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Case Report

Solitary Osteochondroma Arising from the Dorsal Vertebral Spinous Process: A Case Report

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ABSTRACT:

Introduction: Osteochondroma are benign tumors which arise from aberrant cartilage nodules within the periosteum. They can be either pedunculated or sessile and are more common in the extremities and rarely seen in spine. En-bloc excision is the preferred treatment. **Case Report**: We present a case of 20 year female, who came with a swelling and pain in lower back for two years which was diagnosed to be thoracic vertebra(D11) osteochondroma on x-ray and computed tomography. Excision biopsy was done and confirmed it to be osteochondroma. There has been no recurrence even after 16 months of follow up. **Conclusion**: Although rare, osteochondroma of the vertebra should be kept in mind as a differential diagnosis when evaluating mass in spine. En bloc excision should be performed.

Keywords: Osteochondroma • thoracic vertebra • excision

INTRODUCTION:

Osteochondroma otherwise known as "osseocartilaginous exostosis" are frequently seen on the metaphysis of the long bones, but they are rarely seen (2%) on the spinal column. Vertebral osteochondromas usually arise from neural arch of cervical and thoracic vertebra and spinal cord compression is seen more often in hereditary multiple exostosis than in solitary lesion.[1,2] Here, we report a case of solitary osteochondroma arising from the spinous process of D11 vertebra without neurological deficit.

CASE REPORT:

A 20 years old female student presented with low back pain and progressive swelling over the right lower back for two years. The pain was dull aching intermittent in nature, and aggravated by doing heavy work and relieved by analgesics. There was no history of previous trauma or surgery and the past medical history was unremarkable. Clinical examination of her back revealed an elliptical mass 7.5 x 5.25 cm in size lateral to D9 to D12 vertebra on right side (Fig 1). Palpation showed that the swelling was firm to bony hard in consistency which seemed fixed to the underlying corresponding vertebrae and ribs. The swelling became more prominent as the patient bent forwards. Overlying skin was normal. There were no similar swellings in any other parts of the body and remainder Orthopedic examination was normal. Neurological examination was unremarkable with normal mental state. There was mild tenderness with no deformity of the back. The erythrocyte sedimentation rate (ESR) was 11 mm/hr and the white blood cell (WBC) count was normal.

A plain radiograph showed an uneven elliptical paraspinal mass at the level of D10 to D12 vertebrae (Fig. 2A, B). A plain CT scan revealed expansile lesion originating from the posterior elements (spinous process) of D11 vertebra with the lesion showing mixed density with central dense calcification. The normal marrow was seen between the mass and the normal vertebra and the tumor was not extending in the spinal canal (Fig 3A, B). 3D reconstruction of the CT revealed exostosis arising

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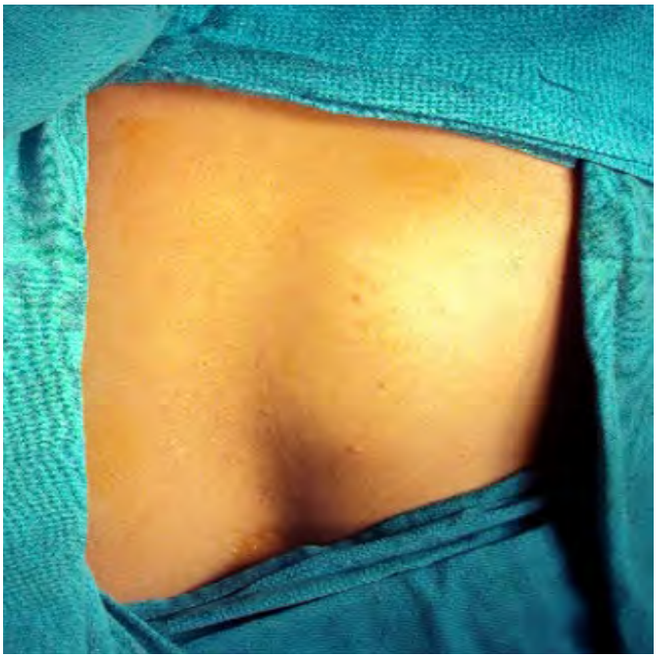

