

Spinal Hemangioma in Pregnancy: A Case Report

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ABSTRACT

Background: Hemangiomas of bone are localized benign tumors composed of fully developed adult blood vessels. Vertebral hemangiomas are present without symptoms in approximately 10% of the population and more common in females. It is usually located in the lower thoracic and lumbar vertebra and are often multifocal. Infrequently these benign lesions may cause local or radicular pain and neurological deficits ranging from myeloradiculopathy to paralysis.

The physiological vascular, hemodynamic and hormonal changes in pregnancy act to enlarge a preexisting hemangioma and most of these changes peak in the third trimester. The most important contributing factor is the increase in venous pressure resulting from mechanical obstruction of blood flow from the paravertebral veins into the inferior vena cava by the gravid uterus.

Objective: To study the outcome of management of a case of spinal hemangioma during pregnancy.

Case report: A 26-years-old pregnant female patient attended the Department of Orthopedic Surgery at the International Medical Center Hospital, Jeddah, Saudi Arabia, suffering from a severe lower limb paresis and loss of sphincteric control and diagnosed with spinal hemangioma. An intervention was done during pregnancy to prevent further complications by decompressing the spinal cord. Post-delivery, the main surgery was performed to prevent the recurrence.

Conclusion: The management of spinal hemangiomas in pregnant women can be done in the following two steps. The First step is short-timed, less bloody intervention to decompress the mass to prevent further damage and complications. The second step is to perform the main surgery post-delivery when the condition permits.

Keywords: Hemangiomas, Spinal, Vertebroplasty.

INTRODUCTION

Spinal hemangiomas are one of the most frequent primary tumors of the spine. This tumor is of vascular origin and like hemangiomas in other parts of the body is usually associated with proliferation of normal capillary and venous structures (1,2).

In a previous study it was identified in about 11% of patients at general autopsy. These lesions are usually an incidentally discovered on CT and MR imaging of the body and spine, and frequently in radiographs of the thoracolumbar spine (3,4).

A minority of these lesions can be associated with symptoms, primarily involving back pain and neurologic complaints with some estimates of 0.9% to 1.2% becoming symptomatic (5). Symptoms can involve severe backaches that is worsened by movement. However, mild to moderate pain might

also be a presenting symptom (6).

In cases associated with neurogenic pain, hemangiomas usually extend into the spinal canal or neural foramina (7).

CASE REPORT

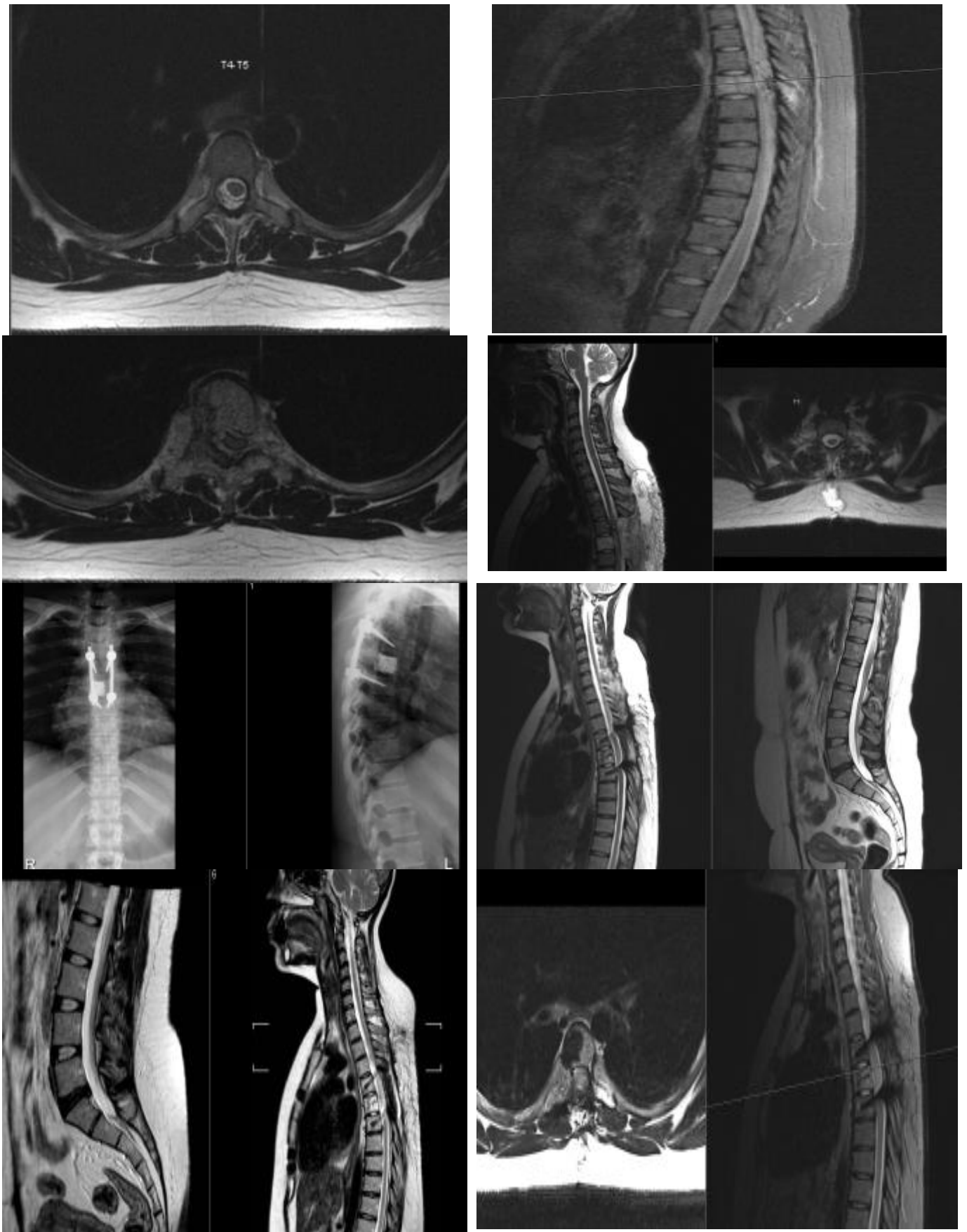
A 26-years-old pregnant patient at the 31st week of gestation was presented to the Department of Orthopedic Surgery at the International Medical Center Hospital, Jeddah, Saudi Arabia, complaining of inability to move her lower extremity with loss of sphincter control.

