

Bilateral Epidural Extension of Thoracic Capillary Vertebral (Intraosseous) Hemangioma Mimicking Spinal Meningioma

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SUMMARY

We describe a rare case of vertebra (intraosseous) hemangioma with bilateral and symmetrical epidural extension causing cord compression in a 24-year-old woman. The epidural component was isointense to cord on both T1 and T2 sequences, and enhanced markedly and homogeneously following gadolinium administration. The gradual in onset and progressive nature with the typical enhancing pattern lead the neurosurgeon to the more common diagnosis of spinal meningioma. Epidural extension of vertebral hemangiomas causing cord compression is rarely reported. Review of literatures reveal that cases that have been reported are of unilateral extension into epidural space and of cavernous type. This is the first case report of capillary vertebral (intraosseous) hemangioma with bilateral extension through both intervertebral foramen into the epidural space causing myelopathy.

KEY WORDS:

Vertebra hemangioma, Bilateral epidural extension, Meningioma

INTRODUCTION

Hemangiomas are a benign vascular tumor with proliferation of blood vessels that occur in bone or soft tissue. They may contain nonvascular elements such as fat, fibrous or myxoid tissue, smooth muscle, thrombus or bone. They are classified histologically by the predominant type of vascular channel: capillary, cavernous, arteriovenous or venous type. Symptomatic vertebra (intraosseous) hemangiomas are rare and usually found incidentally during postmortem studies or presented with pain and pathological fracture. Few cases of vertebra hemangiomas with foraminal extension into paravertebral space and causing myelopathy have been reported in English literature and all are of cavernous type (Templin *et al.*, 2004).

CASE REPORT

A 24-year-old woman presented with a two month history of progressive weakness in both of her lower limbs. The weakness was associated with paresthesia of the lower limbs. The weakness and paresthesia started distally and progressed in ascending pattern to involve the proximal lower limbs muscles by the end of two months. The weakness was rather mild initially as she can still able to ambulate and independent in performing her daily activities during that period of time. As the weakness become worsens, she sought treatment from a traditional healer.

She presented to our emergency department one week following that when she developed sudden deterioration in weakness following few session of massage and limbs manipulation by the healer. On admission, she was bedridden and physical examination revealed present of myelopathy with sensory level at T10 level. Her lower power was grade 1/5 of MRC scale bilaterally. The lower limbs appear to be hypertonic and both knee and ankle jerks were exaggerated. Babinski test reveal bilateral up going plantar response. However, the myelopathy are incomplete as the sacral are spared and both bowel and bladder were claimed to be normal – Frankel or ASIA (American Spinal Injury Association) impairment scale class C.

Emergency Magnetic Resonance Imaging (MRI) of the spine revealed present of bilateral epidural mass with intense enhancement with gadolinium suggestive of spinal meningioma. The body of T3 was noted to have abnormal signals at that time probably represent a reaction to overlying spinal meningioma or incidental vertebra hemangioma as it was rather common. Computed Tomography (CT) scan of spine showed typical 'polka-dot' pattern of the T3 vertebral body typical of vertebra hemangioma (Figure 1). The fact that she never has history of back pain and examination does not elicit any bony tenderness at thoracic spine leading to conclusion that the associated vertebra hemangioma is incidental and asymptomatic. Nevertheless, rare possibility of abnormal vascular lesion was entertained in our differential diagnosis.

She however underwent emergency laminectomy and debulking without spinal angiography in view of rapid neurological deterioration. Intraoperatively, a vascular epidural mass extending through both neural foramina was noted. The intraspinal lesion was removed completely and hemostasis from vertebra and remnant at both neural foraminal was achieved. She has an uneventful recovery and aggressive physiotherapy was started ever since day 1 post operation. Upon discharge at one-week, her weakness had improved and she was able to ambulate again with the help of crutches.

Histopathological examination revealed a vascular lesion composed of closely packed capillaries lined by endothelial cells compatible with of capillary hemangioma (Figure 3). Review at six weeks post surgery revealed she had recovered completely without any neurological sequelae. Repeat MRI spine at three months revealed small residual lesion without any cord compression.

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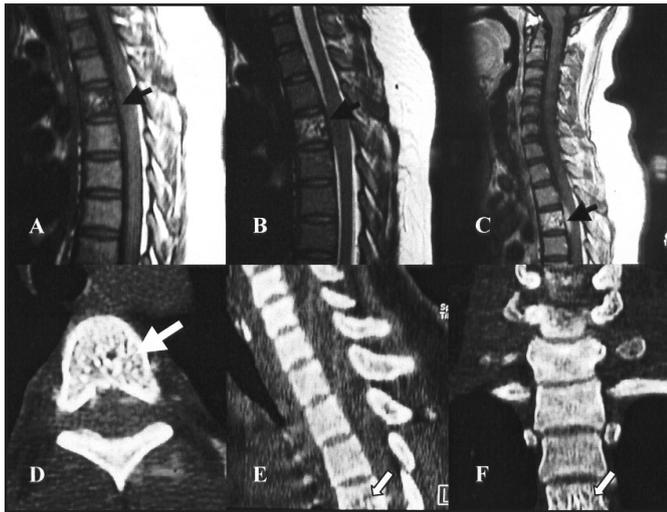


Fig. 1: Sagittal MRI (A) T1WI and (B) T2WI showing isointense extradural lesion arises from T3 vertebra (white arrow). The lesion enhance intensely with gadolinium administration (C). Spinal reconstructed CT scan revealed typical 'polka-dot' pattern (white arrow) of T3 vertebra body on axial (D), and 'Corduroy' or 'jailhouse striation' appearance on sagittal (E) and coronal (F) plane (black arrow).

