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Case Report

D5 Embolization and Transpedicular Decompression of a Patient of D5 Hemangioma with Neurological Involvement

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Abstract

Hemangioma is a benign tumor that occurs in the endothelial lining of the blood vessels. Although they make up less than 1% of all primary bone neoplasms, bone hemangiomas are malformed, benign vascular lesions that are rarely symptomatic in adults.

Keywords: Hemangioma; Aggressive Vertebral Haemangiomas (AVH)

Background

Benign vascular tumors known as aggressive vertebral haemangiomas (AVH) can compress the spinal cord epidurally, compromise the stability of the anterior column, and rupture the posterior cortical wall of the affected vertebra [1].

Although there is no risk of metastatic spread because the Tumour's benign nature, but due to myelopathy or impaired vertebral stability might require surgical intervention for decompression and stabilization [2].

There are combination surgical approaches to decompress and stabilise AVH, depending on the afflicted vertebral level and the anterior and posterior extent of the lesion. Because haemangiomas are highly vascularized, extensive bleeding can make surgery more difficult or perhaps potentially fatal [1].

By obstructing the feeding arteries via flouroscopically controlled endovascular intervention for the embolization of spinal tumors seeks to minimize surgical blood loss by cutting off the blood supply within the tumour. Depending on the size of the vessel and the required length of blockage, a variety of chemicals can be utilized for embolization [3]. Embolizing agents include liquids (like Onyx), particle embolising agents (like polyvinyl ethanol), sclerosing agents (like ethanol), and mechanical occlusion devices (like coils).

Because of the limited dimensions of the vertebral canal in the thoracic vertebrae, hemangiomas are more likely to be symptomatic and require more aggressive management before the onset of severe neurological consequences [4,5].

Hemangioma has three histological types: capillary, cavernous, and mixed. The amount of vascular and fatty tissue might predict the behavior of the lesion [6,7].

We present a rare case of aggressive vertebral hemangioma in the thoracic spine of an 58-year-old female. The diagnosis of vertebral hemangioma is very crucial and can be challenging in some cases. It may mimic malignant lesions in both clinical and radiological behavior. Hemangiomas can be aggressive, compressing the spinal cord as in our case.

