



## Case Report

### Late Surgical Treatment of an Aggressive Vertebral Hemangioma : Case Report

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## Abstract

Vertebral hemangiomas are common benign tumors. These are often asymptomatic lesions but sometimes show aggressive nature, and cause neurological deficit as result of spinal cord compression. Such compressive lesions require aggressive treatment. We report a 45 year old male patient with aggressive vertebral hemangioma, whose motor paraplegia for five months duration had recovered almost completely after surgery.

**Keywords:** Vertebral hemangioma, spinal cord, surgical treatment

### Bir Agresif Vertebral Hemanjiomun Geç Cerrahi Tedavisi : Olgu Sunumu

## Özet

Vertebral hemanjiomlar yaygın benign tümörlerdir. Bunlar genellikle asemptomatik lezyonlardır fakat bazen agresif davranış gösterirler ve spinal kordu komprese ederek nörolojik defisite yol açarlar. Bu tip kompresyon yapan lezyonlar agresif bir tedavi gerektirirler. Biz cerrahi tedavi sonrası beş aylık motor paraplejisi tam olarak düzelen 45 yaşındaki vertebral hemanjiomlu bir erkek hasta sunuyoruz.

**Anahtar Kelimeler:** Vertebral hemanjiom, spinal kord, cerrahi tedavi

## INTRODUCTION

Vertebral hemangiomas are common benign tumors seen in almost 10%-11% of spines at autopsy<sup>(19)</sup>. They are often asymptomatic lesions<sup>(2,3)</sup>, but some of them show aggressive charecteristic and cause paraparesis/paraplegia with compression of the spinal cord<sup>(11,13,14)</sup>. Treatment options of aggressive hemangiomas include of radiotherapy<sup>(2,6,11,20)</sup>, embolisation<sup>(16)</sup>, and intralesional alcohol injection<sup>(5,12,15)</sup> as well as surgery<sup>(8)</sup>. We report a patient with aggressive vertebral hemangioma, whose motor paraplegia of five months duration had recovered almost completely after surgery.

## CASE PRESENTATION

A 45 year old man admitted to our hospital with paraplegia for 5 months duration. He had a history of numbness and weakness of the right leg, which had gradually progressed to paraplegia within 3 months. His neurological examination revealed Frankel B<sup>(7)</sup> motor paraplegia, hypoesthesia below Th7-8 level, bilateral atrophy of thigh and cruris, and bilateral positive anal reflexes. Cremaster and abdominal skin reflexes were negative, and he didn't have urine or stool incontinence.

Magnetic resonance imaging (MRI) of thoracic spine was performed five months ago, when paraplegia had developed. MRI

showed a lesion involving the body of Th4 vertebra. An epidural lesion, with low signal on T1 (Figure 1) and high signal on T2- weighted images(Figure 2), was noted at the level of the involved vertebra, caused spinal cord compression and spinal stenosis. Focal myelomalasia with increased signal was also seen on T2-weighted image (Figure 2). After contrast injection epidural and vertebral body lesions enhanced (Figure 3). A computed tomography (CT) guided biopsy of the lesion was inconclusive; however, partial calcification of the epidural mass was shown on CT (Figure 4).

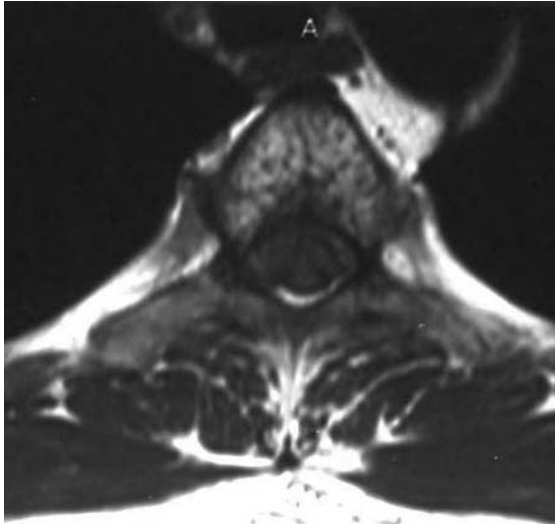


**Figure 1:** T1WI axial MRI scan showing hypointense epidural extension of the vertebral hemangioma

He underwent operation, and thoracotomy was performing via left posterolateral incision with the excision of the left 6th rib. Th 4 corpectomy as well as excision of most of the calcified epidural mass was achieved. The excised rib was put in the corpectomy site in two pieces as a bone graft. Six units of blood were transfused during the operation. Histopathologic evaluation of the operation specimen showed typical characteristics of capillary hemangioma. Postoperative CT showed gross total corpectomy with minimal right epidural calcified residual mass (Figure 5).



**Figure 2:** T2WI sagittal MRI scan showing local hyperintensity in the spinal cord at the level of compression of the vertebral hemangioma.

