Solitary Osteochondroma Arising From the Thoracic Facet Joint

—Case Report—

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Abstract

A 15-year-old male presented with pain in the back and paresthesia and weakness of both lower limbs progressing for 6 months. Magnetic resonance imaging revealed a mass lesion occupying the spinal canal at the T-10 to T-11 levels, which had severely compressed the cord. At surgery, a firm and cartilaginous tumor originating from the facet joint was radically excised. The patient showed rapid neurological recovery following the surgery. Histological examination revealed that the lesion was osteochondroma. Such lesions are extremely rare in the lower thoracic spine and osteochondroma arising from the thoracic facet joint is unique.

Key words: osteochondroma, thoracic spine, facet joint

Introduction

Osteochondromas are common bone lesions that usually arise as a result of a developmental defect in the growth plate, resulting in an osteocartilaginous proliferation that typically originates near the end of a long bone and grows away from the joint.⁷⁾ Most osteochondromas originate in the region of knee, but may occur in any part of the skeleton that forms by enchondral ossification. Histological examination of these lesions reveals central lamellar bone and peripheral cartilage with evidence of enchondral ossification at the interface of bone and cartilage. The actively growing chondrocytes within the lacunae have a columnar arrangement towards the base where they undergo enchondral ossification.

Osteochondromas rarely occur in the spine, with an incidence of only 2–7% of all osteochondromas.^{1,2,11)} The tumors have extradural and extraspinal growth patterns and neurological complications are rare.^{5,6,8,9)} However, spinal osteochondromas have a predilection for the cervical or upper thoracic regions.³⁾ A review of 20 years experience with 10 spinal osteochondromas from one single institution⁹⁾ showed an incidence of 20% for thoracic osteochondromas and 80% for cervical

osteochondromas. Analysis of 10 reported cases of spinal osteochondromas revealed eight cases (80%) of solitary cervical and two cases (20%) of solitary thoracic osteochondromas causing spinal cord compression.⁵⁾

Here, we describe a case of myelopathy secondary to an osteochondroma arising from the T10-11 facet joint.

Case Report

A 15-year-old male presented with a 6-month history of backache localized to the lower dorsal region and progressive weakness and paresthesia in both lower limbs. The symptoms had progressed more rapidly in the last month and were more prominent on the right. On admission, he had difficulty in walking unaided and in rising from the squatting position. All sensations below the level of the waist were impaired. Increased frequencies of micturition and moderate constipation were present. Physical examination found no spinal tenderness or any palpable deformity. Spinal movements were normal and free. Neurological examination revealed grade 4 spastic paraparesis and impairment of all sensory modalities below the L-1 dermatome.

Magnetic resonance (MR) imaging of the spine revealed a lesion located in the right posterolateral aspect of the cord at the T10–11 levels and extending

Fig. 1 A: Sagittal T₁-weighted magnetic resonance (MR) image showing an extradural compressive lesion as hypointense with an isointense surrounding rim. B: T₂-weighted MR image showing the lesion as hypointense towards the site of attachment at the facet and surrounded by a hyperintense rim anteriorly. C: T₁-weighted MR image with contrast medium showing diffuse enhancement.

Fig. 2 A: Axial T₁-weighted magnetic resonance (MR) image showing the extension of the mixed intensity lesion and the probable site of origin from the facet joint. B: T₂-weighted MR image demonstrating the origin and horizontal extension of the tumor, and a hyperintense rim (arrow) over the growing end of the lesion.

vertically from the superior aspect of the T-10 to the superior half of the T-12 level. The lesion had severely compressed the spinal cord (Figs. 1 and 2). The tumor was isointense with bone on both T₁- and T₂-weighted MR imaging and appeared separate from the T-10 and T-11 laminae. T₂-weighted MR imaging with contrast medium showed the cartilaginous cap as hyperintense and the bony base as hypointense. T₁-weighted MR imaging with contrast medium showed diffuse enhancement within the lesion. The T-10 and T-11 laminae were apparently thinned due to compression by the slowly enlarging tumor. T₂-weighted MR imaging showed hyperin-

tense areas in the substance of the cord at the site of compression suggesting cord edema.

At surgery, the extradural tumor was identified after laminectomy of the thinned T-10 and T-11 laminae. The lesion had a smooth surface and was firm and cartilaginous, with an attachment to the left T10-11 facet joint. The entire tumor was excised piecemeal. The T-11 facet was partially excised and the tumor was disconnected from the left T10-11 facet joint, which was probably the origin.

Histological examination of the specimen showed cartilage and bony trabeculae with enchondral ossification at the interface of bone and cartilage.

Fig. 3 Photomicrograph showing hyaline cartilage and trabecular bone with enchondral ossification at the interface. HE stain, original magnification $\times 400$.

These findings were consistent with the diagnosis of benign osteochondroma (Fig. 3).

Following surgery, the patient showed a rapid recovery in neurological function. Postoperative MR imaging confirmed complete excision of the tumor. At 2-year follow up, the patient was pain-free with normal neurological status and had returned to working in the fields as a farmer.

Discussion

The neural arch is the most common site of origin of spinal osteochondromas, whereas the facet joint is a very rare site of origin, with only one previous case of osteochondroma growing from the facet joint in the cervical spine manifesting as neck pain but no neurological deficit.⁴⁾ In contrast, our case arose from the T10-11 facet joint.

The neuroimaging findings of osteochondroma reveal a characteristic well-circumscribed lobulated mass with areas of ring-like chondral mineralizations as well as calcifications representing mature trabeculated bone. Roentgenography could not establish the diagnosis in this case, probably because of overlapping of the ribs as well as soft-tissue shadows. MR imaging was useful in a suspected case of osteochondroma arising from the spine.¹²⁾ The growing end of an osteochondroma is characteristically covered by a cartilaginous cap, which appears hypointense on T₁-weighted and hyperintense on T₂-weighted imaging, providing the exact

size of the lesion. Computed tomography provides remarkable osseous details but poor in delineation of cartilage. Total excision of these lesions is almost curative. Recurrences are extremely rare.^{7,8,10)}

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