Fig 1: *A diffuse lump over lower dorsal paraspinal region of right side*

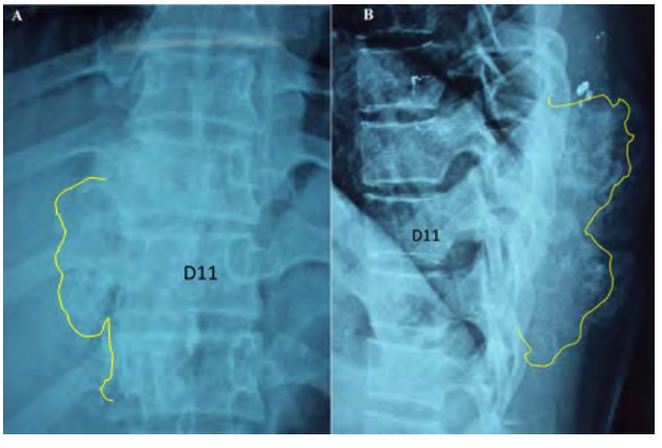

Fig 2(A, B): *AP and lateral plain X-ray of the thoracic spine. A heterogeneous bony mass is seen in the lower thoracic spine*

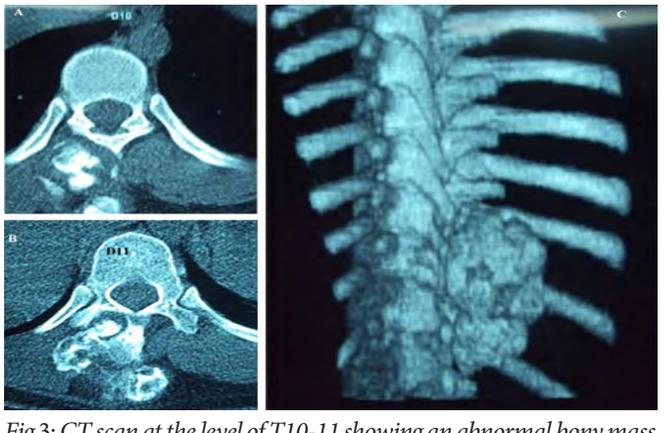

Fig 3: *CT scan at the level of T10-11 showing an abnormal bony mass arising from the posterior arch of T11 having irregular cortical margins (A and B). The 3D CT reconstruction of this patient shows the osteochondroma of T11 vertebra comes from the spinous process (C)*

from the spinous process (Fig. 3C). Excision biopsy of the tumor was planned.

Under general anesthesia, patient was positioned prone. A 10 cm long longitudinal right para median incision was made centering on the tumor. Trapezius muscle was dissected, paraspinal muscles were incised along the fibers to expose the tumor (Fig 4). En bloc excision of the elliptical capsulated mass with well defined borders was carried out. Tumor revealed a hard mass measuring 7.5 cm x 6 cm x 4 cm along with multiple grey white bony pieces (Fig 5). Histopathologically, the tumor was noted to have a cartilaginous cap centered by trabecular bone with endochondral ossification at the bone-cartilage interface which were consistent with a diagnosis of osteochondroma. Postoperative stay was uneventful and patient got discharged after a week. After 16 months postoperatively, patient was asymptomatic and there was no recurrence.

