



Case Report

Recurrent symptomatic vertebral hemangioma in pregnancy managed with decompression and vertebroplasty

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ABSTRACT

Background: Vertebral hemangioma is a benign vascular tumor of the spine that occurs in the endothelial lining of blood vessels. The majority of these lesions are detected incidentally on routine magnetic resonance imaging scans. Rarely, lesions can increase in size and result in neurological deterioration.

Case Description: A 19-year-old post-partum female, presented with paraplegia due to a recurrent vertebral hemangioma with exophytic extension into the epidural space resulting in spinal cord compression. Early decompressive surgery facilitated adequate early recovery of neurological function.

Conclusion: Exophytic vertebral hemangiomas that have extended into the spinal canal resulting in cord compression require urgent surgical decompression.

Keywords: Epidural, Post-partum, Tumor, Vascular, Vertebral hemangioma

INTRODUCTION

Vertebral hemangiomas (VH) are the most common benign tumors of the spine. Based on a large autopsy series, and a large review of plain spine films, these lesions occur in about 10–12% of the general population. Middle aged females are most commonly affected.^[5] There are a few reports of symptomatic VH occurring during pregnancy. Although some may be managed non-invasively, others require, as in the case presented, urgent/emergent surgery.

CASE REPORT

First surgery

A 19-year-old, 1-month postpartum female presented with a progressive paraparesis of two months' duration. She had originally presented at the age of 13 years with paraparesis and back pain. The thoracic MR scan showed a T4 hemangioma that extended into the epidural space from T3 to T5 causing cord compression; a second hemangioma was localized to the T9 level without intraspinal extension. The patient was managed with arterial embolization of feeders from the thyrocervical trunk, and she neurologically recovered.

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Secondary surgery

The patient had a symptom-free course for 6 years at which point she newly developed paraplegia (Frankel Grade A: Complete) in the eighth month of pregnancy. The thoracic magnetic resonance imaging (MRI) now showed a recurrent VH with exophytic extension, and cord compression at the T3-T5 levels [Figure 1]. She underwent an emergent decompressive laminectomy from T3-T5 with T4 vertebroplasty [Figures 2 and 3]. The patient's motor deficit improved within one week and she was able to ambulate without support four weeks later. The patient was asymptomatic, and did not have any residual weakness on examination during her latest follow-up visit 2 years postoperatively.

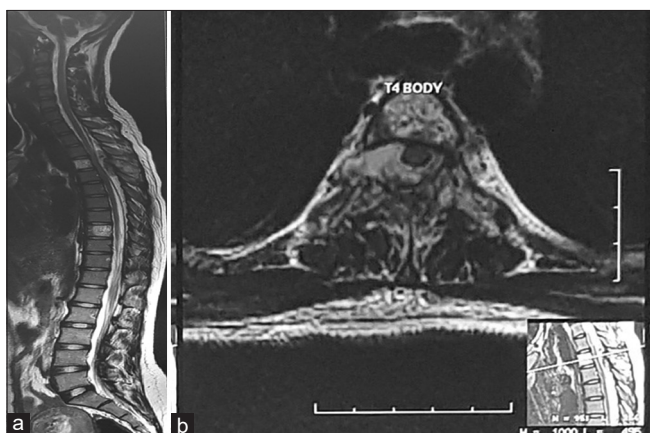


Figure 1: (a) T2-weighted MRI scan (sagittal cut) of the whole spine (b) T2-weighted MRI scan at the level of T4 (axial cut). (a) A well-defined extradural soft tissue mass is seen extending from the inferior end-plate of T3 to the inferior end-plate of T5. Hyperintensities noted at T4 and T9. (b) Lesion seen at the level of T4 with an epidural component surrounding the spinal cord and causing displacement of the cord from the midline.

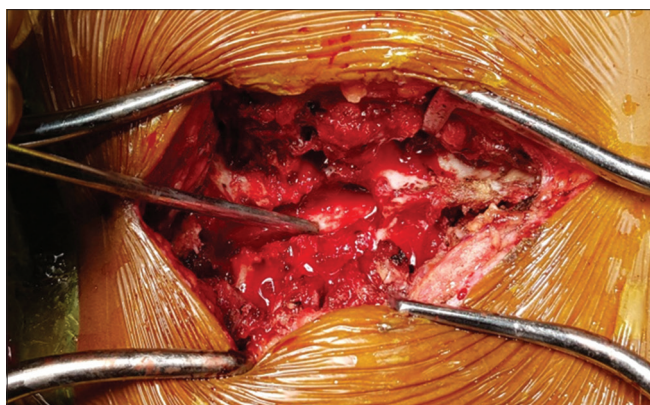


Figure 2: Intra-operative clinical image after decompression. The image demonstrates the posterior midline laminectomy performed with preservation of the facet joints.

DISCUSSION

Clinical presentation and etiology of neurological findings

Vertebral hemangioma is a malformed vascular lesion which is symptomatic in only 0.9–1.2% of cases. They may present with pain (54%) or neurological symptoms (45%).^[4] Balado first described symptomatic hemangioma during pregnancy, attributed to an increased blood volume and congestion of the epidural vertebral venous plexus due to the enlarged uterus producing greater inferior vena cava pressure.^[3,6]

Radiographic findings

Plain radiographs demonstrate a vertically striated pattern. On MRI scan, they are hyper-intense to mottled/ starburst on T1 and T2 weighted images, or hyperintense on the T2-weighted study as was seen in our case.

Computed tomography (CT) findings of VH and guided biopsy

On axial CT scan cuts, VH will show a “polka-dotted” or “salt and pepper” appearance due to the thickened vertebral trabeculae. A percutaneous CT-guided biopsy should be performed in cases where there is a suspected malignant lesion.

