

A Rare Case of Extensive Spinal Hemangioma in the Thoracic Spinal Canal

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Abstract

Vertebral hemangiomas are relatively common, but those causing spinal cord compression are rare. A 50-year-old male presented with a history of progressive neurological symptoms of tingling, numbness, and subsequent weakness in both lower limbs. Initially experiencing tingling and numbness, the patient reported worsening of symptoms leading to complete inability to walk. A detailed neurological examination revealed normal upper limb function but significant weakness and sensory loss in the lower limbs. Despite significant motor and sensory impairments, bowel and bladder functions remained unaffected. MRI of the spine identified an extradural extramedullary space occupying lesion (most common differential diagnosis hemangioma) spanning the D7 to D10 vertebrae, causing substantial spinal cord compression. Management included decompression with surgical resection of tumor, analgesics, corticosteroids, IV fluids, antibiotics. Patient's condition showed significant improvement, with lower limb strength increasing from initial zero

power (MMC) to 4/5 in the knees and ankles. This indicated some degree of neural recovery, underscoring the importance of early and accurate diagnosis. This case emphasizes the need for prompt recognition of spinal hemangiomas, as early intervention can lead to significant improvements in neurological function. Despite the extensive nature of the tumor, the patient’s prognosis was favorable, with notable recovery of motor function observed during the hospital stay. In conclusion, this case illustrates the clinical challenges posed by extensive thoracic spinal hemangiomas and highlights the critical role of early diagnosis and comprehensive treatment. The successful management of this patient emphasizes the potential for significant neurological recovery even in cases of extensive spinal cord compression, provided timely approach is adopted.

Keywords: Hemangioma, Decompression, Case report

Introduction

Spinal hemangiomas are rare, vascular tumors that arise from the blood vessels within the vertebral bodies.(1) These tumors can be benign but may cause significant

morbidity when they compress the spinal cord or nerve roots. Accounting for approximately 2-3% of all primary spinal tumors, spinal hemangiomas are often incidental findings but can become symptomatic, predominantly affecting the thoracic region and typically occurring in middle-aged individuals, with no marked gender preponderance.(2,3) Symptoms can vary depending on the size, location, and growth rate of the tumor, and include back pain, motor weakness, sensory disturbances, and, occasionally, autonomic dysfunction.(4)

In the clinical setting, patients with spinal hemangiomas may present with a range of symptoms including back pain, motor weakness, sensory disturbances, and autonomic dysfunction.(5) The gradual onset of symptoms often leads to a delay in diagnosis, with patients frequently seeking medical attention only after significant neurological impairment has developed. Magnetic Resonance Imaging (MRI) is the gold standard for non-invasively diagnosing spinal hemangiomas, offering detailed visualization of the tumor's size, location, and its effect on surrounding structures.(6-8)

The management of spinal hemangiomas varies depending on the severity of symptoms and the extent of the tumor. Options include surgical resection, embolization, and radiation therapy, all aiming to relieve spinal cord compression and preserve neurological function.(9,10) The prognosis for patients with spinal hemangiomas is generally favorable, particularly when the tumor is effectively managed. However, the extent of neurological recovery is closely related to the duration and severity of preoperative deficits. Early diagnosis and prompt intervention are crucial for optimizing outcomes and minimizing permanent neurological damage.(11)

Case Presentation

A 50-year-old male presented with a six-month history of progressive neurological symptoms. The patient was managed elsewhere for the same conservatively. The patient experienced tingling and numbness in both lower limbs, which gradually worsened since 2 months. Over the following one month, the weakness progressively deteriorated, culminating in complete inability to walk 15 days prior to hospital admission. Despite significant motor and sensory impairments, there were no reported bowel or bladder involvement.

Upon initial presentation, the patient described the tingling sensation as starting in the feet and slowly ascending to the thighs. This was accompanied by a feeling of numbness, which progressively affected his ability to perceive touch and temperature changes. By the fifth month, the patient started experiencing muscle weakness in the lower limbs, which worsened over time, significantly affecting his mobility.

On admission, a detailed neurological examination was conducted. The neurocharting revealed distinct differences in motor and sensory functions between the upper and lower limbs. The upper limb examination showed full strength (5/5) in shoulders, elbows, wrists, and grips on both sides, with intact sensation, eutonic muscle tone, and normal reflexes. In contrast, the lower limb examination revealed significant weakness, with power rated at 0/5 in the right hip, knee, ankle, and toe, and 0/5 in the left hip, knee, ankle, and toe. Sensation was decreased below the D8 vertebra level, but muscle tone remained eutonic, and reflexes were present bilaterally.

An MRI of the spine was performed, which indicated an extradural extramedullary space occupying lesion (most probably hemangioma) at the D7, D8, D9, and D10

vertebrae levels. The tumor appeared to be exerting significant pressure on the spinal cord, correlating with the patient's symptoms. Laboratory tests showed normal blood counts, liver, and kidney function, but elevated inflammatory markers (ESR and CRP) suggesting an ongoing inflammatory process.

The patient was scheduled for surgery after a detailed pre-operative evaluation for fitness for surgery, given the significant spinal cord compression. Patient was operated under general anesthesia and placed in prone position. Vertebral level localized under Fluoroscopy. Standard posterior approach was taken, extending from D7 to D10 vertebra. After soft tissue dissection, laminectomy was performed. Spinal cord was significantly compressed by space occupying lesion, causing its considerable displacement. Margins of the tumor were identified, and meticulously resected from D7 to D10 vertebra while taking care to avoid injury to the spinal cord.

Histopathology of resected tumor revealed loose fibrocollagenous vascular stroma and underneath are many slit like spaces few filled with red blood cells and few are empty .No hyperchromatic benign endothelial cells seen. Stroma is edematous and with inflammatory cells.

