Thoracic extradural meningioma mimicking lumbar canal stenosis: A case report

Pokharel S, Pathak N, Adhikari S, Paudel S, Pokharel RK
Department of Orthopedics and Trauma Surgery (Spine Unit), Maharajgunj Medical Campus, Institute of Medicine, Tribhuvan University Teaching Hospital, Kathmandu, Nepal.

ABSTRACT

Pure extradural meningioma is a rare condition. Clinical presentation of thoracic extradural meningioma may mimic lumbar canal stenosis, and there are reports on paraplegia due to missed thoracic meningioma following lumbar canal decompression surgery. We report a case with long history of low back pain radiating to both legs with weaknesses, initially diagnosed as lumbar canal stenosis. On further clinical evaluation revealed features of upper motor neuron lesion in lower limbs, not corroborating to the initial diagnosis. Screening MRI of whole spine showed thoracic extradural meningioma. The tumor was enucleated and the cord was decompressed. Post operatively, there was excellent neurological improvement without recurrence till last follow up of one year. Thorough clinical evaluation of cases and adequate imaging keeping differential diagnosis of rare lesions can avoid missing such conditions.

KEYWORDS: Extradural, Lumbar canal stenosis, Meningioma

INTRODUCTION

Extradural thoracic masses are mostly metastatic.[1, 2] Meningioma are common spinal tumor and their location can be intradural, intra- and extradural and pure extradural.[3, 4] Extradural meningioma are rare, accounting for approximately 2.5-3.5% of spinal meningioma.[1] Clinical features of spinal meningioma may be consistent with that of lumbar canal stenosis as low back pain and radiculopathy often causing diagnostic dilemma.[3, 4, 5] Surgical decompression along with complete resection of mass is indicated for the cases confirmed by neuroimaging studies.[4, 6] We report a patient with extradural thoracic meningioma who presented with lower limb neurological deficits and radicular pain mimicking lumbar canal stenosis.

CASE REPORT

A 50 years old lady, known case of hypertension under medication, presented with gradual onset lower back pain radiating to both the legs for 5 months. She complained of bilateral weakness of lower limb for 2 months. Her bladder and bowel habits were normal. She came for second opinion since she was diagnosed as a case of lumbar canal stenosis due to prolapsed intervertebral disc and was advised for surgery in another hospital. On examination, her general appearance was fair and her vitals were stable. On neurological examination, her muscle strength, sensation, reflexes were normal in the upper limb. There were no signs of cervical neuropathy. However, she had bilateral moderate-severe paresis on lower limbs with signs of upper motor neuron (UMN) involvement; plantar reflex was up going and clonus was present bilaterally.There was presence of sensory deficit below the level of T8. Her anal tone was decreased. Modified McCormick Scale[7] was Grade 3. She could not walk more than 3 minutes due to claudication pain.

Available MRI imaging of LS spine showed canal stenosis at L4-L5 and L5-S1 level (Figure 1). However, it would not explain decreased

sensation below the level of T8 and UMN lesion findings in lower limbs. Thus repeat MRI of whole spine was done (Figure 2). MRI revealed oval approximately 3x1 cm sized extradural mass with base towards dura at the level of T2-T3. The mass was iso - to low in T1 and iso -signal intensity in T2 images. The dorsally located lesion was causing compression and buckling of spinal cord anteriorly. The post contrast images showed homogenous enhancement with mild thickening and enhancement of adjacent dura giving dural tail sign. Degenerative changes were seen in whole spine with mild central spinal canal stenosis at C6-C7, L4-L5 and L5-S1 vertebral level. MRI of the brain was normal.

Figure 1: MRI of LS spine at initial presentation showing LCS at multiple levels (L3-L4, L4-L5, and L5-S1)

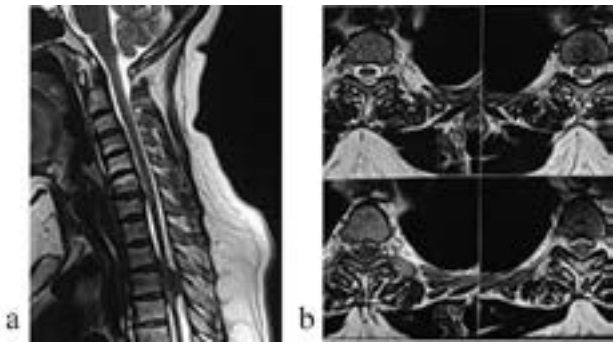

Figure 2: a) MRI T2 revealed oval approximately 3x1 cm sized isointense extradural mass with base towards dura, seen in posterior central spinal canal at T2-T3 vertebral level compressing spinal cord.

b) Axial view of MRI showing extradural mass at the thoracic level compressing the spinal cord.

Decompression of the cord was planned. Laminectomy was done from T2 to T4. A circumscribed dark brown extradural mass of approximately 2 x1.5 cm size tethered to the duramater was carefully dissected and excised. There was no CSF leak. Microscopic examination (Figure 3) shows meningothelial cells arranged in nests and lobules separated by collagenous tissue and focally infiltrating into the adjacent adipose tissue with surrounding lymphoplasmocytic infiltration. These cells are small polygonal and show focal increase in cellularity at the periphery. Histopathological diagnosis was Meningothelial Meningioma, WHO grade I.

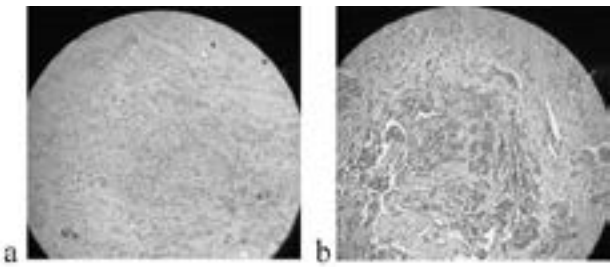

Figure 3: Histopathological slides of the mass showing meningothelial cells arranged in nests and lobules

Postoperatively, there was a marked improvement in the muscle strength of lower extremities (greater or equal to 4/5) with McCormick-Grade II outcome. Patient was able to walk long distance without pain. Follow up report after one year showed complete neurological improvement with no signs of recurrence.

