement	T1 hyperintense far intensity.
Metastases	T1W hypo T2W hyper T1W +C heterogeneous enhancement	Lytic or sclerotic changes on CT, bone destruction common.
Neurogenic tumour (schwannoma, neurofibroma)	T1W hypo T2W hyper T1W +C heterogeneous enhancement	Dumb bell appearance and T2 target sign are common.
Aggressive hemangioma	T1W hypo to hyper T2W hyper T1W +C avid enhancement	T2 bright signal due to high water content.
Epidural lipomatosis	T1W hyper T2W hyper T1W +C no enhancement	Suppression of signal on fat-saturated images

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