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Case Report

# Dorsal Spine Extradural Hemangioma with Neurodeficit, Mistaken Pott's Paraplegia: A Case Report

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## Abstract

**Background:** Vertebral hemangiomas are the most common primary vertebral tumor of the spine, usually with vascular origin (capillary and venous malformations), and are detected incidentally in most cases. The occurrence of vertebral hemangiomas is more common in women than men and is more symptomatic in the fourth decade of life. The exact etiology is not well understood. An increase in daily living activity leads to vertebral hemangioma becoming painful. The proliferation of hemangiomas causes erosion of bone and, in some cases, causes encroachment into the spinal canal.
**Case Report:** We present a case of a 37-year-old man with gradually progressive paraplegia and a D2 level infiltrative mass causing compression on the spinal cord.
**Conclusion:** A patient with vertebral hemangioma with spinal cord compression, if diagnosed correctly and treated early with surgical intervention, results in a good prognostic outcome.

*Keywords:* Hemangioma; Vertebral Body; Spinal Cord Compression; Pott's Paraplegia

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## Background

Vertebral hemangiomas are common lesions and are usually considered benign. A rare subset of them is characterized by extra-osseous extension, bone expansion, disturbance of blood flow, and occasionally by compression fractures, referred to as aggressive hemangiomas.

We present a case of a 37-year-old man with gradually progressive paraplegia and D2 level infiltrative mass causing compression on the spinal cord. The patient was on oral anti-tubercular medications for around five months. He did not improve after anti-Koch's treatment (AKT). Magnetic resonance imaging (MRI) suggested the diagnosis of D2 level extradural lesion in favor of hemangioma with cord compression. After decompression and stabilization, surgery confirmed the final pathological diagnosis of dorsal spine D2-level osseous extradural hemangioma.

## Case Report

A 37-year-old Nigerian man presented to us with the chief complaint of back pain and insidious development of weakness in both his lower limbs associated with gradual loss of sensation from nipple level to toe and was bedridden for the last five months, during which he was started on oral anti-tubercular medications. On presentation, neurological examination demonstrated decreased strength of both lower limbs with decreased sensation below T4 level. Clonus, as well as extensor plantar reflexes, was well appreciated bilaterally. Deep tendon reflexes were brisk. The patient's routine blood investigations, including erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP), were within normal range. Moreover, there was no significant history suggestive of Koch's contact. Hence, the patient's anti-tubercular medications were discontinued.

His X-ray of the cervico-dorsal spine were essentially normal (Figure 1).

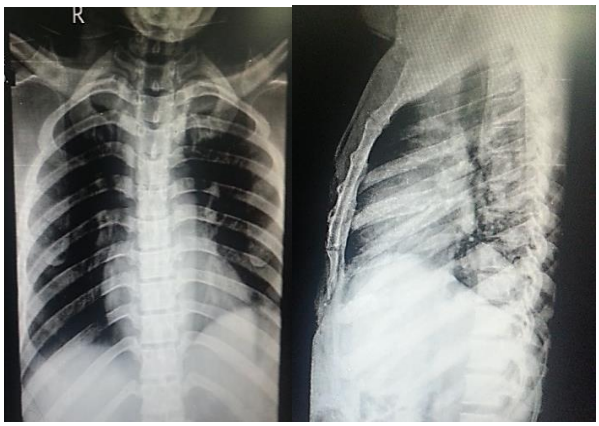


**Figure 1.** Essentially normal cervico-dorsal X-ray

MRI of the cervicothoracic region demonstrated a T-2 weighted hyperintense enhancing expansile osseous lesion with trabecular thickening involving the D2 vertebral body. Additionally, the mass extended into the spinal canal, compressing the thoracic spinal cord at this level (Figure 2).

The surgical option was preferred with a posterior dorsal spine decompression (laminectomy) and excision of the extradural lesion along with stabilization with lateral mass screws at C6, C7 and pedicle screw fixation at D3, D4 with rods (Figure 3).

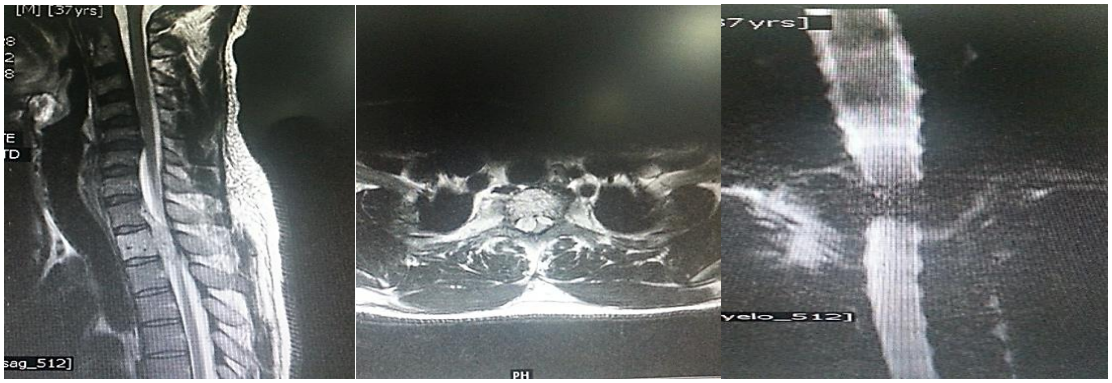

**Figure 2.** Extradural hemangioma of the thoracic spine with progressive paraplegia; A: T-2 weighted sagittal magnetic resonance imaging (MRI) showing solitary expansile lesion of D2 vertebral body with trabecular thickening; B: T-2 weighted axial MRI showing the expansile mass occupying the spinal canal and causing epidural compromise and cord compression; C: MRI myelogram study shows spinal cord compression

