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CT Scanning Versus MR Imaging in Intraspinal Osteochondroma

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SUMMARY

Osteochondroma is a rare but well described spinal tumour which may be associated with spinal compression syndromes. We describe a patient with multiple osteochondromas with the radiological findings including CT and MRI.

INTRODUCTION

Osteochondroma is a rare cause of spinal compression. As CT Scanning and Magnetic Resonance Imaging become the modalities of choice in the imaging of spinal disease we report a case of osteochondroma with atypical findings causing confusion with intraspinal extradural lipoma.

CASE REPORT

A 16 Year old male presented to our department with the complaints of a difficulty in walking for the previous months. This had started suddenly with pain in the left chest and he developed of weakness and numbness in the left leg at the same time. He complained bitterly of nocturnal pain in the interscapular region. The numbness and weakness grew progressively worse and he developed a cold feeling in his right lower limb. In the past he had the excision of multiple bony swellings from the medial aspects of both distal femoral epiphyses and the medial aspects of both proximal tibial epiphyses. The histology of these excised swellings was not available. The patient also complained of a few small swellings developing on the medial aspects of both wrists and the lateral border of the right scapula.

On examination he was seen to have a scoliosis to the left. He had a Brown Sequard Syndrome with increased tone and Grade IV power in the left leg with the loss of kinaesthetic and touch sensation in the left leg. The temperature and pinprick sensation was lost in the right lower limb with a sensory level at D5. The small swellings (<0.5cm) in the limbs were confirmed as well as the surgical scars.

A CT Myelogram was performed through the affected area and this revealed a low attenuation lesion with severe thecal sac compression which at the site of maximal compression was associated with a dumbbell calcified lesion (Fig. 1) arising from the inner aspect of the D5 Lamina on the right. A diagnosis of an osteochondroma associated with a lipoma was made. To clarify the situation an MR Scan was done which confirmed a 2.5 cm mass lesion at D5. This was of a high signal on T1 weighted images and a low signal on T2 sequences (Fig. 2) confirming the presence of fat. This was suggestive of an intraspinal lipoma. The clinical suspicion however was that of intraspinal osteochondroma.

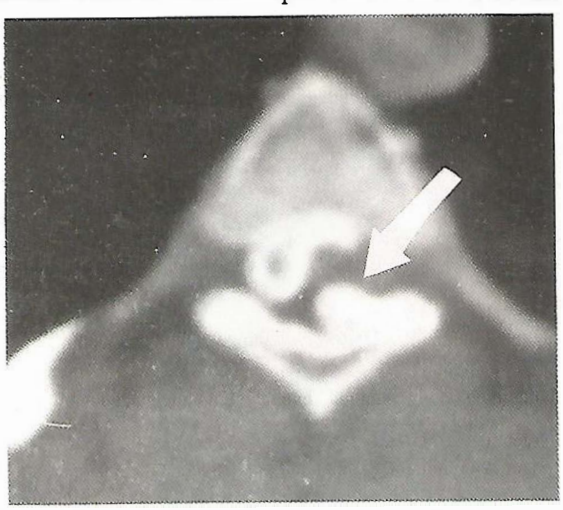

Fig. 1: CT myelogram showing high and low attenuation lesion.