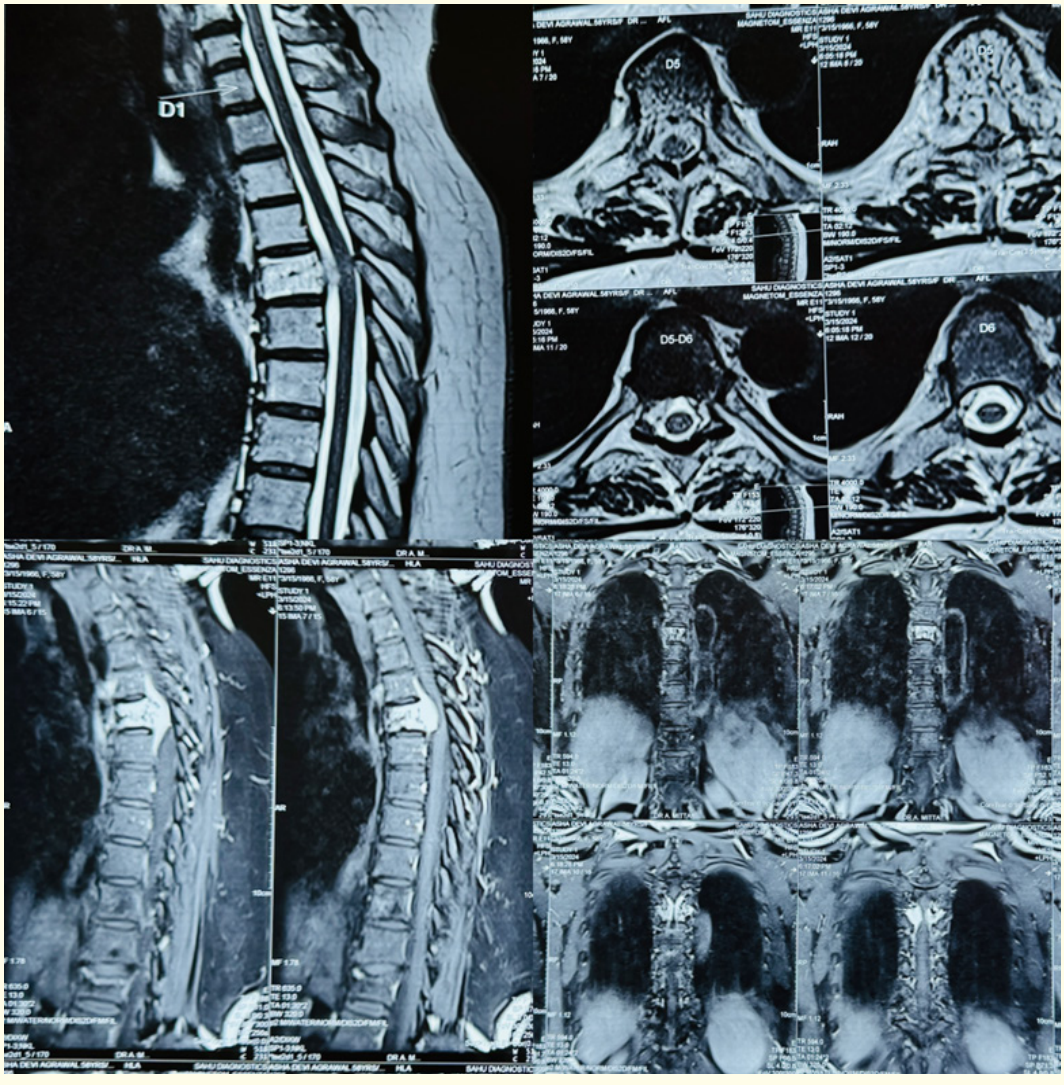
Case Report

An 58-year-old female presented to the clinic with a two-month history of mild to moderate mid-thoracic back pain. It was associated with both lower limb parasthesia. There was no history of bowel or bladder incontinence. Patient is a known case of hypothyroidism.

On physical examination, the patient was generally stable. There was mild to moderate tenderness at the upper to mid back region. Neurological examination was normal in both upper limbs. Power

was in both lower limbs to grade 5/5. The examination also revealed exaggerated deep tendon reflexes, impaired sensations below the T7 level extending to both lower limbs and a positive Babinski sign.

Plain x-ray of the spine showed an osteolytic destructive lesion at the 5th and 10th thoracic vertebra with vertical trabeculations and jail-bar appearance. CT scan showed a diffuse T5 and T10 lesion with coarse trabeculations, corduroy cloth appearance, or jail-bar sign. The tumor at the D5 was poorly defined surrounding soft tissue is seen extending into the epidural space. The axial cuts showed extensive trabeculations that resembled polka dots, as well as enlargement of the body and lamina that compromised the neural components and caused spinal stenosis. Spine MRI showed an extensive high signal intensity body lesion on T2-weighted images and stained with contrast on T1-weighted images. The tumor mass extended to the neuronal canal, compressing the spinal cord at the D5 level. PET scan showed abnormal FDG uptake at D5 vertebra, junction of proximal and mid shaft fibula, both lobes of thyroid (left>right), prevascular lymph nodes, retrocaval pretracheal lymph nodes, right hilar lymph nodes.