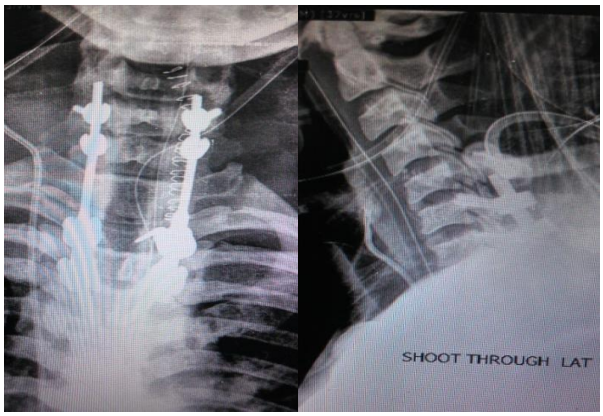


**Figure 3.** Post-operative images showing a rigid posterior stabilization fixation with cervical (C6, C7) lateral mass screws and thoracic (D3, D4) pedicle screws with rods

Intraoperatively, it was seen as a solitary extradural lesion adhered to the cord. The lesion was dark brown and fluffy in consistency, appearing very vascular. Intraoperative blood loss was 2.5 liters, which was replaced to maintain hemostasis.

Post-operatively, the patient showed immediate clinical neurological improvements, such as toe movements, sensations below the D-4 level, and better leg sensations. The patient responded well to muscle stimulation and was mobilized in the wheelchair.

The diagnosis of vertebral osseous hemangioma was confirmed by histological analysis (Figure 4).

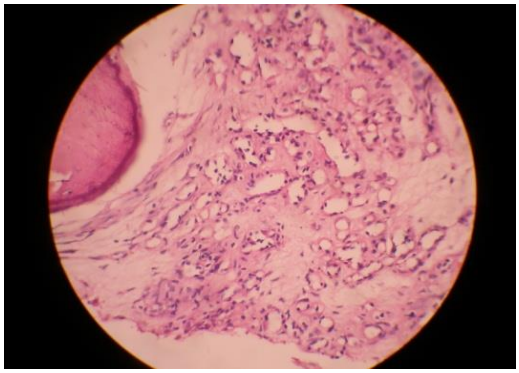

**Figure 4.** Histology from the surgical biopsy of the mass; thin-walled blood vessels of various sizes filled with blood and serous fluid extend through the bony trabeculae of the vertebral body, replacing the normal marrow, consistent with osseous hemangioma

## Discussion

Initially described by Perman in 1926 and later by Bailey and Bucy in 1930, vertebral hemangiomas are common benign lesions of the spinal column, with an estimated incidence of 10-12 percent based on extensive autopsy series and spine radiograph reviews. Although typically incidental findings, they are symptomatic in 0.9% to 1.2% of adults (1, 2). This small but significant subset of symptomatic lesions is known as aggressive hemangioma and is characterized by bone expansion, extraosseous extension of tumor, disturbance of local blood flow, and rarely by compression fractures (1). Approximately 45% of aggressive hemangiomas are associated with neurologic deficits, while the others are only characterized by pain (3).

Vertebral hemangiomas are classically characterized by sparing and thickening of vertically striated trabeculae, which preserve the vertebral body's functional capability to withstand an axial load (4).

Vertebral hemangiomas most commonly occur between D3 and D9 vertebral columns (5). These lesions typically involve the entire vertebral body, extending into the neural arch and causing expansion of the bone margins. They often contain a soft tissue component and may lead to cord compression and myelopathy due to the encroachment of extradural tissue, fractures, or hemorrhage (6). Vertebral hemangiomas may become symptomatic during pregnancy due to increased intraabdominal pressure and vascular flow redistribution in the vertebral venous plexus when the uterus enlarges (7).

Paget's disease of the spine can have a similar appearance but is usually distinguished by the expansion of the vertebral body with peripheral cortical thickening corresponding to the characteristic "picture frame" vertebral body on radiographs (8). Lymphoma can present with a similar appearance but is typically differentiated by its homogeneous enhancement on contrast-enhanced MRI (9).

The histologic pattern of osseous hemangiomas is characterized by the proliferation of anomalous thin-walled blood vessels and sinuses lined by endothelium between the thickened, vertically oriented trabeculae of bone. The dilated vascular channels are set in a stroma of fat. The signal intensity on MRIs is influenced by the proportion of fat to vascular tissue that is situated between the bone pillars (10).

Treatment options for symptomatic or aggressive hemangiomas without cord compression include vertebroplasty (7, 11), embolization, and sclerotherapy (12). Urrutia et al., in a recent case series of four patients,

showed that surgical resection was a relatively safe approach for treating compressive vertebral hemangiomas (13). In cases where only a subtotal resection of the hemangioma is performed, radiation therapy may be considered as a treatment option (13, 14).

*Conclusion*

Early diagnosis of hemangioma is critical to prevent spinal cord compression. AKT should be initiated only after the biopsy of the specimen. Empirical AKT should be avoided. Stabilization of the spine is important for early painless patient mobilization and prevents further vertebral body collapse.

## Conflict of Interest

The authors declare no conflict of interest in this study.

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