

Case Report

Surgical treatment of lumbar canal stenosis with concomitant aggressive vertebral haemangioma

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ABSTRACT

Vertebral hemangiomas are the most common benign spinal tumours which are asymptomatic, slow-growing benign vascular malformations. They usually involve the vertebral body. However, the involvement of the posterior elements may present with spinal cord compression. Vertebral hemangiomas exist as a continuum of manifestations and lesions ranging from the common asymptomatic forms to rare compressive lesions. Presence of multilevel spinal canal stenosis along with an atypical vertebral hemangioma with cord is a rare condition and represents a treatment challenge. We report a case of spinal canal stenosis at L2 to L4 spinal levels along with an atypical vertebral hemangioma at L3 vertebra with extension to bilateral pedicles. This tumour caused neurological manifestations and was surgically treated with posterior decompression and stabilization with transpedicular screws and rods along with vertebroplasty for the hemangioma. Presence of an atypical hemangioma with co-existing spinal canal stenosis is a rare indication of spinal fusion. Vertebroplasty for the treatment of hemangioma in such cases is imperative.

Keywords: Atypical hemangioma, Vertebroplasty, Spinal canal stenosis

INTRODUCTION

Vertebral hemangiomas are benign hamartomatous tissue of vascular origin. Vertebral hemangiomas (VHs) are relatively common, at an estimated incidence of 10 to 12% in the general population, vertebral hemangiomas are one of the most common benign bone tumours.¹ Most of the cases of vertebral hemangiomas are asymptomatic and are usually diagnosed as incidental findings during imaging studies that are commonly discovered in the routine evaluation of back pain.¹ These lesions can cause symptoms by hypertrophy of bone, epidural hemorrhage, or compression fracture.^{2,3} These account for about 1% of all hemangiomas.⁴

Spinal canal stenosis is a common cause of backache with radiculitis. Treatment of multiple level spinal canal stenosis with laminectomy alone without fusion may lead to instability.⁵ In presence of atypical vertebral

hemangioma in a patient with spinal canal stenosis, treatment with mere laminectomy or laminectomy with fusion may not suffice. Vertebroplasty may be done additionally for such a patient.

This case report presents a case of spinal canal stenosis from L2 to L4 levels with an atypical vertebral hemangioma with extension into bilateral pedicles at L3 vertebra causing severe backache with neuro-deficit and its treatment with vertebroplasty along with decompressive laminectomy at L2, L3, L4 vertebra with spinal fusion using transpedicular screws and rods.

CASE REPORT

55 years old female presented to the Outpatient department at our hospital with complaints of backache since 3 months and bilateral lower limb radiculitis accompanied with difficulty in walking since 1 month. She was a labourer by

occupation. There was no history of trauma in the past. No history of multiple joint pains in the past. There was no family or past history of tuberculosis. Patient was a known diabetic for which she was on treatment with oral hypoglycemic drugs. On examination, patient had tenderness at lumbar region. There was no kyphosis or scoliosis of the spine. Sensory loss of 50% was present in both the lower limbs. Radicular symptoms involved mainly the L3 dermatome. However, the motor examination was normal. Knee and ankle reflex were absent and planter's extensor on both sides. Oswestry severity index was 74 at the time of admission.

Plain X-ray (Figure 1) depicted a few degenerative changes. MRI lumbosacral spine (Figure 2 and 3) was suggestive of a heterogeneously enhancing altered signal intensity lesion involving body of L3 vertebra and bilateral pedicles, mostly suggestive of an atypical hemangioma. This was associated with diffuse circumferential disc bulge, indenting on thecal sac, compromising bilateral neural foramina and compressing bilateral traversing nerve roots at L3-4, L4-L5 and L5-S1 disc levels. Sagittal spinal canal dimensions at the intervertebral disc levels (in mm) were D12-L1- 9.7, L1-L2-12.1, L2-L3-8.1, L3-L4-8.9, L4-L5-8.5, and L5- S1-7.2.

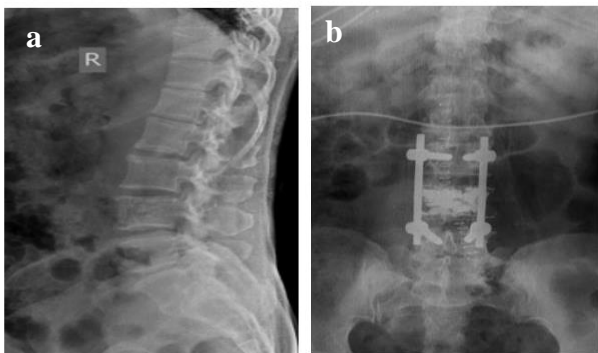


Figure 1: (a) Pre-operative X-ray showing vertical striations in L3 vertebra in lateral view and (b) post-operated anteroposterior view of lumbosacral spine.

