Giant Cell Tumor of Dorsal Spine

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ABSTRACT

Giant cell tumor (GCT) is a low-grade malignant tumor that commonly involves ends of the long bone. The most common site for GCT of the spine is sacrum. These are rare above the sacrum and usually present with destruction of vertebral body and neural arch. Giant cell tumors are locally aggressive, and tumor recurrence is frequently seen after intralesional or incomplete excision. Total spondylectomy with appropriate reconstruction for preservation of spinal integrity is the treatment of choice. Radiation therapy can be given in cases of subtotal resection.

INTRODUCTION

Giant cell tumor (GCT) is a low-grade malignant tumor that commonly involves ends of the long bone. The most common site for GCT of the spine is sacrum. These are rare above the sacrum and usually present with destruction of vertebral body and neural arch. Giant cell tumors are locally aggressive, and tumor recurrence is frequently seen after intralesional or incomplete excision. Total spondylectomy with appropriate reconstruction for preservation of spinal integrity is the treatment of choice. Radiation therapy can be given in cases of subtotal resection.

CASE REPORT

A 21-year-old male presented to our department with complaints of pain in his upper back, which radiated to both shoulders for 2 months. There was numbness and weakness of B/L lower limbs. Also, history of off and on fever was present. The patient was earlier treated for pulmonary tuberculosis in childhood. On examination, the patient was conscious and alert. The B/L upper limbs were normal. Tone was increased in B/L lower limbs. Motor power was 5/5 in all limbs. Knee and ankle reflexes were exaggerated in B/L lower limbs, ankle clonus was present B/L, and B/L plantars were extensor. On sensory examination, sensation to pain, touch, and temperature was decreased by 50% below T4 level. The patient was investigated and magnetic resonance imaging (MRI) was done, which showed wedge compression of T2 vertebral body with cord compression with edema in vertebral body? Lymphoma?? Tuberculoma. A high-resolution computed tomography (CT) chest was done, which showed near-total destruction of D2 vertebral body with associated soft tissue component in the prevertebral and anterior epidural spaces causing spinal canal narrowing. The patient was planned for surgery. Anterior median sternotomy with anterior low cervical approach with D2 corpectomy with right iliac bone grafting with D1–D3 plate and screw fixation was done. Biopsy showed features consistent with GCT D2 vertebral body. Radiotherapy consult was sought. Postoperatively the patient improved and was discharged. At the time of discharge, motor power in B/L lower limbs was 5/5 and sensory deficit improved. The patient is advised follow-up in neurosurgery and radio-oncology.

DISCUSSION

Giant cell tumor of bone accounts for 5% among all primary bone tumors. Mobile spinal segment involvement is seen in only 1 to 1.5% of these cases. Incidence in all three mobile spinal segments above the sacrum is approximately equal. It occurs in the age group of 20 to 45 and sex incidence is equal. Common symptoms of patients with spinal GCT include back pain, neurological deficit due to compression of spinal cord, bladder and bowel dysfunction, and structural deformity of the spine.

Sacral GCTs present as an expansile lytic lesion involving both sides of the midline, without a sclerotic rim. Radiologically, spinal GCTs also present as expansile lytic lesion that most often involves the vertebral body, and soft-tissue involvement may be present. Giant cell tumor in the long bone usually has epiphyseal-metaphyseal location, which is a clue to the radiographic diagnosis.

The most common site for metastasis is the lung. The histologic appearance of GCT is suggestive of uniform distribution of multinucleated giant cells against a background of round to spindle-shaped mononuclear stromal cells. For planning treatment, the Enneking staging system is used, which divides low-grade tumors into stage 1 and high-grade tumors into stage 2.

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Various modalities of treatment used for spinal GCTs are surgery, radiotherapy, embolization, cryosurgery, cementation, and chemical adjuvant like phenol or liquid nitrogen. Total en bloc surgical excision is the treatment of choice in long bones as well as spine. The treatment of long bones GCT is curettage, sclerotherapy, and filling of the defect with bone cement. It is not always possible in the spine due to the unacceptable risk of permanent neurological deficit. Adjuvant radiotherapy should be reserved for incomplete tumor excision and local recurrence due to risk of myelitis and bone graft complications.

Recurrence rates reported range from 29\(^8\) to 50\(^9\)\(^\circ\) in patients with sacral GCTs. Sacral GCTs that are large for en bloc excision should be treated by preoperative embolization followed by intrallesional resection. Local recurrence rates reported following intrallesional resection of spinal GCT range from 0 to 71\(^10-13\)\(^\circ\). For spinal GCT in the mobile spine, embolization followed by intrallesional resection should be reserved for patients with extensive disease who cannot be treated with en bloc excision.

Leggon et al showed no benefit of adjuvant radiation therapy following conservative surgical management of sacral GCT\(^14\). Few authors still advocate its use following intrallesional resections\(^15-17\).

Donthineni et al\(^18\) reported higher rate of lung metastases from GCT of the mobile spine as compared to long bones. Metastasectomy of lung nodules can be considered in view of prolonged survival. A close follow-up for detecting recurrence should be done. Plain radiograph of local site and chest can detect recurrent and metastatic lesions. Periodic CT and MRI are excellent tools to identify the recurrent lesion and plan out the necessary treatment.

REFERENCES