



Review Article

## Aggressive vertebral hemangiomas in asymptomatic patients: A review

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### ABSTRACT

**Background:** Hemangioma is the most common benign tumor of the spine. Most patients are asymptomatic, but some lesions can become aggressive, leading to spinal compression. Here, we reviewed the natural history and treatment of aggressive hemangiomas in asymptomatic patients.

**Methods:** An electronic review of the literature was performed regarding the diagnosis/treatment modalities for asymptomatic aggressive hemangiomas of the spine utilizing the Medline (PubMed) and Google Scholar databases.

**Results:** We selected four articles describing the diagnosis/management of four cases of aggressive, asymptomatic hemangiomas in patients averaging  $11.25 \pm 2.36$  years of age. Three of the four patients were females, and all were followed an average of  $36.5 \pm 25$  months. Notably, two of four patients required emergency surgery.

**Conclusion:** There is a paucity of the literature regarding the diagnosis and optimal therapeutic management of aggressive hemangiomas in asymptomatic patients, half of whom may present with acute neurological deterioration warranting emergency surgery.

**Keywords:** Hemangioma, Spinal neoplasms, Spine, Vertebra

### INTRODUCTION

Hemangiomas are the most common benign tumors of the spine constituting 2–3% of all vertebral tumors. Most are located in the thoracic spine, with multi-level involvement in up to 30% of cases. Only 1% of hemangiomas are symptomatic (e.g., with back pain). Moreover, few result in significant myelopathy/compressive symptoms).<sup>[1,4,5]</sup>

Various treatment modalities include ethanol embolizations, radiotherapy, vertebroplasty, decompression, and/or spondylectomy.<sup>[4]</sup>

Here, we performed a systematic review of the natural history and treatment of aggressive hemangiomas in asymptomatic patients.

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## MATERIALS AND METHODS

We utilized the Medline (PubMed) and Google Scholar databases to study the history/treatment of asymptomatic aggressive hemangiomas (e.g., natural history longer than 12 months) [Table 1].

Only 4 of 89 articles met the inclusion criteria for this the study [Table 2].<sup>[2,3,5,6]</sup>

Patients undergoing surgery, embolizations, or radiotherapy, were excluded from the study.

### Four patients evaluated with aggressive hemangiomas

We identified four children averaging 11.25 years of age, including 3 females and 1 male, with aggressive hemangiomas followed for an average interval of 36.5 months.

Of the four initially asymptomatic patients, two later required emergent surgery within an average follow-up period of 28 months.<sup>[3,6]</sup>

## DISCUSSION

The natural history for aggressive hemangiomas was described by four authors and involved just four patients.

**Table 1:** Search strategy of this review.

(“Hemangioma” [MeSH Terms] OR “hemangioma” [All Fields] OR “Hemangioma” [MeSH Terms] OR “Hemangioma” [All Fields] OR “hemangiomas” [All Fields] OR “hemangiomas” [All Fields] AND “Spine” [MeSH Terms] AND “aggress” [All Fields] OR “aggressed” [All Fields] OR “aggressing” [All Fields] OR “aggression” [MeSH Terms] OR “aggression” [All Fields] OR “aggressions” [All Fields] OR “aggressive” [All Fields] OR “aggressiveness” [All Fields] OR “aggressively” [All Fields] OR “aggressives” [All Fields] OR “aggressivity” [All Fields])

Of interest, two patients remained asymptomatic following their diagnosis for between 18 months and 6 years, while the other two required emergency surgery (at 20–36 months).

Hernalsteen *et al.* reported a 13-year-old female with T12 and L4 aggressive hemangiomas, within the next 6 years, these lesions showed significant shrinkage and neither became symptomatic or required intervention<sup>[2]</sup> [Table 2].

Jha and Choudhary described the natural history of an 11-year-old female with back pain, due to a T12 vertebral hemangioma treated with bracing alone.<sup>[3]</sup> However, within 20 months, she developed spinal cord compression warranting surgical decompression [Table 2].<sup>[3]</sup>

In a third case, Pretell-Mazzini *et al.* described a 13-year-old female with low back pain and an aggressive L1 hemangioma; suddenly, 3 years later, she acutely presented with a cauda equina syndrome requiring emergency surgery [Table 2].<sup>[5]</sup>

In the fourth case (e.g., 4<sup>th</sup> study), Uzunaslán *et al.* described using propranolol to treat T5 aggressive hemangioma.<sup>[6]</sup> Patient 8 years of age, without epidural invasion, improved within 2 months. On repeat magnetic resonance imaging scan, 18 months later, the lesion did not decrease in size<sup>[6]</sup> [Table 2].

## CONCLUSION

There is little information to determine the optimal treatment for initially asymptomatic aggressive vertebral hemangiomas. However, as noted in this series of four patients, two went on to demonstrate acute neurological deterioration 20–36 months following this diagnosis.

**Table 2:** Four articles for patients with aggressive hemangiomas.

Study	Age (years)	Follow-up	Symptoms	Outcomes symptoms/surgery	Surgery type/results
Hernalsteen <i>et al.</i> , 2004	13 F	6 Years	None	None	None/No symptoms reported
Jha and Choudhary, 2008	11 F	20 Months	Back pain	Numbness and tingling in her right leg requiring surgery	Partial resection of L1 and fusion/postoperative status not reported
Pretell-Mazzini <i>et al.</i> , 2012	13 F	3 Years	Back pain	Cauda Equina syndrome requiring surgery	Partial L1 vertebrectomy and posterior T11-L3 instrumentation/Improvement of motor potential, except anal sphincter
Uzunaslán <i>et al.</i> , 2013	8 M	18 Months	Back pain	None	None/improvement of back pain with propranol

F: Female, M: Male

### Declaration of patient consent

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

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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