

Clinical Study

Diagnosis and treatment of vertebral hemangiomas with neurologic deficit: a report of 29 cases and literature review

Liang Jiang, MD^a, Xiao Guang Liu, MD^a, Hui Shu Yuan, MD^b, Shao Min Yang, MD^c, Jie Li, MD^a, Feng Wei, MD^a, Chen Liu, MD^b, Lei Dang, MD^a, Zhong Jun Liu, MD^{a,*}

^aOrthopaedic Department, Peking University Third Hospital, No 49, North Garden Rd, HaiDian District, Beijing 100191, China

^bRadiological Department, Peking University Third Hospital, No 49, North Garden Rd, HaiDian District, Beijing 100191, China

^cPathological Department of Peking University Health Science Center, No 38 XueYuan Rd, HaiDian District, Beijing 100191, China

Received 25 April 2012; revised 25 June 2013; accepted 14 July 2013

Abstract

BACKGROUND CONTEXT: Vertebral hemangiomas (VHs) are called benign tumors but are actually just vascular malformations. The diagnosis and treatment for aggressive VHs is still controversial, due to their rarity.

PURPOSE: To evaluate the safety and efficiency of the present diagnostic methods and treatment choices.

STUDY DESIGN: A retrospective study of aggressive VHs with neurologic deficit.

PATIENTS SAMPLE: A total of 29 consecutive aggressive VH cases were diagnosed and treated in our department since 2001.

OUTCOME MEASURES: We routinely took anteroposterior and lateral spinal roentgenograms, computed tomography, and magnetic resonance images.

METHODS: Trocar biopsy is indicated in suspected malignant cases. Radiotherapy was usually our first choice if the neurologic deficit was mild or developed slowly. Surgery was indicated if the neurologic deficit was severe or developed quickly or if the radiotherapy was not effective.

RESULTS: This series included 12 males and 17 females, and the mean age at diagnosis was 44.0 years (range, 21–72 years). Ten patients had radiculopathy, 1 had cauda equina syndrome, and 18 cases had myelopathy. Twenty-one cases had lesions in the thoracic spine, 5 in the lumbar, and 3 in the cervical region. Eleven cases had untypical image findings, including five cases with pathologic vertebral fracture. The neurologic compression came from only epidural soft tumor mass in 18 cases, whereas it came from both bony compression and soft lesion in the other 11 cases. Ten cases had radiotherapy alone, but two failed and had surgery later. Twenty-one cases had surgery. In the 12 cases having surgical decompression without vertebroplasty, the average estimated blood loss was 1900 mL, and it was 1093 mL for the eight cases having decompression with vertebroplasty. The average follow-up was 51.1 months (range, 24–133 months). There was no recurrence in those cases with radiotherapy, whereas three had local recurrence in those six cases treated by surgical decompression alone without radiotherapy.

CONCLUSIONS: In aggressive VHs, epidural soft-tissue compression was usually the main reason for neurologic deficit. In cases with rapid progressive and/or severe myelopathy, posterior decompression and stabilization could be combined with intraoperative vertebroplasty to reduce blood loss. © 2014 Elsevier Inc. All rights reserved.

Keywords:

Vertebral hemangioma; Neurological deficit; Spine; Biopsy; Vertebroplasty

FDA device/drug status: Not approved for this indication (pedicle screw instrumentation; vertebroplasty).

Author disclosures: **LJ**: Nothing to disclose. **XGL**: Nothing to disclose. **HSY**: Nothing to disclose. **SMY**: Nothing to disclose. **JL**: Nothing to disclose. **FW**: Nothing to disclose. **CL**: Nothing to disclose. **LD**: Nothing to disclose. **ZJL**: Nothing to disclose.

* Corresponding author. Orthopaedic Department, Peking University Third Hospital, No 49, North Garden Rd, HaiDian District, Beijing 100191, China. Tel./fax: (86) 10-82267361.

E-mail address: zjliu@bjmu.edu.cn (Z.J. Liu)

Introduction

Vertebral hemangiomas (VHs) are relatively common, with an estimated incidence of 10% to 12% in the general population, as determined by autopsy and radiography studies [1]. Although they are called benign tumors, they are actually vascular malformation in nature [2,3].

