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The Spine Journal 6 (2006) 704–707

THE SPINE JOURNAL

Case Report

Unusual presentation of osteoblastoma in a patient with idiopathic scoliosis after posterior spinal fusion

Andrew G. Todd, MD, Purnendu Gupta, MD*

Division of Orthopaedic Surgery and Rehabilitation Medicine, University of Chicago Hospitals, 5841 S. Maryland Avenue MC 3079, Chicago, IL 60637, USA

Received 20 September 2005; accepted 15 February 2006

Abstract

BACKGROUND CONTEXT: Few studies have described the diagnosis of osteoblastoma of the spine as a cause of scoliosis. These reports have described the tumor in conjunction with initial presentation of painful scoliosis. This case report presents a case of osteoblastoma 9 years removed from diagnosis and fusion of idiopathic scoliosis in the thoracic spine.

PURPOSE: To report the late presentation of an osteoblastoma of the thoracic spine 9 years after posterior spinal fusion for scoliosis.

STUDY DESIGN: Case report.

METHODS: A 25-year-old man presented with thoracolumbar back pain and progressive neurological deficit 9 years after posterior spinal fusion for idiopathic scoliosis. Magnetic resonance imaging of the thoracic spine indicated the presence of a mass in the spinal canal causing cord compression. The patient underwent decompression with resection of the mass which was found to be an aggressive osteoblastoma.

RESULTS: The patient enjoyed a full neurological recovery and has subsequently developed a recurrence at 13 months.

CONCLUSIONS: We present osteoblastoma as a possible cause of low back pain and neurological deficit postfusion that should be considered in a differential diagnosis.

Keywords: Osteoblastoma; Idiopathic scoliosis; Posterior spinal fusion; Back pain

Introduction

Osteoblastoma is described as a vascular, osteoid, and bone-forming tumor containing many osteoblasts; it may occasionally be difficult to distinguish histologically from osteoid osteoma and other benign, bone-forming tumor. Consequently, its diagnosis requires careful radiologic correlation to ensure diagnosis [1]. Osteoblastoma is a relatively rare neoplasm which commonly affects the vertebral column with up to 40% of osteoblastomas occurring in the spine [2,3]. These lesions have been shown to have a propensity for the posterior elements of the spine, especially in the cervical region, although thoracic and lumbar involvement is also common [1].

In Nemoto's series of 75 patients with spinal involvement, 17 patients demonstrated scoliosis which was painful. In every case, the tumor was located at the apex of the curve. Occurrence rates for scoliosis of greater than 50% in patients with osteoblastoma were noted in two different series by Marsh et al. and Mehta [3,4]. It is important to note that these cases of painful scoliosis related to osteoblastoma of the spine are believed to be secondary to the pain caused by the tumor itself [4]. We know of no description in the literature of the occurrence of osteoblastoma after a patient has been treated with posterior spinal fusion for idiopathic scoliosis. In this study, we present an occurrence of osteoblastoma in the thoracic spine 9 years after posterior spinal fusion for idiopathic scoliosis.

Case report

A healthy 25-year-old man had previously undergone posterior spinal fusion and instrumentation from T3 to L2

FDA device/drug status: not applicable.

Nothing of value received from a commercial entity related to this manuscript.

* Corresponding author. 5841 S. Maryland Ave., MC 3079, Chicago, IL 60657. Tel.: (773) 702-6213; fax: (773) 702-0076.

E-mail address: pgupta@surgery.bsd.uchicago.edu (P. Gupta)

1529-9430/06/$ – see front matter
doi:10.1016/j.spinee.2006.02.028

using Cotrel-Dubousset instrumentation and iliac crest bone graft for progressive idiopathic scoliosis 9 years before presentation. He had been treated in a brace, but developed rapid progression of his lower right thoracic curve from 50 to 65 degrees over the 6 months leading up to his surgery (Fig. 1). The patient had no history of thoracic back pain or discomfort at his iliac crest harvest site before or after spinal fusion. Magnetic resonance imaging (MRI) of his spine was obtained at the time because of his rapid curve progression. It did not reveal any spinal cord abnormality, canal abnormality, or posterior element tumor (Fig. 2). His postoperative course was complicated by development of an abscess over the proximal aspect of his thoracic spine incision at 15 months after fusion. He underwent incision and drainage with removal of a portion of his hardware. He initially did well with long-term intravenous antibiotic treatment after his second surgery, but at 3 years postfusion began to develop drainage and further signs of infection. He again underwent incision and debridement with removal of the remainder of his instrumentation. He had an uneventful clinical course after this surgery until his presentation 9 years after his initial fusion.