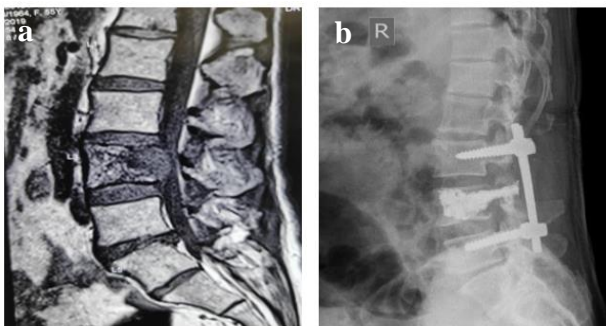


Figure 2: (a) Pre-operative sagittal MRI T1-weighted image of whole spine appearing hypointense on T1W mostly suggesting atypical haemangioma and (b) post-operated lateral view of lumbosacral spine.

Patient needed laminectomy and discectomy at multiple levels and also needed treatment for the atypical vertebral hemangioma. As a first step, spinal fusion procedure was done for L2, L3 and L4 vertebrae by using 4 pedicle screws (2 monoaxial screws of size 6.5x40 mm) and (2 polyaxial screws of size 6.5x40 mm) in pedicles of L2 and L4 vertebrae.

Vertebroplasty was done for L3 vertebra to treat hemangioma. Transpedicular injection of bone cement was done under fluoroscopic guidance to achieve uniform distribution of cement in the L3 vertebra. Laminectomy discectomy and bilateral nerve root clearance was done as a second step.

Patient was followed up at monthly intervals for 6 months. At 6 months follow up, the Oswestry disability score was 21 up from 74 prior to the surgery. Patient had no complaints on follow up.

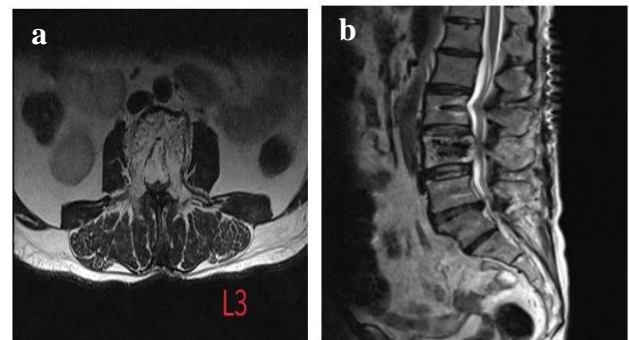


Figure 3: (a) T1W axial image of atypical hemangioma in L3 vertebra with bilateral pedicle involvement and (b) sagittal T2-weighted image of whole spine reveals increased T2 signal diffusely at L3 vertebra.

DISCUSSION

Hemangiomas are common benign neoplasms of vascular origin that closely resembles normal vessels. These are benign osseous lesion of dysembryogenetic origin or a hamartomatous lesion.¹ Vertebral hemangiomas are the most common benign lesions of the spinal column with an estimated incidence of 10-12%. Typically, these are symptomless incidental findings but they may be symptomatic in 0.9 to 1.2% of the cases.^{1,6} These atypical cases are known as aggressive vertebral hemangiomas which present with radiculopathy or spinal cord compression. Neurologic deficit in these cases is caused by bony compression resulting from hypertrophy or bulging of the posterior cortex. It may also be due to enlargement of lamina and hypertrophied facets resulting from the hemangioma. Sometimes soft tissue compression may occur due to the expansion of the hemangioma into the epidural and foraminal space; compression fracture of the involved vertebral body; and epidural hematoma.^{2,3,7} In the presented case, patient had canal stenosis from L2 to S1 associated with multiple levels disc bulge for which

decompressive surgery in the form of laminectomy and discectomy along with stabilization procedure in the form of pedicle screw fixation is warranted.⁵ However, atypical hemangioma involved the pedicles bilaterally at L3 vertebra and hence needed vertebroplasty. We, therefore, planned the surgery for stabilization with pedicle screw fixation as a first step followed by decompression. The idea was to allow shrinkage and destruction of hemangioma due to vertebroplasty to reduce the intraoperative bleeding and then perform a decompression to improve the neurological symptoms.⁸

In a similar case report by Syrimpeis et al, a 73 years old female with atypical hemangioma of L3 vertebra with radiculitis in L3 dermatome was treated with balloon kyphoplasty, decompression and pedicle screw fixation to prevent instability.⁹

It is important to look for erosion or a fracture of posterior wall of the vertebra when a cemented vertebroplasty is planned. We confirmed the same prior to the procedure. Cement entering the spinal canal can be fatal to the patient.¹⁰ No leakage occurred in our case.

Thus, hybrid fixation with vertebroplasty and pedicle screw fixation is a good form of treatment for lumbar canal stenosis associated with atypical vertebral hemangiomas with satisfactory surgical outcome.

CONCLUSION

Spine surgeons should always look for atypical vertebral hemangiomas when treating a patient with spinal canal stenosis. Early detection of these hemangiomas with MRI and CT scan can go a long way in improving outcome. Posterior decompression along with vertebroplasty, and posterior segmental pedicle screw fixation, in patients with neurological symptoms as a single or two staged procedure minimizes further neurological deterioration and allows early and safe mobilization and improves surgical outcome.

Recommendations

We recommend this technique in similar cases of lumbar canal stenosis with concomitant vertebral hemangiomas.

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