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Osteoblastoma of the vertebral body of the third lumbar vertebra

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Abstract The case of a 22-year-old woman presenting with progressive low back pain as a result of a recurrent osteoblastoma of the body of L3, is reported. Total spondylectomy together with anterior and posterior fusion was carried out in a two-stage procedure. We highlight the rarity of

the site of occurrence of osteoblastoma, the difficulty in diagnosis and the fact that a radical treatment needs to be performed.

Key words Osteoblastoma · Spine

Introduction

In 1932 Jaffe and Mayer and in 1956 Jaffe described a rare osteoblastic lesion occurring in the posterior elements of vertebrae or at varying sites in the long bones or pelvis that histologically resembled an osteoid osteoma [7]. Benign osteoblastoma occurs frequently in the vertebral column. In particular, it occurs in the posterior elements, including the pedicle in most cases and seldom involving the vertebral body alone [7].

We report a recent case of an aggressive osteoblastoma of the vertebral body of L3 treated by total spondylectomy.

Case report

A 22-year-old Greek woman gymnast presented in September 1992 with a 4-months history of lumbar back pain, which worsened on exercise. The only significant finding on examination was reduced lumbar spine movement. Plain radiograph of the lumbar spine did not reveal any abnormality at that time, CT (Fig. 1) and MRI (Fig. 2) revealed a lytic lesion in the body of L3 with a zone of sclerosis in the vertebral body anteriorly. This lesion extended into the vertebral canal through a hole in the posterior part of vertebral body, forming a mass occupying the spinal canal at the same level. Myelography showed an epidural mass with some root irregularities. A technetium radionuclide isotope bone scan revealed a positive uptake at the L3 vertebra.

Low back pain persisted in spite of pain killers. One year later, plain radiograph of the lumbar spine revealed an osteoblastic lesion in the body of L3 (Fig. 3). Full blood count, serum bio-

chemistries, protein electrophoresis and CT scans of the chest and abdomen were found to be normal.

In August 1993, the lesion was biopsied and curetted through an anterior retroperitoneal approach. No clear histopathological diagnosis of excised tissue was made. The low back pain continued and MRI was therefore repeated in November 1993. This showed some involvement of the anterior portion of the vertebral body of L3 and soft tissue protruding into the spinal canal. Through a posterior approach and hemilaminectomy, the spinal canal was decompressed and a specimen of tissue was sent to an experienced bone tumor pathologist in Washington, where a probable diagnosis of aggressive osteoblastoma was made. After a 6-month pain-free interval, the patient developed further back pain, and was referred to this unit for further management.

In December 1994, a two-stage anterior and posterior total vertebrectomy was performed at L3 and an interbody iliac crest strut graft was inserted. Stabilisation was achieved with a titanium thoraco-lumbar locking plate and with a posterior pedicle screw construct (Fig. 4).

The patient remained pain free at 18 months follow-up; radiographic findings at this stage were satisfactory (Fig. 5).

Discussion

Osteoblastoma is rare, accounting for approximately 1% of primary bone tumours [1]. In the spine, it commonly involves the posterior elements including the pedicle, in contrast to other benign tumours, which often involve the vertebral body. Tumours that invade the vertebral body from the posterior side have been reported in literature, but few of the previous reports documented tumours occurring in the vertebral body alone [2, 6, 8].

Fig. 1 **A** Conventional and **B** reformatted CT scan of the L3 vertebral body, showing the lesion

Fig. 2 Sagittal MR image of the lumbar vertebra of the same patient

Fig. 3 Plain lateral radiograph of the lumbar spine taken 1 year later, showing an osteoblastic lesion of the vertebral body of L3

Fig. 4 Postoperative radiograph of the lumbar spine

Fig. 5 **A, B** Anteroposterior (**A**) and lateral (**B**) lumbar spine radiographs taken 18 months after the operation

Nemoto et al. reported that 2 of 75 cases of benign osteoblastoma in the vertebral column involved the vertebral body alone [6]. Watanabe et al. reported another case of osteoblastoma in the sixth thoracic vertebral body [8]. Thus, osteoblastoma occurring in the vertebra is extremely rare.

Gradually increasing pain is the predominant symptom experienced by patients with this condition. Mild neurological symptoms are also present in most cases [8]. The main presenting feature in the current case was a progressive persistent low back pain and stiffness, without neurological symptoms. Spinal stiffness was a complaint of the series described by Boriani et al., although this has not been frequently reported [2]. Scoliosis is commonly associated with osteoid osteoma and osteoblastoma of the spine [2].

In contrast to osteoid osteoma, plain roentgenograms are usually sufficient to make the diagnosis of osteoblas-

toma [1, 5]. This was not the case in the early stages of the disease in the current case.

Schajowicz and Lemos, McLeod and co-workers, and Mirra and associates found that aggressive osteoblastoma is a distinct entity that can be identified not only by clinical course, i.e. persistent back pain, but also by radiographic features, i.e. early cortical perforation and the histologic pattern [7].

A marginal resection may be necessary for extirpation of aggressive lesions that have broken through the bone and involve soft tissue [5–7]. Malignant sarcomatous changes in osteoblastoma have been reported [4]. Jackson reported sarcomatous changes in recurrent osteoblastoma in his series [3]. We therefore feel a total vertebrectomy as performed in this case, with spinal fusion, is the treatment of choice in recurrent or aggressive osteoblastoma.

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