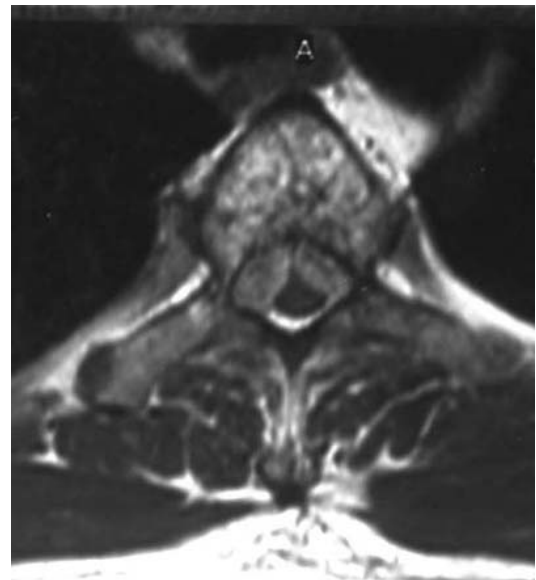


**Figure 3:** Gadolinium-enhanced T1-weighted axial MRI scan showing contrast enhancement of the bilobed epidural extension of the vertebral hemangioma



**Figure 4:** Axial CT scan shows biopsy needle entering the vertebrae with polka-dot pattern. In the epidural space the calcification next to the corpus can be seen.

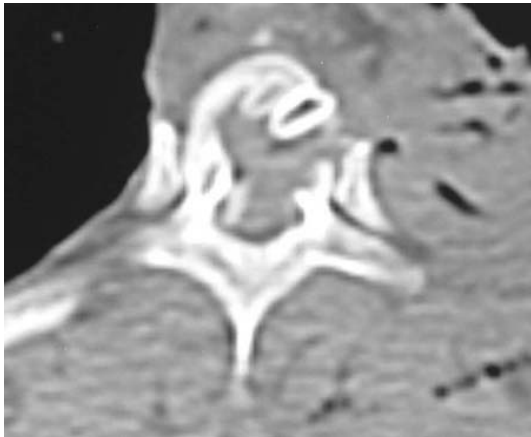


**Figure 5:** Postoperative axial CT scan showing the decompression of the spinal canal and some residue on the right side. Two parts of costal grafts can be seen anteriorly

Just after the operation, the patient started to move his legs. His paraplegia had reversed almost completely in a month. His ten month follow-up examination revealed normal neurological examination except grade 4/5 strength at the dorsal flexion of the right toe. He did not have any complaints other than slight contractions of the calves during walking.

## DISCUSSION

Hemangiomas of the vertebrae are common lesions estimated incidence of 9-12%<sup>(8,11)</sup>. Most vertebral hemangiomas are asymptomatic<sup>(2,3)</sup>, but rarely showed aggressive character and causing neurological deficit because of compression of the spinal cord<sup>(11,13,14)</sup>. Both sexes are equally affected and the mean age group is about 40 years<sup>(2)</sup>. These lesions are seen frequently at the thoracic region especially between T3 and T9<sup>(1)</sup>.

Vertebral hemangiomas can cause myelopathy related by many factors. Most common are the subperiosteal (epidural) growth of tumor into the spinal canal and expansion of the bone (cortical “blistering”) with widening of the pedicles and lamina producing a “bony” spinal stenosis. Other causes compressing the spinal cord reported as vessels feeding or draining the lesion<sup>(10)</sup>, by a pathological fracture<sup>(9)</sup> or a hematoma. Spinal cord ischemia due to diversion of the blood flow can also cause neurological symptoms<sup>(4)</sup>. In our case, it was the protrusion of the tumor into the spinal canal that caused cord compression and paraplegia.

Numerous treatment alternatives exist for aggressive vertebral hemangiomas presenting with myelopathy such as surgery<sup>(8)</sup>, embolisation<sup>(16)</sup>, vertebroplasty<sup>(17,18)</sup>, radiotherapy<sup>(2,6,11,20)</sup>, and injection of ethanol into the affected vertebral body, which has become popular lately<sup>(5,12,15)</sup>. Cases with complete reversal of paraplegia have been reported after being treated by various modalities. Yang et al<sup>(20)</sup> and Faria et al<sup>(6)</sup> reported complete reversal of paraplegia of several weeks duration following radiation therapy alone. Doppman reported complete reversal of paraplegia in one patient following intralesional injection of ethanol<sup>(5)</sup>. When cord compression is caused by soft tissue tumor, it may be reasonable to choose embolisation, intralesional alcohol injection, or radiotherapy for treatment. Treatment by these modalities causes

intralesional thrombosis and destruction of the endothelium that composes the hemangioma. Devascularisation is followed by shrinkage of the lesion, which decompresses the cord and nerve roots<sup>(15)</sup>. However, when cord compression is caused by either bony expansion or a hard – calcified tumor, as in our case, decompression can only be achieved by surgery. It has been reported that the recurrence rate of 20-30% after subtotal resections may be lowered to 7% by the addition of radiotherapy<sup>(10)</sup>. However, we have not chosen radiotherapy after surgery, because of the small volume of the calcified residual tumor and the risk of post-radiotherapy myelopathy or pulmonary radio-necrosis.

## CONCLUSION

Decompressive surgery may prove effective in patients with paraplegia when cord compression is caused by slow growing tumors like hemangiomas, even if the duration of paraplegia is long. Complete or almost complete reversal of symptoms can be achieved even when the decompression is not 100%.

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