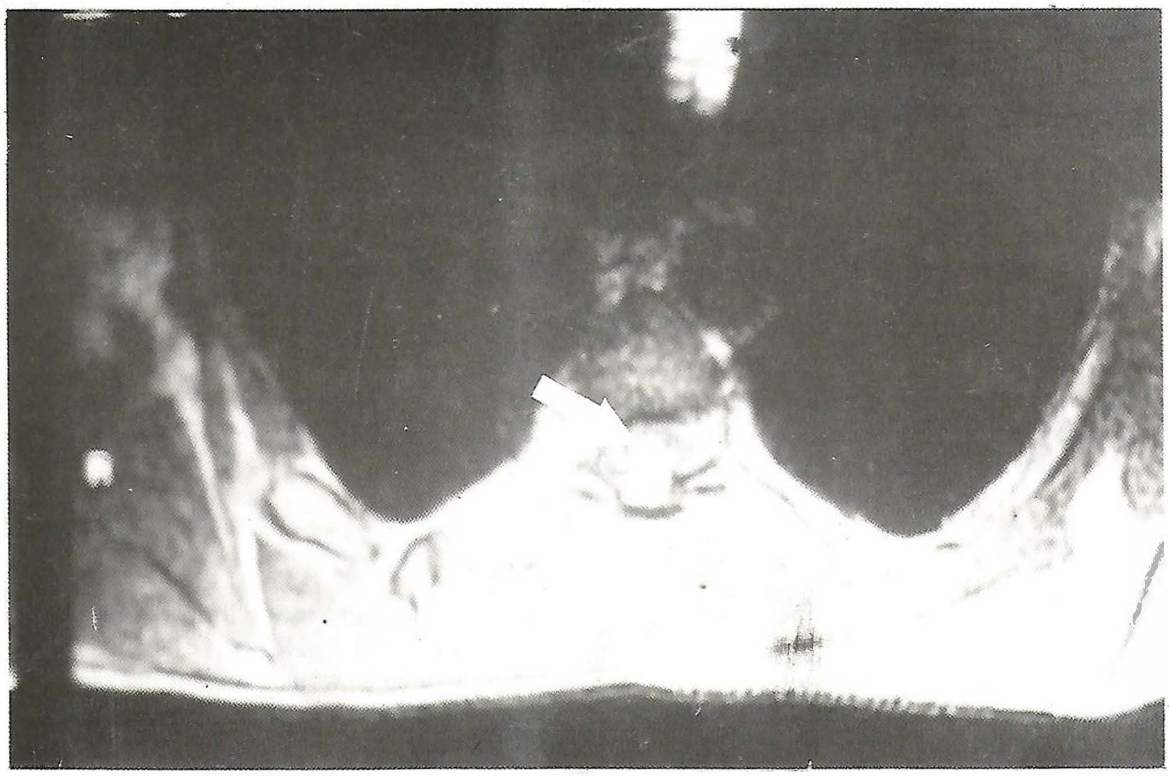

Fig. 2: Axial MR scan of the lesion.

A D4-5 Laminectomy was performed and a compressive bony lesion (Fig. 3) arising from the deep aspect of the lamina of D5 on the right was removed completely. The thecal sac was pushed over and the large extradural space formed by the arching of the dura was occupied by large epidural veins. There was a minimal amount of fat. Histology revealed a cartilage capped bony swelling confirming it as an osteochondroma. He made an uneventful recovery. Two months after surgery he remains neurologically unchanged although his pain has completely disappeared.

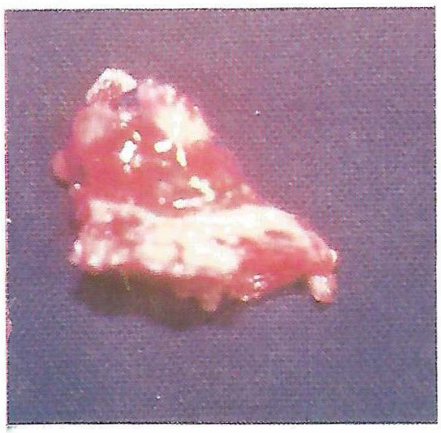

Fig. 3: Osteochondroma excised whole.

Discussion

Osteochondroma is a bone tumour which usually occurs in the peripheral skeleton but which may also be found in the axial skeleton. Other bony tumours such as Osteoblastoma and Osteoid Osteoma may also be found in the axial skeleton[1]. Spinal osteochondromas may occur in isolation but also occur in patients with diaphysial aclasis, hereditary multiple exostoses The patients with osteochondromatosis have these lesions at the metaphyses of bones including the phalanges The main problems are pathological fractures, pain in the lesions, deformities caused by the lesions including short stature and brachydactyly, bursitis, neurological complications and the malignant transformation of the osteochondromata[2].

The main symptoms in these patients with spinal osteochondromas are neurological with spinal cord or cauda equina compression as in our patient. The lesions are most common in the cervical region but are also found in the thoracic and lumbar regions there being a propensity to grow into the neural canal from the posterior vertebral elements[3]. Neurological symptoms may also be due to a non compressive aetiology of unknown origin[4].

Diagnosis is established clinically with the

characteristic symptoms and radiological localisation and diagnosis is achieved by demonstrating hot spots with Radioisotope Bone Scanning, followed up by CT Scans. The osteochondroma is shown on CT Scan as a calcified conical lesion capped by a low attenuation which is the cartilage cap of the osteochondroma. Although Ultrasound is considered a more sensitive investigation in superficial osteochondromas in the spine it is inferior to CT due to the deep location[5]. The presence of epidural low attenuation fat density caudal to the lesion on the CT scan in our patient is more difficult to explain. At surgery this area was found to be occupied by a few epidural veins stretched across the tumour summit. No association of Lipoma with Osteochondroma has been described. An MR Scan was performed prior to surgery to delineate the anatomical relationships. We found this investigation to be inferior to CT Myelography. Not only was a false fat signal obtained but the presence of calcification could only be inferred from minute foci of low signal in the lesion. In patients with solitary rather than multiple osteochondroma this may be a liability.

Other authors have also thought CT Scanning superior to MR Imaging in this clinical setting[6] but the false fat signal on both T1 and T2 weighted images has not been described before.

CONCLUSION

As MR Imaging becomes the modality of choice in the investigation of patients with neurological spinal disease some erroneous diagnoses may result. . However in patients with solitary spinal tumours the diagnosis may prove difficult. This may have a bearing on treatment as the surgical techniques of dealing with lipoma and osteochondroma digging into the thecal sac are different.

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