Periosteal chondroma of the sacrum

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Periosteal chondroma in the spine is rare and has not been reported in the sacrum until now. We report a case of periosteal chondroma that was unusual owing to its large size and location in the sacrum.

Case report

A 35-year-old man presented with complaints of back pain with radiation to the outer aspect of his right leg for 1 year. There was no history of trauma or any episode of similar pain. Physical examination revealed firm, nontender swelling over the right lumbar paraspinal region with normal overlying skin. There was no neural deficit. Radiographs demonstrated a large radiolucent shadow with stippled calcification, probably arising from the sacrum and extending up to the L4 vertebral level longitudinally (Fig. 1). Magnetic resonance imaging (MRI) revealed a lobular mass arising from the S1 vertebra, measuring $8 \times 8 \times 9$ cm, that was hypointense on T_1-weighted images and hyperintense on T_2-weighted images. The mass extended up to the L5 neural foramen and caused a compression of the L5 nerve root (Fig. 2). Cytologic examination of the fine-needle aspirate suggested that the lesion was a benign cartilaginous tumour. But the large size of the tumour favoured a diagnosis of chondrosarcoma. A second opinion of the cytologic findings confirmed the first.

Because we could not entirely rule out cancer, an excision biopsy was planned. Perioperatively, the tumour was noted to be surrounded by an intact fibrous capsule and to originate from posterior aspect of the right ala of the sacrum. After freeing the L5 nerve root, we excised the tumour en bloc, including margins of normal bone. The patient's symptoms improved substantially, and he returned to his normal routine after about 3 weeks. On histopathologic examination, the mass was identified as a periosteal chondroma (Fig. 3). There has been no recurrence after a follow-up period of 4 years.

Discussion

Periosteal chondroma is a slow-growing benign cartilaginous tumour of periosteal origin. It occurs mostly in the second and third decades of life and is found mostly in long, tubular bones.[1–3] A few cases have been reported in the cervical spine.[3] Clinical manifestation in the spine usually includes pain, swelling and sometimes a mass. The patient may also present with neurologic deficit due to the mass effect of the lesion on the cord or nerve roots. Radiologically, a mildly destructive tumour originating in the posterior neural arch of the spine and containing stippled calcification suggests the diagnosis of periosteal chondroma.[3] Computed tomography shows a soft-tissue mass of iso or high density, containing stippled calcifications and local bone destruction.[3] Magnetic resonance imaging shows a sharply delineated subperiosteal lobulated mass at the bone surface, consisting of a matrix with bright signal, with a hypointense lining on T_2-weighted images and hypo- to isointense signal relative to muscle on T_1-weighted images.[4]

Grossly, the lesions are ovoid and dull white or blue-white in colour. A fibrous capsule always marks the boundary of the lesion. Histologically, immature cartilage cells predominate. There is increased

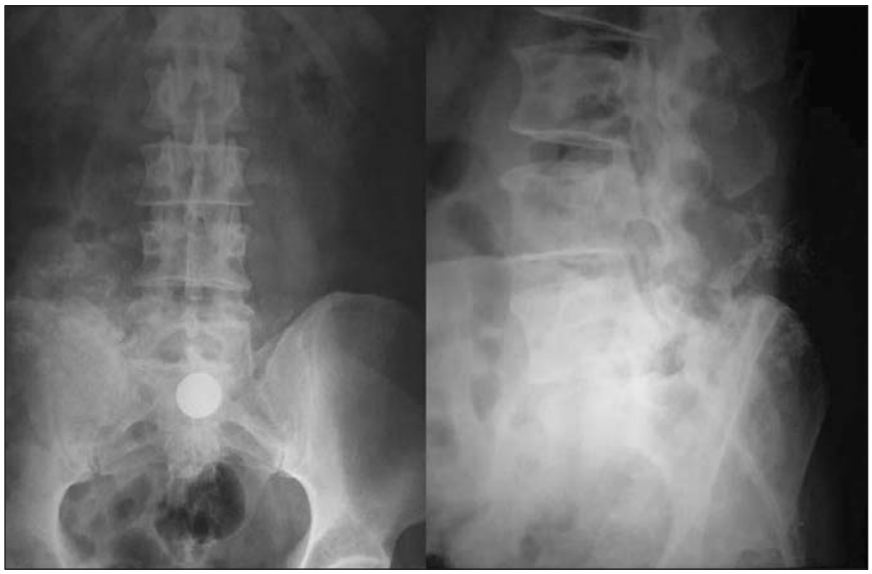

FIG. 1. Anteroposterior (left) and lateral (right) views of the lower spine showing a radiolucent shadow with stippled calcification.