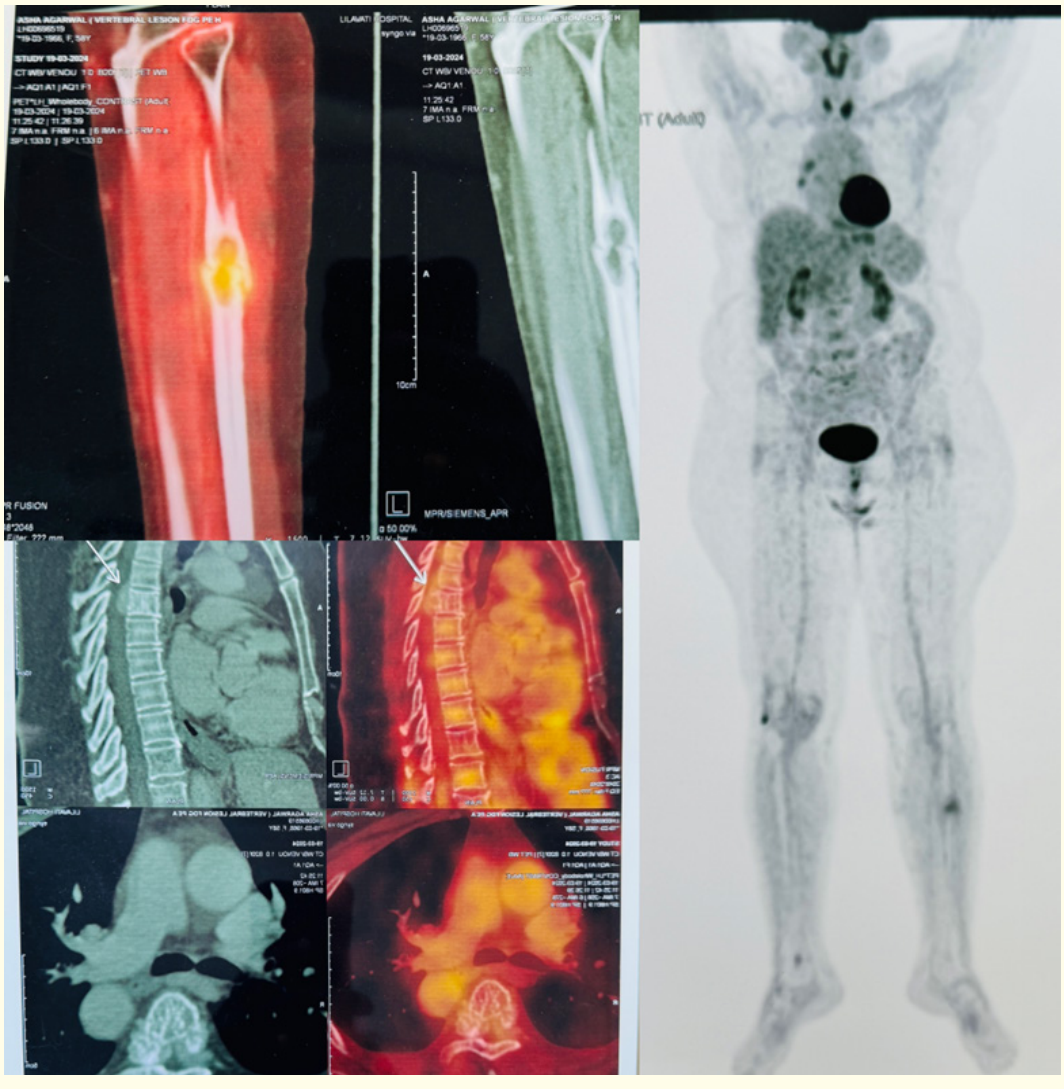


Figure 1

A diagnosis of spinal hemangioma was considered and because of deteriorating neurological status and impending collapse of the vertebra. The patient was advised for pre-operative embolization.

The patient underwent decompression, biopsy, and segmental fixation utilizing the posterior approach . During the surgery there was comparatively less bleeding coming out of the vertebra and adjacent soft tissue component. Several bone tissue samples were collected from epidural soft tissue and D5 vertebral body was sent for a frozen section and biopsy. Biopsy samples showed aggregates of small capillaries and ramifying varying in calibre and shape, and they are lined plump endothelial cells with uniform bland nuclei and no malignant cells. At places, intralumenal fibrinous material is seen, suggestive of capillary hemangioma.

