Osteochondroma of rib with neural foraminal extension and cord compression

Sir,

Osteochondroma (cartilage cap exostosis) is an osseous outgrowth arising from cortical bone. It is the commonest benign bone tumor, which arises from the metaphyseal region of long bones. Commonly seen around the knee joint, osteochondroma can also arise from flat bones (ileum, scapula) and the spine.\(^1,2\) Osteochondromas of the ribs are rare and nearly always arise at or near the costochondral junction. We report a rare case of osteochondroma rib at the costovertebral junction, with neural foraminal extension, causing cord compression and cord symptoms. Only a few such cases are reported in the literature.\(^3,4\)

A 12-year-old girl presented with history of progressive spastic paraparesis of eight months duration with highest level of involvement at D8 cord level clinically. Plain radiography showed an exophytic bony lesion arising from the costovertebral junction of the left sixth rib. The cortical lines and medulla of the rib and of the lesion were continuous. There was pressure erosion and thinning of the adjacent seventh rib, indicating its longstanding nature. Plain computed tomogram (CT) confirmed the plain radiography findings and in addition showed widening of the neural foramen, extension of the lesion into the extradural space and

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<th>Table 1: Electrophysiological data</th>
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<td>Nerve</td>
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<tr>
<td>Ulnar motor</td>
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<td>Ulnar sensory</td>
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<td>Median motor</td>
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<td>Median sensory</td>
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<td>Radial sensory</td>
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Leprosy mainly affects exteroceptive sensory modalities. Mononeuropathies and mononeuritis multiplex are the common presentations and polyneuropathy is rare. In a minority of patients, position and vibration may also be affected, resulting in a pan sensory neuropathy.\(^1\) Such patients tend to have affection of dorsal root ganglia. “Leprous ganglionitis” is believed to be responsible for the kinesthetic sensory deficits seen in these patients.\(^1\) By histopathology of affected ganglia, various stages of neuronal degeneration, inflammation and acid-fast bacilli have been demonstrated.\(^2\) In our case, MRI detected this uncommon involvement of dorsal root ganglia in a noninvasive manner. The intense enhancement of dorsal root ganglion is in keeping with active inflammatory process. Dorsal root ganglia may be affected in Sjogren’s syndrome, HIV infection, other immunological and infective conditions and as paraneoplastic manifestation.\(^3\) These conditions were not present in our patient.

Information on imaging of the spinal cord in leprosy is not available. In our patient, use of MRI technique helped us study the spinal cord and ganglia in the active phase of disease. Characteristics of MRI signals in the spinal cord suggest a granulomatous process. Autopsy studies of the spinal cord in patients with leprosy have shown changes of degeneration of posterior columns and amyloid bodies in grey and white matter,\(^4,5\) but not granulomas. We did not perform biopsy of the spinal cord lesion for concerns of safety and potential of reversibility.

This patient illustrates extensive involvement of the peripheral nervous system, dorsal root ganglia and also newly documents MRI changes of spinal cord involvement in leprosy.

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shift of the dural tube to the opposite side. There was dense calcification at the tip of the lesion within the spinal canal (cartilage calcification) [Figure 1]. The MRI showed cord thinning, compression by the lesion with diffuse hyperintensity in the cord extending over two (D6, D7) vertebral body levels on T2W sequence. The cord changes were isointense on T1W images. The lesion was hyperintense on T2W images and isointense to vertebra on T1W images. The tip (cartilage cap) of the lesion in the spinal canal was hypointense in T1W images and hyperintense on T2W images [Figure 2].

She underwent D5, 6, 7 laminectomy and excision. The lesion was drilled and the involved rib was sectioned and removed beyond the lateral extent of the lesion. Postoperatively her paraparesis gradually improved. Biopsy was reported as osteochondroma.

The tip of the osteochondroma is usually covered with cartilage cap and this structure is important as there is a 1% risk of malignant transformation into chondrosarcoma if the lesion is solitary. In multiple osteochondromas malignant transformation can occur in 10% of cases.[1] As age progresses calcification occurs in the cartilage and it appears radiodense as in our case. The cartilaginous tissue in the cap of osteochondroma is hyperintense in T2W spin echo MR images and this tissue is covered with perichondrium that appears to be of low signal intensity on MR spin echo sequences.[5] In children and adolescents, in whom there is active bone growth, the cap may be as thick as 3 cm. However, in adults, the cap may be entirely absent or than 10 mm thick.

Magnetic resonance imaging is important in these cases as it can suggest malignant transformation – if the thickness of the cartilage cap is more than 10mm, there is a change in cartilage cap signal morphology or if it reveals infiltration of adjacent soft tissue structures, particularly, if these changes are accompanied by history of insidious increase in local pain.[1,5]

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