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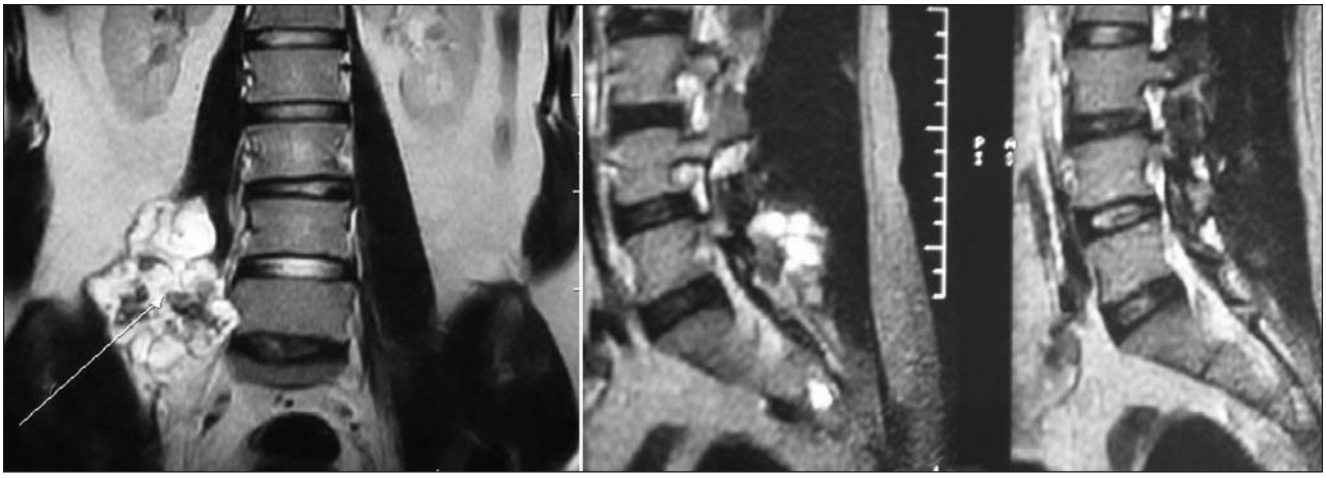

FIG. 2. Magnetic resonance imaging showing the sacral origin of sharply delineated lobular swelling (arrow). The mass was iso- to hyperintense on the T_1-weighted image and hypointense on the T_2-weighted image.

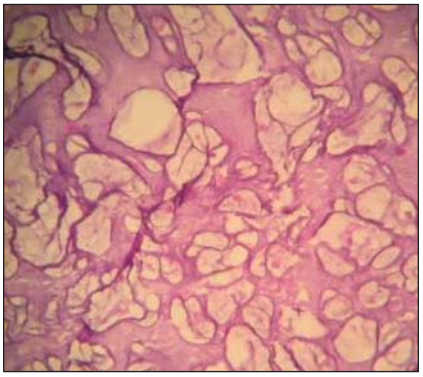

FIG. 3. Histopathologic examination of the specimen showing chondroid cells and increased cellularity without mitotic figures (hematoxylin–eosin stain, original magnification ×400).

cellularity, cellular pleomorphism and binucleate cells within the tumour, but no mitotic figures are found.[1]

Chondrosarcoma is always a major differential diagnosis in cases of periosteal chondroma. However, differentiation between the 2 lesions can be quite difficult. Chondrosarcomas are larger in size, occur in older people and may have a soft-tissue extension. Isotopic bone scanning is usually more intense in the malignant tumour and can help in the preoperative differentiation between the 2 types of lesions.[1] Periosteal chondrosarcoma tends to permeate the underlying bone without the formation of reactive bone. When it is difficult to reach a diagnosis, an excision biopsy should be performed.[1]

In the present case, owing to the large size of the lesion, the possibility of chondrosarcoma could not be ruled out in spite of cytologic findings suggesting a benign tumour. Therefore, an excision biopsy was performed. Perioperative presence of a surrounding fibrous capsule and absence of soft-tissue extension favoured periosteal chondroma. Later, histopathologic findings confirmed that the lesion was periosteal chondroma.

Periosteal chondroma also needs to be differentiated from osteochondroma. Osteochondroma contains a dense osteoid formation in the cortex and medulla of the osteochondroma and is continuous with the bone from which it originates.[5] Osteochondromas are common in the adolescent skeleton, whereas periosteal chondromas occur in young adults.

Other lesions that may be considered in the differential diagnosis are osteoblastomas and aneurysmal bone cysts. They are usually markedly expansile rather than destructive and possess characteristic outer sclerotic rims.

The treatment for an asymptomatic and latent periosteal chondroma is observation. For symptomatic lesions, complete excision with free resection margins along with the intact rim of underlying bone is curative.[1,5] No malignant transformation, metastasis or multiple lesions have been reported. Recurrence is rare. No recurrence was noted in our patient after a follow-up of 3 years.

The present case posed quite a diagnostic challenge owing to its atypical location and large size. The aim of this report is to highlight that, in cases of suspected chondroid tumour, a differential diagnosis of periosteal chondroma should also be considered.

Competing interests: None declared.

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