The patient presented with the complaints of low back pain and leg pain which was positional and worse when supine. His right leg was affected more than his left, and pain and numbness occurred in his medial thigh radiating into his calf.

His physical examination was significant for the presence of kyphosis in his upper thoracic spine. He was neurologically intact with no sign of upper motor neuron lesions.

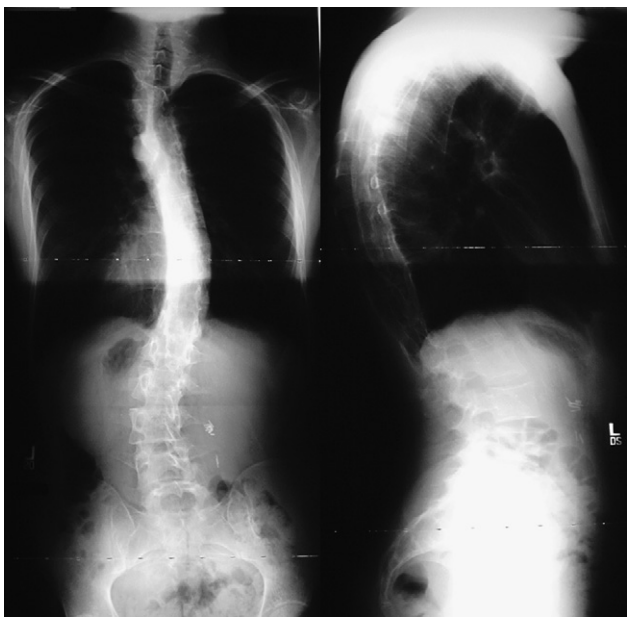

Fig. 1. Posterior-anterior and lateral standing radiographs, 9 years after posterior spinal fusion and 6 years after removal of instrumentation. No significant radiographic findings present.

Thoracolumbar disc herniation was suspected, and an MRI of the lumbar spine was obtained and was within normal limits. The patient presented to clinic 1 week later and noted continued back pain with new-onset numbness about the T7–T8 level. He was found to have decreased sensation and hyperreflexia in both lower extremities. MRI of the thoracic spine was obtained, which indicated spinal cord signal changes with edema and a mass involving the lamina of T4, extending from the T3 to T5 levels. The mass exhibited a heterogenic signal characteristic consisting of high and low signal intensities on both T1- and T2-weighted images and enhanced with gadolinium (Fig. 3). He developed progressive lower extremity weakness over the course of the next week and at 1 month after presentation underwent decompression through the fusion mass at levels T4 to T7 with removal of the epidural mass. The mass consisted of a small, vascular soft-tissue component with significant areas of calcification and bone formation. A musculoskeletal pathologist reported that the presence of epitheloid osteoblasts conclusively indicated that the tumor was an aggressive osteoblastoma (Fig. 4).

The patient has had an uneventful postoperative course, recovering full strength in both lower extremities and only mild decreased sensation remains. He is currently being followed at an outside institution, and the tumor has subsequently recurred in the same area of the thoracic spine. He is currently being evaluated for possible proton beam radiation therapy at 13 months postexcision, but has yet to consent to therapy.

Discussion

The term *osteoblastoma* was first proposed independently by Jaffe and Lichtenstein in 1956 to describe a vascular, osteoid, and bone-forming lesion similar to osteoid osteoma [5,6]. Subsequently, a number of series have described the incidence, natural history, and treatment of osteoblastoma in the spine [1,7–10].

Back pain is usually the presenting symptom in these patients [11]. Additionally, 50% of patients with osteoblastoma of the spine present with spinal deformity [12]. In a study assessing the development of scoliosis in these patients, asymmetric location of the lesion was the most significant factor, followed by location vertically within the spine [13]. Therefore, asymmetric tumor location in the thoracolumbar spine would be most likely to cause scoliosis. The presence of pain and scoliosis in the young patient should add to a clinician's differential allowing appropriate diagnosis and management. Treatment of these lesions includes resection with or without fusion based on the stability of the spine at the levels of resection. Treatment of extensive tumors and recurrences with radiation and chemotherapy have been described in the literature [14], but some deny that a role exists [2,15]. No consensus exists currently, and its use in this case is being explored.