Postoperatively, the patient was transferred to the intensive care unit for close monitoring. He received intravenous corticosteroids to manage postoperative swelling and pain management and nonsteroidal anti-inflammatory drugs. Physical therapy was initiated early to promote mobility and prevent complications such as deep vein thrombosis and muscle atrophy. By the third postoperative day, the patient showed notable improvement in lower limb strength, with power in the knees and ankles improving to 3/5 bilaterally. Sensation

below the D8 level also improved, although some numbness persisted.

The patient continued to show progress over the following weeks. At discharge, patient had regained significant motor function, with strength rated at 4/5 in most lower limb muscles. Follow-up MRI at six weeks post-surgery showed no residual tumor, and the spinal cord appeared decompressed with normal alignment.

Discussion

Spinal hemangiomas are uncommon, constituting about 2-3% of primary spinal tumors, and they predominantly occur in the thoracic region.(2) They are typically slow-growing and benign but can lead to significant morbidity due to compression of the spinal cord and nerve roots. The clinical presentation of spinal hemangiomas varies widely depending on the size and location of the tumor, as well as the degree of spinal cord compression.(12)

In this case, the patient presented with a six-month history of progressive neurological symptoms, starting with tingling and numbness in the lower limbs, followed by muscle weakness. Such a presentation is typical of spinal hemangiomas, where sensory symptoms often precede motor deficits due to the gradual nature of tumor growth and spinal cord compression.

The diagnostic workup in this case included an MRI of the spine, which is the noninvasive gold standard for identifying spinal hemangiomas. MRI provides detailed images of the spinal cord and surrounding structures, enabling precise localization of the tumor.(7) In this patient, the MRI revealed an extensive hemangioma spanning four vertebral levels (D7-D10), causing significant spinal cord compression, which explained the severe neurological deficits observed.

Management of spinal hemangiomas varies depending on the severity of symptoms and the extent of the tumor.

Options include surgical resection, embolization, and radiation therapy, aiming to relieve spinal cord compression and preserve neurological function.(13)

The absence of bowel and bladder involvement in this patient is notable, as these functions are often affected in extensive spinal cord lesions.(14) This could be attributed to the precise location of the hemangioma, which may have spared the sacral nerve roots responsible for these autonomic functions.

Prognosis in spinal hemangiomas is generally favorable, especially with effective management. However, the extent of neurological recovery depends on the duration and severity of preoperative deficits.(15) In this patient, the significant recovery of motor function suggests a positive outlook, though long-term follow-up is necessary to monitor for tumor recurrence and manage any residual deficits.

Conclusions

This case of an extensive thoracic spinal hemangioma highlights the critical importance of early diagnosis and intervention in managing spinal cord tumors. The patient's presentation with progressive lower limb weakness and sensory deficits over six months emphasizes the need for vigilance in recognizing early neurological symptoms. MRI proved invaluable for accurately diagnosing the extent of the hemangioma. The absence of bowel and bladder involvement, despite significant spinal cord compression, points to the complex nature of symptom manifestation in spinal tumors with a favorable prognosis likely when early and comprehensive treatment strategies are employed.

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Legend Figures

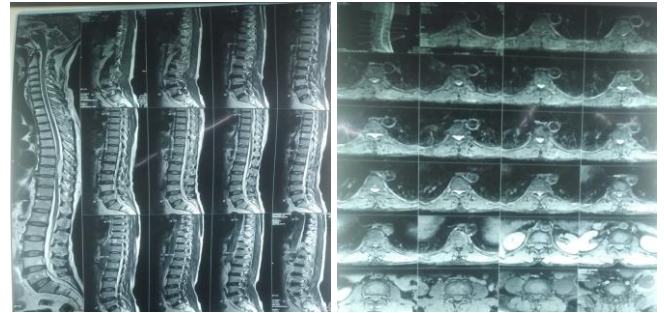


Figure 1: MRI images tumor extending from D7 to D 10 vertebrae levels

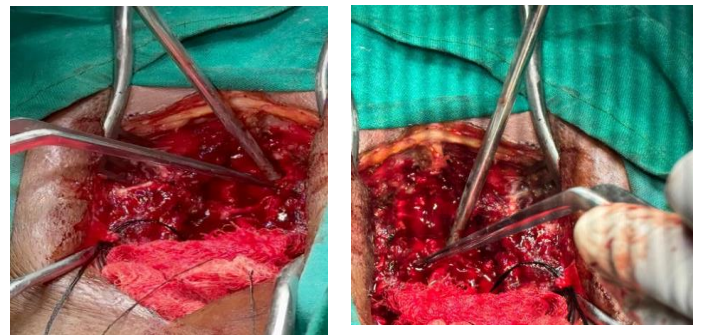


Figure 2: Intraoperative pictures during resection of tumor



Figure 3: Sample collected during intraoperative period

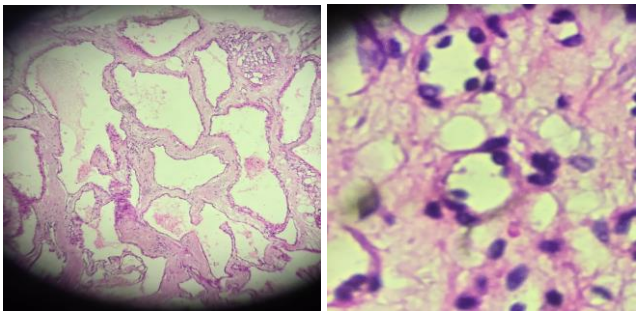


Figure 4: Histopathology slides (Hematoxyline and eosin stain)