DISCUSSION

Meningiomas are the second most common benign tumors of the spine. Women of 5th and 6th decades are frequently affected with male female ratio of 1:4.[3, 4] In about 80% of cases the

thoracic spine is the common site.[3,8] Intradural extra medullary is the exclusively common location of meningiomas, intra-extra dural is rare and extradural is very rare.[1, 9] Histological characteristics and clinical presentation of both extradural and intradural are same. [1, 9] However, extradural meningioma are more aggressive and there is higher chance of recurrence (four times) than intradural meningioma.[6] Underlying pathogenesis of extradural meningioma is still unknown. However, different theories have been postulated like migration of island of arachnoidal tissue into extradural space, presence of ectopic arachnoid cells, vestigial remnant of superficial layers of embryonal arachnoid matter and villi. [1, 2]

Cases of meningioma may present with radicular pain or low back pain (53.4%),[3] and there is chances of missing thoracic pathology and misdiagnosing the case as a lumbar radiculopathy. In 3 Japanese cases, Takeuchi et al[5] operated on lumbar spine, there was post operative deterioration of neurology due to missed thoracic compressive lesions. Valls et al.[10] detected a missed thoracic arachnoid cyst postoperatively after lumbar surgery.

Our case, 50 years old lady presented with low back pain and bilateral radicular pain with decreased anal tone was diagnosed as lumbar canal stenosis at peripheral hospital. Degenerative changes with mild stenosis in MR imaging of the lumbar spine helped for diagnosis. Though, sometimes in cases of thoracic compressive myelopathy associated with compressive lumbar lesion the long tract signs, such as exaggerated deep tendon reflexes at the lower extremities, can be masked and lumbar spinal disorders may be diagnosed. The present case highlights an important pitfall in clinical practice. Lack of careful neurological examination including sensory and motor function tests lead to such a misdiagnosis. Thus, if lumbar imaging findings do not correspond to the complaints or results of physical examination, repeated thorough neurological examination must be carried out. A fresh MR imaging including proximal neural structures, whole spine and brain should be taken.

Per-operatively, the tumor was tethered to the dura, but as recommended[2, 3, 4, 6] the tumor could be stripped-off from the dura without CSF leak and was totally excised. Post operative improvement was excellent. Prognosis is related to extent of excision so it is always advisable to completely remove the tumor, if safe, and keep patient on regular follow up.[2, 5] Though there is risk of 7% recurrence even after complete removal,[3] on one year of follow up there is no signs of recurrence in our case.

CONCLUSION

Though rare, extradural meningioma must also be considered on differential diagnosis. Also, physician must perform thorough neurological examination meticulously. MRI of upper spinal segments should be done if there is discrepancy between neurological symptoms and lumbar imaging.

Conflict of Interest: None

REFERENCES

1. *Dehcordi SR, Ricci A, Chiominto A, De Paulis D, Di Vitantonio H, Galzio RJ. Dorsal extradural meningioma: case report and literature review. Surgical neurology international. 2016;7.*
2. *Savardekar A, Chatterjee D, Chatterjee D, Dhandapani S, Mohindra S, Salunke P. Totally extradural spinal en plaque meningiomas–Diagnostic dilemmas and treatment strategies. Surgical Neurology International. 2014;5(Suppl 7):S291.*
3. *Solero CL, Fornari M, Giombini S, Lasio G, Oliveri G, Cimino C et al. Spinal meningiomas: review of 174 operated cases. Neurosurgery. 1989 Aug 1;25(2):153-60.*
4. *King AT, Sharr MM, Gullan RW, Bartlett JR. Spinal meningiomas: a 20-year review. British journal of neurosurgery. 1998 Jan 1;12(6):521-6.*
5. *Takeuchi A, Miyamoto K, Hosoe H, Shimizu K. Thoracic paraplegia due to missed thoracic compressive lesions after lumbar spinal decompression surgery: report of three cases. Journal of Neurosurgery: Spine. 2004 Jan 1;100(1):71-4.*
6. *Klekamp J, Samii M. Surgical results for spinal*

meningiomas. Surgical neurology. 1999 Dec 1;52(6):552-62.

7. *McCormick JD, Werner BC, Shimer AL. Patient-reported outcome measures in spine surgery. JAAOS-Journal of the American Academy of Orthopaedic Surgeons. 2013 Feb 1;21(2):99-107.*
8. *Ito K, Imagama S, Ando K, Kobayashi K, Hida T, Tsushima M et al. Discrimination between spinal extradural meningioma and both intra and extradural meningioma: Case Report. Nagoya journal of medical science. 2017 Feb;79(1):115.*
9. *Santiago BM, Rodeia P, Cunha ES, Sa M. Extradural thoracic spinal meningioma. Neurol India. 2009 Jan 1;57(1):98.*
10. *Valls PL, Naul GL, Kanter SL. Paraplegia after a routine lumbar laminectomy: report of a rare complication and successful management. Neurosurgery. 1990 Oct 1;27(4):638-40.*

Address for correspondence:

SABIN POKHAREL

Department of Orthopedics and Trauma Surgery (Spine Unit),

Maharajgunj Medical Campus, Institute of Medicine, Tribhuvan University Teaching Hospital, Kathmandu, Nepal.

Phone Number: 977- 9841834458

Email: sabinpokh100@gmail.com