The patient had an uneventful postoperative course. Parasthesia was improved and pain decreased over the D5 region over the back and Babinski sign was negative. Patient at 4 weeks had normal sensations and movements were painless over the back.

Discussion

Vertebral hemangiomas have a prevalence of approximately 10% and a predilection for young, female patients and the thoracic spine [8].

The available literature supports the use of preoperative embolisation in cases of AVH. Embolization does not appear to be the

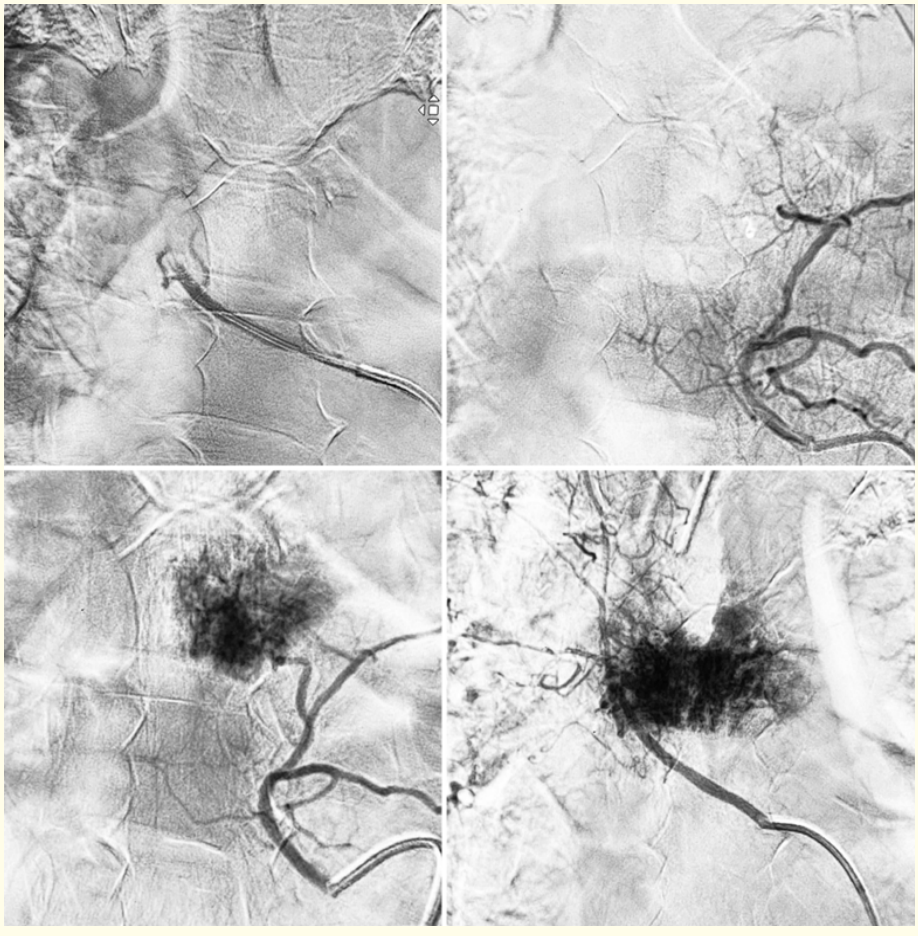


Figure 2

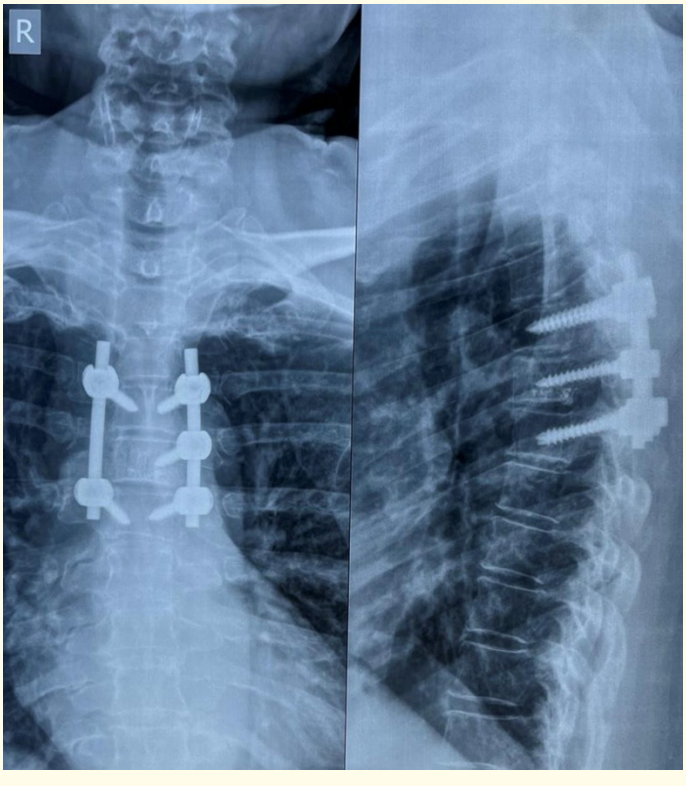


Figure 3

only factor reducing bleeding; other factors that also play a significant role in reducing the overall effect of embolization include surgical technique, appropriate anesthesia (low positive end-expiratory pressure), and the patients' clotting capacity [13].

In the case of spinal surgery, there may be a connection between surgical bleeding and postoperative morbidity and mortality [9].

Not only transfusion risks but also cardiovascular and pulmonary complications increase with greater blood loss [10].

Berkefeld., *et al*. [11] confirmed the efficacy of embolization of hypervascular spine Tumour, finding a median perioperative blood loss of 1850 mL versus 4350 mL in controls. Hemostasis was not significantly improved if the feeder was simply coiled. However, high volumes and slow injection rates are necessary for safe particle embolization, which means long injection and fluoroscopic times [14].

It is important to distinguish between hemangioma and spine metastatic spine lesions as well as spine Paget's disease. The most reliable method for diagnosing vertebral hemangioma is typically a CT scan. The soft tissue component of the lesion, its extension, and the degree of compression of the neural components are all visible on an MRI [15].