DISCUSSION:

Osteochondromas are common benign primary bone tumors that are thought to arise through a process of progressive enchondral ossification of aberrant cartilage of a growth plate as a consequence of congenital defect or trauma. Osteochondromas rarely affect the spine; 1.3% to 4.1% of solitary osteochondromas arise within the spine, and approximately 9% of patients with multiple osteochondromas have spinal lesions.[3-5] Understanding embryological development of spine could also conjecture on other etiological hypothesis. The complete growth of the vertebral column is completed in adolescence by secondary ossification centers at the spinous process, transverse process, articular process, and end plate of vertebral body. These secondary ossification centers appear in children between the ages of 11 and 18 years and complete the ossification process in the cervical spine during the third decade of life, in the thoracic and lumbar spine during the end of second decade of life and in the sacrum during the third decade of life.[1]

The aberrant cartilaginous tissue of these secondary ossification centers could be the origin of osteochondroma. So, it can be hypothesized that more rapid ossification of these centers could give rise to aberrant cartilaginous tissues. Osteochondromas arising in the upper segment of vertebral column could probably be explained by age

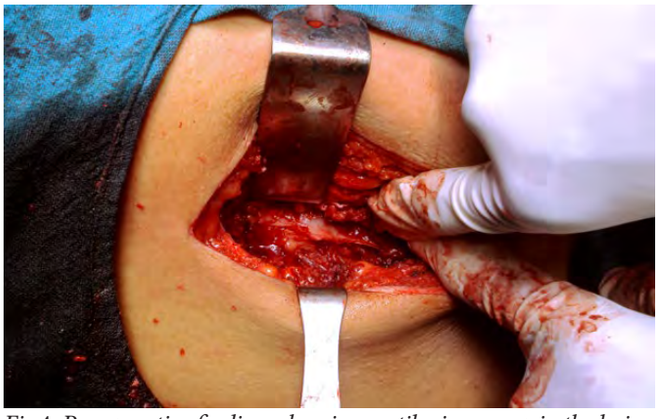

Fig 4: Per operative findings showing cartilaginous cap in the lesion

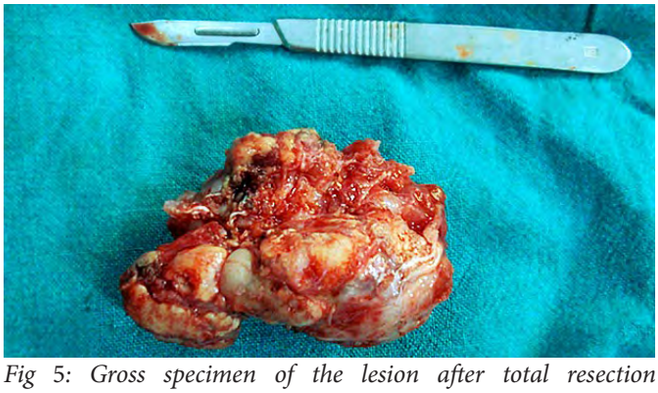

Fig 5: Gross specimen of the lesion after total resection

Fig 6: Photomicrograph of the osteochondroma (hematoxylin and eosin stain) showing a cartilaginous cap (*) covering the trabecular bone

variations of ossification process in these centers.[1] Spinal involvement is more common in Hereditary Multiple Osteochondroma (HME) and may present with radiculopathy and myelopathy. It usually affects the dorsolumbar vertebrae, while the solitary lesions commonly affect the cervical spine particularly C1-C2 vertebra.[6] Computed Tomography(CT) is the diagnostic imaging of choice. Complete excision of the cartilaginous cap is advocated to reduce the likelihood of recurrence.[7] Malignant transformation is reported in 10-30% of HME as compared to 15% in solitary osteochondroma, so complete resection of these tumor is crucial.[1] Majority of surgically treated patients' outcomes are good and malignant degeneration is uncommon.[8] We present this case to highlight a successful resection of a solitary thoracic osteochondroma originating from the spinous process of thoracic veterbra.

CLINICAL MESSAGE:

Veterbral osteochondroma is a rare condition, which can present with diversed presentations and locations. Complete excison of Osseous mass is a treatment of choice with lower risk of local recurrence .

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Conflicts of interest: None.

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