Most VHs are latent (Enneking Stage 1, st.1) and do not require specific treatment; only 1% of VHs become active and symptomatic. Approximately 55% of these symptomatic VH cases are associated with pain alone [1]. In approximately 45% of cases, VHs may become aggressive and extend into the spinal canal and/or the paravertebral space, leading to neurologic deficit (Enneking Stage 3, st.3) [4].

Because of the rarity of aggressive VH cases, diagnosis and treatment protocols for these cases remain controversial and problematic. Few studies have focused on st.3 VH (with or without neurologic deficits). In 2010, Acosta et al. [5] reported 10 cases of VH that were treated with aggressive wide resection. Total en bloc spondylectomy for VH has also been reported [6]. Less aggressive treatments (such as radiotherapy alone, vertebroplasty, direct alcohol injection, and surgical decompression with/without radiotherapy) have also been reported to provide good clinical results.

In this study, we analyzed the aggressive VHs cases diagnosed in our department between 2001 and 2010. We focused primarily on the diagnostic methods and treatments.

Materials and methods

Vertebral hemangioma cases encountered in our department during the past 12 years were collected because most patients with VHs diagnosed before 2001 were lost to follow-up because of frequent changes in their addresses and telephone numbers following major city renovations in China. Thus, 29 consecutive patients with aggressive VH were included in this study.

A retrospective review of hospital charts, operating room reports, office charts, and radiographs was performed. The data collected were as follows: patient age, sex, radiological features, pathology, treatment method, outcome, and complications of biopsy and treatment.

Imaging

We routinely performed anteroposterior and lateral spinal radiography, computed tomography (CT), and magnetic resonance imaging (MRI) (Fig. 1, Case 17).

Biopsy

In some cases, the image changes were atypical, leading to diagnostic difficulties. In these cases, VHs were difficult to differentiate from malignant vascular tumors (angiosarcoma and epithelioid hemangioendothelioma), metastasis, and myeloma. In the case of suspected malignancy, percutaneous CT-guided trocar biopsy was performed by our

EVIDENCE & METHODS

Context

Aggressive hemangiomas causing neurological compression are rare. The authors present their experience.

Contribution

In this case series report, the investigators found that soft tissue mass compression was the most common cause of neurological compression and that either radiotherapy alone or decompression/vertebroplasty/fusion with radiotherapy (in more severe cases) were effective.

Implications

Case series reports often represent the best-available evidence for rare conditions, such as aggressive hemangiomas of the spine. Such reports provide some insight when higher-level evidence is not achievable.

—The Editors

radiologists [7]. Under CT guidance, the biopsy trocar needle was inserted through the pedicle or the lateral side of the affected vertebra (Fig. 2, Case 15). If the radiologists determined that percutaneous biopsy would endanger the patient, direct treatment was recommended.

Treatment protocol

In our clinical practice, if the neurologic deficit was mild or developed slowly, radiotherapy was usually the first choice for treatment. An orthosis was suggested if a pathologic fracture was suspected or threatened. Surgery was indicated if the neurologic deficit was severe or developed quickly, or if radiotherapy was ineffective.

Posterior surgical decompression was preferred, whereas the anterior surgical approach was reserved for ventrally localized lesions. Spondylectomy was only indicated for suspected malignant lesions using either a posterior approach or combined approaches. To minimize blood loss, embolization was routinely performed before the scheduled operation.

Surgical techniques

Decompression and stabilization have been used in combination with intraoperative vertebroplasty since 2009. Before performing direct lesion decompression, we first partially removed the adjacent normal laminae located cranially and caudally to the lesion to visualize the dura. Then, bilateral transpedicular cement injection was performed. The needles were usually advanced close to the anterior border of the vertebral body. The vertebral body with the VH lesion was completely filled with cement, while avoiding leakage, to obliterate and shrink the malformation [8,9]. Soft epidural lesions may shrink after vertebroplasty as a result of decreased blood supply. With direct visualization of the adjacent dura, laminectomy through the lesion could be

Download English Version:

<https://daneshyari.com/en/article/4097770>

Download Persian Version:

<https://daneshyari.com/article/4097770>

[Daneshyari.com](https://daneshyari.com)