Following history taking, medical examination and investigations, she was found to have spinal hemangioma that was compressing the spinal cord at the level of T3 to T5 started to bleed and calcified inside the epidural space compressing the cord.



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Preoperative MRI:



Postoperative MRI:



Ethical approval and patient consent:

The patient signed informed written consent for the acceptance of the operation and publication of this case report. An approval of the study was obtained from the International Medical Center Hospital, Saudi Arabia, Academic and Ethical committee. This work has been carried out in accordance with the Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

DISCUSSION

Spinal hemangioma is the most common benign spinal neoplasm that occurs in 11% of the general population⁽⁸⁾. In majority of patients, it is asymptomatic and diagnosed incidentally, but in about 1% of people it becomes symptomatic⁽⁹⁾. The most common site for involvement is the lower dorsal and lumbosacral spine, and it rarely involves the cervical spine⁽⁸⁾. Rarely, it causes cord compression due to spinal expansion and bleeding to the epidural space, rare pathologic fractures, and/or ischemia due to vascular shunting^(8,9).

The two main mechanisms for exacerbation/dilatation/expansion of hemangiomas during pregnancy include: (1) increased blood volume/and elevated venous pressure particularly after seven months of pregnancy (e.g. greater uterine volume and inferior vena cava compression), and (2) hormonal changes and the angiogenic effects of estrogen and progesterone promoting growth^(10,11).

Chi et al.⁽¹²⁾ proposed an algorithm for managing vertebral hemangioma during pregnancy: if the patient is neurologically intact, the management will be conservative despite the gestational age. However, if the patient has a significant neurological deficit and the gestational age was < 32 weeks, antepartum surgery should be performed. Whereas if the gestational age was > 32 weeks, surgery should be performed following fetus extraction. At that time, the decision was taken by multidisciplinary team including, spine surgeon, oncology team, and OB/Gyn in order to perform the shortest surgery as possible, in order to avoid fetal distress. So, the patient had a posterior spinal decompression of the part of the tumor that was inside the canal.

