Isolated Giant Cell Tumor of the Lumbar Spine

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ABSTRACT

Giant cell tumors (GCTs) are benign tumors of the bone that most commonly occur at the ends of the long bones; they are rarely found in the spine above the sacrum. The management of patients with GCTs of the spine represents a challenge, and the clinical approach to this problem continues to evolve with improvements in surgical and adjunctive therapies. Giant cell tumor is a rare bone tumor seen in 3 to 5% of primary bone neoplasm. Approximately, 7% of GCTs are found in the vertebral column. Giant cell tumors of the spine are found in only 5 to 7% of cases and can occur in any region of the spine but are believed to be predominantly in the sacrum. Despite its benign nature, expansion in a confined space makes early detection of compressive myelopathy/radiculopathy important to prevent occurrence of compressive myelopathy/radiculopathy. Although complete en bloc surgical resection is difficult in the spine, treatment with adjuvant radiotherapy has been considered controversial because of a small risk of malignant transformation. We are reporting a cases of GCTs in the lumbar vertebrae that were treated successfully with surgical excision, decompression and as well as follow-up. 

Keywords: Giant cell tumor, Lumbar spine, Rediculopathy Surgical decompression. 


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CASE REPORT

Twenty-eight-year-old male driver by occupation came to us with complain of both lower limb paraparesis with urinary incontinence since last 5 days with hypoesthesia around perianal region. Patient had backache and thigh pain (rediculopathy) since last 1 year for which he was treated by some doctor with nonsteroidal anti-inflammatory drugs (NSAIDs) but intensity of pain increases as time passes. Since last month, he felt weakness and constitutional symptoms, local tenderness at dorsolumbar region. Patient had neurological weakness around hip mainly over flexors and extensors and thigh pain. Hypoesthesia around L1, L2, L3 dermatomes. Patient went under diagnosis for X-ray dorsolumbar region. X-ray shows lytic lesion in L1 vertebral body. We prescribed magnetic resonance imaging (MRI) investigation which shows hypointense area over posterosilateral aspect toward right side in L1 vertebral body in T1W image with homogeneous enhancement within it is projecting into epidural space on right side and indenting and displacing the cord to left side in T2W image. The area in size was 2.0 × 2.3 × 2.8 cm (Fig. 1). We plan for the surgical decompression with excision and biopsy to rule out the lesion's cytological findings. Patient went for the second opinion to other medical center and there they performed CT guided fine needle aspiration cytology (FNAC) in which they found out that the type of lesion is giant cell tumor (GCT). Patient was admitted under us and we performed the surgical decompression with cavity wash given with 3% penol and hydrogen peroxide as per the literature (Fig. 2). Again tissue sent for cytological assessment which shows numerous multinucleated osteoclast like giant cell mixed with fibroblastic stromal tissue (Fig. 3). Postoperatively, patient thigh pain (rediculopathy) was relived. Follow-up after 4 weeks shows recovery and improvement in his neurological status.

DISCUSSION

Giant cell tumors were termed ‘osteoclastomas’ in the older literature because they were considered to arise from the osteoclast. Despite its benign nature, expansion in a confined space makes early detection of spinal GCTs important to prevent occurrence of compressive myelopathy/radiculopathy.1 The exact cell of origin, however, is unclear. Multinucleated giant cells can arise in bone in some conditions, including chondroblastoma, fibrous dysplasia, eosinophilic granuloma, chondromyxoid fibroma, telangiectatic or fibrogenic variants of osteosarcoma, and malignant fibrous histiocytoma.2 In cases of spinal GCTs, there is usually an expansile lesion with bone destruction that affects the vertebral body, as opposed to the posterior elements observed with other spinal bone tumors, such as aneurysmal bone cyst, osteoid osteoma and osteoblastoma.3 The management of patients with GCTs of the spine represents a challenge, and the clinical approach to this problem continues to evolve with improvements in surgical and adjunctive therapies. Gaint cell tumors of the lumbar vertebrae are very rare,
Lesions in the spine are usually found in the vertebral body, but with continued growth may extend to involve the laminae, spinous process, and even the paravertebral area. Approximately 10% of all GCTs are malignant, and they may metastasise to other organs. The frequency of metastatic involvement in the large series of benign GCTs generally has ranged from 1 to 6%. Metastatic lesions occur mainly in the lungs. Solitary metastasis to regional lymph nodes, the mediastinum and the pelvis have been reported. The symptoms are to be divided into two groups: those due to the tumor formation and those due to pressure upon the spinal cord or the peripheral nerves. Where the vertebra is superficial, as in the cervical region,
the tumor may be readily palpated, but where, as in the lumbar region, the involved area is deeplying, the tumor may first be betrayed by the appearance of neurological signs. These symptoms and signs, as in other tumors involving the cord, range from various types of sensory disturbance to more or less complete paralyses, and even to complete section of the cord. Especially when the bodies of the vertebrae have been involved, these tumors have been mistaken by orthopedic surgeons for tuberculosis, tumors of other types, low grade osteomyelitis, and osteoarthritis. When the growth is situated in the spines or transverse processes, the x-ray photograph is usually characteristic, as in the long bones. Where the body of the vertebra is primarily involved, the influence of weight-bearing and the collapse of the internal structure of the bone may completely efface the typical picture and lead to difficulties in diagnosis. In such cases, the diagnosis may be attempted by bone puncture, by biopsy, or by observing the reaction to X-ray therapy. Bone puncture may be dangerous, because of the collapse of the body and the proximity of important structures. Biopsy can readily be performed even on the body of the vertebra, by means of a relatively simple costotransversectomy. The danger of this procedure lies in the possibility of opening into a closed tuberculosis or initiating a hemorrhage from an angioma or other vascular tumor. The simplest and probably the safest method of diagnosing and treating these tumors is by X-rays or radium. Where the body of the vertebra is involved, even in the presence of nerve complications, conservative therapy is indicated. The other hand, when the tumor is located in the spine or transverse processes, when paralysis is progressive, and when, in legal terminology, ‘time is of the essence,’ surgical intervention to relieve pressure, with subsequent radiotherapy if advised by radiotherapist, would seem to be the method of choice.8

CONCLUSION

We report an extremely rare case of GCT in the epidural space that extended from a lumbar vertebral body. The tumor was removed successfully through laminectomies. Although GCT of a lumbar region rare, it must be considered in the differential diagnosis for masses occurring in the epidural space in a adult. Total tumor removal is the best treatment. En bloc resection was found not to be feasible due to the friable nature of the tumor and involvement of the soft tissues. In addition, fusion was avoided with consideration of the young age of the patient and part of involvement. However, complete resection of the L1 lumbar vertebra is still challenging to accomplish. The literature and approaches to the management of spinal GCTs are reviewed. Careful monitoring of recurrence can achieve a good clinical outcome.

REFERENCES