Hemangiomas can have capillary, cavernous, or mixed histopathological patterns. In bone, the capillary and cavernous types are common.

Exaggerating continuous pain over the back and progressing neurological and upper motor neuron involvement in our case reflected the behavior of an aggressive hemangioma, which may result in permanent paraplegia and permanent disability if not managed properly. The diagnosis is typically made possible by a high degree of suspicion, the distinctive corduroy appearance on the x-ray, and the polka dots on the CT scan [16].

Radiation therapy, embolization, percutaneous sclerotherapy, vertebroplasty, and surgery are available treatment options for symptomatic hemangiomas. Various combinations of these have been employed in the past. Some authors suggested a therapy algorithm. They suggest: (1) radiotherapy limited to small lesions where spinal stability is unaffected; (2) kyphoplasty for asymptomatic patients with small vertebral hemangiomas and for patients affected by small vertebral hemangiomas experiencing pain without spinal canal invasion; and (3) surgery for patients experiencing pain without spinal canal invasion but with a wide vertebral hemangioma, patients with spinal canal invasion, and patients with neurological deficits [12].

In our case CT and MRI were diagnostic of vertebral hemangioma. Surgical decompression was warranted because of the progressing disease. The patient recovered after surgery and completion of a rehabilitation program.

Conclusions

Symptomatic vertebral hemangiomas are rare but should be considered as a differential diagnosis. They can present with severe neurological symptoms, but when managed properly, severe disability can be prevented. In our case, decompression and a rehabilitation program resulted in complete recovery.

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