Pathology

There are three histological variants of VH: capillary, cavernous, and mixed type; the cavernous type is the most common. The lesion in this case was a capillary hemangioma [Figure 4].

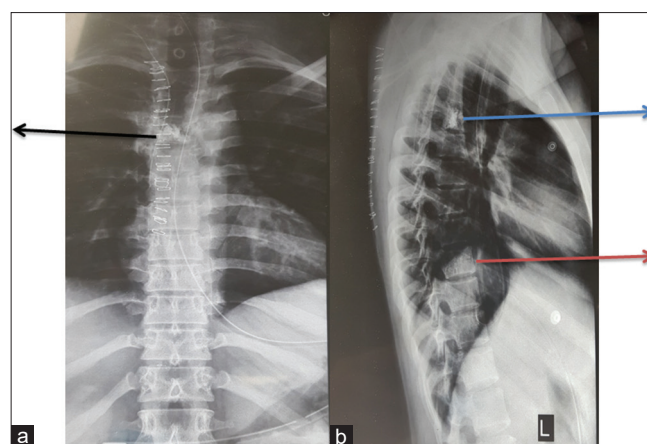


Figure 3: Post-operative anteroposterior and lateral radiograph of the spine. (a) Anteroposterior radiograph demonstrates the radio-opaque cement injected into the T4 vertebral body (black arrow). (b) Cement can be seen in T4 on lateral view. A striated pattern can be demonstrated in the T9 vertebral body (red arrow), suggestive of a vertebral body hemangioma

Table 1: Literature review of few symptomatic vertebral hemangiomas in pregnancy

Author	Year	Age*	Gest (m)**	Level	Location	Symptoms	Timing of surgery	Surgery performed	Outcomes
Balado	1927	36	9	Thoracic	Extradural	Pain, paraplegia	-	-	Death
Guthkelch	1948	34	8.5	T6	Vertebral, extradural	Pain, paraplegia	Pre-partum	Laminectomy	Death
Lam, <i>et al.</i>	1951	36	9	T3	Extradural	Pain, paraplegia	Post-partum	Laminectomy	Excellent recovery***
Bouchez, <i>et al.</i>	1984	24	7	T2	?	?	Pre-partum	Embolization	Excellent recovery***
Shapiro, <i>et al.</i>	2001	39	Term	T5-T9	Extradural	Pain, paraplegia	Post-partum	Laminectomy	Excellent recovery***
Fereydonyan <i>et al.</i> [2]	2017	1 st pregnancy: 28 Recurrence: 34	34 weeks 29 weeks	T5 T5	Vertebral, extradural Vertebral, extradural	Paraplegia Acute paraparesis/sphincter deficit	Post-partum Pre-partum	T5 corpectomy, T4/5 and T5/6 discectomy T5 and T6 laminectomy	Excellent recovery*** Mild post-operative residual spasticity
Present study		19	8	T4, T9	Extradural	Pain, paraplegia	Post-partum	Laminectomy and T4 vertebroplasty	Excellent recovery***

* Age of the patient in years. ** Age of gestation in months (age in weeks where specified). *** Patient had excellent recovery and could ambulate independently at follow-up visit

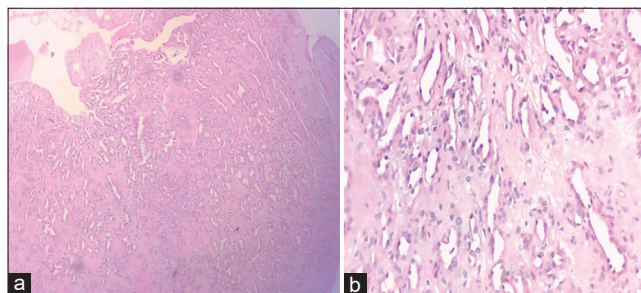


Figure 4: Images showing the histology. (a) Numerous small sized closely packed capillary channels with scant intervening stroma ($\times 40$); (b) the vascular channels are lined by flattened to plump endothelial cells without any atypia or mitosis ($\times 400$).

Surgery for symptomatic VH

The main indication for surgical decompression is rapid and progressive neurologic deterioration. Noninvasive management with angioembolization or radiotherapy can be attempted when the lesion is just localized to the vertebral body in an asymptomatic patient. In our case, the patient had a vertebral lesion with exophytic extension into the spinal canal that was first managed non-invasively with embolization procedure, but ultimately recurred with significant intraspinal extension.

Embolization and radiotherapy were not appropriate options in our patient as the epidural tumor resulted in cord compression and a significant neurological deficit. Here, the patient underwent an emergent decompressive laminectomy from T3-T5 with T4 vertebroplasty.

Treatment of symptomatic VH with pregnancy

There are few reports in the literature reporting symptomatic VH in pregnancy [Table 1]. Here, we present an algorithm for managing vertebral hemangioma in pregnancy. Chi *et al.* recommended conservative treatment in pregnancy, irrespective of gestational age, if the patient remained neurologically intact. Where the patient had a significant neurological deficit and the gestation age was less than 32 weeks, antepartum surgery was recommended; observation was recommended between 32 and 36 weeks of gestation, with surgical decompression reserved for those presenting with a severe neurologic deficit. Patients presenting at 36 weeks of gestation or later were also observed, but if the neurologic deficit worsened, induction of labour followed by management of the lesion was considered.^[1]

CONCLUSION

The management of recurrent symptomatic, exophytic VH that extends into the spinal canal resulting in renewed cord compression should consist of laminectomy and vertebroplasty.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Conflicts of interest

There are no conflicts of interest.

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