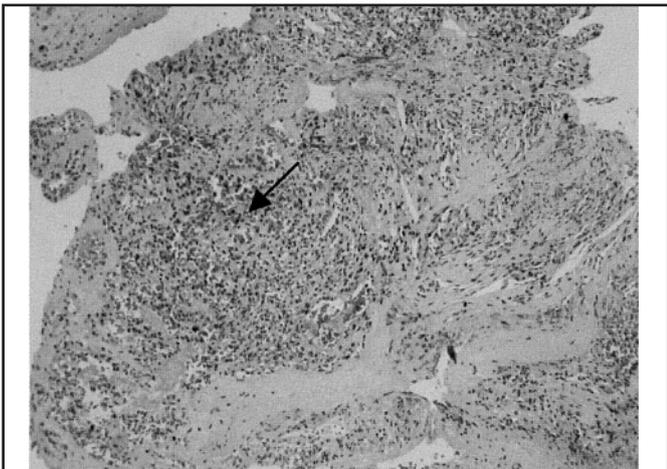


Fig. 3: Photomicrograph showing closely packed capillaries (arrow) with minimal intervening stroma lined by endothelial cells (H & E x 20).

DISCUSSION

Vertebral (intraosseous) hemangiomas represent 2-3% of spinal tumors. They are usually picked up as an incidental finding on radiological image or during autopsy. These lesions occur most commonly in the thoracic vertebra as in this case. They usually have an indolent course but might cause pathological fracture, hemorrhage and extraosseous extension to paravertebral space and rarely epidural extension.

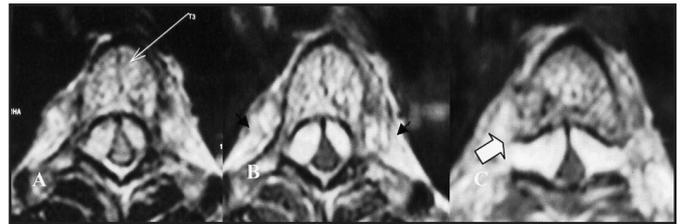


Fig. 2: Axial T2WI MRI plain (A) and with gadolinium (B) at pedicle level of T3 which demonstrate homogenous and intensely enhancing epidural mass causing thoracic cord compression, with mottled hyperintense signals within T3 vertebral body (white arrow) and present of bilateral paravertebral mass (black arrow). (C) Axial T2WI MRI with gadolinium at level of T3/4 intervertebral foramen reveal continuation of epidural mass bilaterally with paravertebral mass through the neural foramina (block arrow).

They tend to erode the horizontal trabeculae of the vertebral bodies thus leading to appearance of accentuated, thickened vertical trabeculae, give rise to 'Corduroy' or 'jailhouse striation' appearance in lateral XR or sagittal CT scan (Rudnick and Stern, 2004). In axial CT scans, they give the appearance of a 'polka-dot' or 'spike of bone' pattern because the vertical trabeculae are imaged in cross section (Puvanewary *et al.*, 2003).

The compression is at the level of T3 vertebra which corresponded to T5 spinal cord and the sensory level should be above umbilical. The disproportion between sensory level and exact location of lesion suggest that the etiology for myelopathy is of ischemic or vascular in origin. This is further supported by the fact that the neurological deterioration is sudden in onset.

Spinal angiography is recommended before surgery, to determine the vascular supply to the lesion and spinal cord. Pre-operative endovascular embolization of feeding vessels should be done whenever possible, to minimize the risk of massive hemorrhage intraoperatively. Transarterial embolization followed by laminectomy have been shown to be a safe and effective procedure for the treatment of cord compression by vertebral hemangioma causing stenosis without instability or deformity (Acosta *et al.*, 2006). Transarterial embolization without decompression is an effective treatment for painful intraosseous hemangiomas. Vertebroplasty is useful for improving pain symptoms, especially when vertebral body compression fracture has occurred in patients without neurological deficit, but is less effective in providing long-term pain relief (Acosta *et al.*, 2006). Various management options such as stereotactic radiosurgery and percutaneous transpedicular intralesional injection of absolute alcohol have been tried by few authors with good result (Murugan *et al.*, 2002). However, their benefits are still questionable as limited data available in the literatures.

Case Report

The T3 vertebral hemangioma and residual lesion in the paravertebral space in this lady should be treated in view of recurrent risk of cord compression in the future. She is planned for staged embolization and vertebrectomy via postero-lateral approach if lesion recurs or progresses.

CONCLUSION

This case report presents a rare cause of thoracic cord compression. Although rare, vertebral hemangioma with epidural extension must be considered as a differential diagnosis, especially those involving thoracic spine. CT scan of spine is the best modality to pick up the diagnostic radiological features when characteristic trabecular polka-dot pattern is demonstrated. In acute neurological deterioration, decompressive laminectomy with debulking should be carried out first and the vertebral hemangioma can be tackled later.

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