The patient was in the prone position over Jackson table, the abdomen was backed and supported without pressure. The support was under the chest and pelvic area, X-ray was done to identify the exact level of dissection. The dissection was done from level of T3 to level of T6, there was a lot of new vascularization, even with the muscle. With the identification of lamina, it was found to be invaded with the tumor at level of T5. In order to control the profuse bleeding with bone wax, we continued to

decompress upwards towards T3, so we removed the levels T3-T4 ligamentum Flavum, T4 lamina, T4-T5 ligamentum Flavum, T5 lamina, T5-T6 ligamentum Flavum and the superior portion of T6. We went also laterally removing the facets and reaching at each level of the pedicle. This was our lateral border. The facets were decorticated and removed for fusion. We also performed laborious hemostasis mainly with bone wax and with the FloSeal to control the bleeding. After finishing the decompression, the field was dry as there was no bleeding. The fetal monitoring at all stages of the procedure was normal. An Ob/Gyn consultant was monitoring the procedure all along, in addition to observing the patient with intraoperative monitoring. No complications were encountered during the surgery.

This procedure was performed within three hours. The patients lost about 3 liters of blood, but we were able to continue our surgery and the neonate was saved. The neonate was born at an appropriate age of gestation. At that time, we explained to the family that the patient needed a salvage surgery to decompress the cord in order to save her from getting paralysed.

Following the patient's delivery at an appropriate gestational age, it was time to consider the main surgery, which salvage be controlling the tumor, which is in the vertebral body. In order to prevent a new occurrence of this problem, which meant another bleeding when patient is pregnant. The required surgery II was embolization of the vertebral body of T5 to control the bleeding then going with vertebroplasty to inject cement in the vertebral body to sterilize the tumor and to fix the spine that was decompressed from posterior and do pedicular screw instrumentation and fusion. This was the main surgery that must be done if the patient was not pregnant. The surgery was scheduled as soon as the patient' condition permits further intervention.

CONCLUSION

During pregnancy, a patient with a vertebral hemangioma should be closely monitored for the emergence of a severe neurological impairment. Hemangiomas can demonstrate increased growth/expansion during pregnancy.

Management of spinal hemangiomas diagnosed in a pregnant women can be done in two steps first short-timed, less bloody intervention to decompress the mass to prevent further damage and complications, then when the condition permits following delivery the main surgery could be done.

REFERENCES

1. **Ciftdemir M, Kaya M, Selcuk E et al. (2016):** Tumors of the spine. *World J Orthop.*, 7 (2): 109-16.

2. **Nair A, Kumar R, Srivastav A *et al.* (2012):** Outcome of dorsolumbar vertebral hemangiomas presenting with neuraxial compression. *Indian J Orthop.*, 46 (5): 536-41.
3. **Pastushyn A, Slin'ko E, Mirzoyeva G (1998):** Vertebral hemangiomas: diagnosis, management, natural history and clinicopathological correlates in 86 patients. *Surg Neurol.*, 50 (6): 535-47.
4. **Dang L, Liu C, Yang S *et al.* (2012):** Aggressive vertebral hemangioma of the thoracic spine without typical radiological appearance. *Eur Spine J.*, 21 (10): 1994-9.
5. **Nguyen J, Djindjian M, Gaston A *et al.* (1987):** Vertebral hemangiomas presenting with neurologic symptoms. *Surg Neurol.*, 27 (4): 391-7.
6. **Lakemeier S, Westhoff C, Fuchs-Winkelmann S *et al.* (2009):** Osseous hemangioma of the seventh cervical vertebra with osteoid formation mimicking metastasis: a case report. *J Med Case Rep.*, 3: 92.
7. **Vinay S, Khan S, Braybrooke J (2011):** Lumbar vertebral haemangioma causing pathological fracture, epidural haemorrhage, and cord compression: a case report and review of literature. *J Spinal Cord Med.*, 34 (3): 335-9.
8. **Gupta M, Nayak R, Singh H *et al.* (2014):** Pregnancy related symptomatic vertebral hemangioma. *Ann Indian Acad Neurol.*, 17: 120-2.
9. **Moles A, Hamel O, Perret C *et al.* (2014):** Symptomatic vertebral hemangiomas during pregnancy. *J Neurosurg Spine*, 20: 585-91.
10. **Schwartz T, Hibshoosh H, Riedel C (2000):** Estrogen and progesterone receptor-negative T11 vertebral hemangioma presenting as a postpartum compression fracture: Case report and management. *Neurosurgery*, 46: 218-21
11. **Vijay K, Shetty A, Rajasekaran S (2008):** Symptomatic vertebral hemangioma in pregnancy treated antepartum. A case report with review of literature. *Eur Spine J.*, 17: 299-303.
12. **Chi J, Manley G, Chou D (2005):** Pregnancy-related vertebral hemangioma. Case report, review of the literature, and management algorithm. *Neurosurg Focus*, 19: 1-7.