Radiology for the surgeon

Musculoskeletal case 36

Presentation

A 59-year-old man has noticed lately a grating sensation, especially when squatting, as if he had a grain of sand under his left kneecap. Physical examination revealed no abnormality apart from minimal swelling. Plain radiographs were initially obtained to evaluate the cause of his pain (Fig. 1, Fig. 2). Because of the plain radiographic findings, magnetic resonance imaging (MRI) was performed. Fig. 3 is a representative sagittal gradient-echo image, and Fig. 4 is a representative transverse axial T_2-weighted image.

From these imaging characteristics, what is your diagnosis?

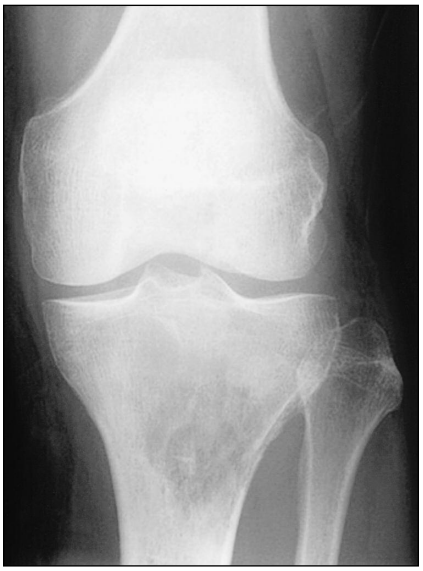

FIG. 1.

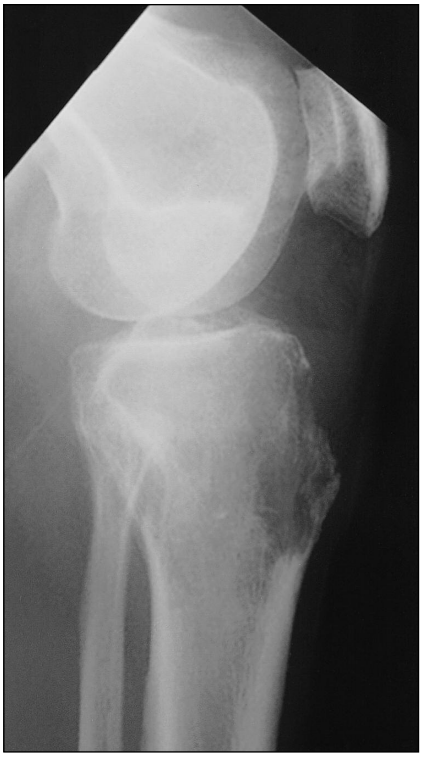

FIG. 2.

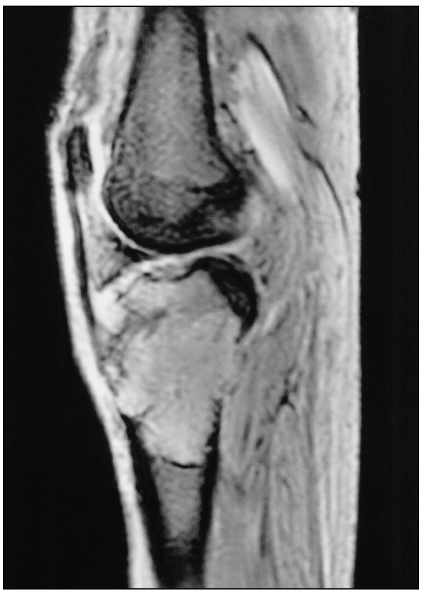

FIG. 3.

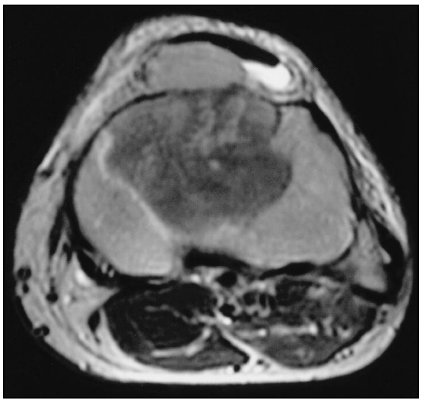

FIG. 4.

Submitted by Nizar A. Al-Nakshabandi, MD, and Peter L. Munk, MD, Department of Radiology, Vancouver General Hospital, Vancouver, BC.

Inquiries about this feature should be directed to the section editor: Dr. Peter L. Munk, Professor, Department of Radiology, Vancouver General Hospital and Health Sciences Centre, 855 West 12th Ave., Vancouver BC V5Z 1M9; fax 604 875-4723; peter.munk@vch.ca

Diagnosis

Primary leiomyosarcoma of the tibia

The anteroposterior and lateral plain radiographs (Fig. 1, Fig. 2) demonstrate an ill-defined, eccentric, expansile, lytic lesion involving the metaphysis and subarticular regions of the medial tibial plateau. On sagittal T_2-weighted gradient-echo images, MRI (Fig. 3) shows destruction of the tibial metaphysis with a soft-tissue mass component involving and displacing the anterior muscular compartment. The axial T_2-weighted image (Fig. 4) again demonstrates the soft-tissue mass component and tibial destruction.

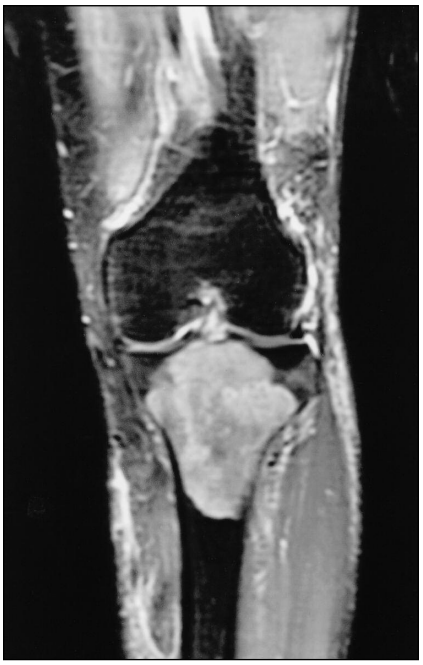

FIG. 5.

Coronal short tau inversion recovery (STIR)-weighted images demonstrate a lesion of high signal intensity with thinning and destruction of the medial and lateral tibial cortex (Fig. 5).

Primary leiomyosarcoma of bone is rare.[1] Berlin et al[2] estimated the incidence of this disease in Sweden was 0.09 case per million population. In 1965, Evans and Sanerkin[3] first reported leiomyosarcoma of bone. Patients can be of either sex and range in age from the first to eighth decade of life.[4,5] The tumour has a predilection for long tubular bones, particularly the femur and tibia.[2,4] Plain films demonstrate a poorly circumscribed lytic lesion with destruction, permeation and fine periosteal reaction.[4,6] Computed tomography (CT) is useful for determining the character of any tumour matrix, such as type of calcification, and in evaluating cortical and medullar involvement. MRI shows the exact extent of the lesion. The tumour is isointense to muscle on T_1-weighted images and heterogeneous and of high signal on T_2-weighted images. In the long bones, the metaphysis is chiefly involved. The radiographic differential diagnosis includes malignant fibrous histiocytoma, fibrosarcoma and osteolytic osteosarcoma.[6]

The histological features of primary leiomyosarcoma of bone do not differ from those of leiomyosarcoma found elsewhere in the body. Immunohistochemical staining allows the diagnosis to be made by showing the presence of actin and vimentin immunoreactivity in tumour cells.[7] The most frequent site of metastasis is to the lung, followed by the lumbar spine and liver.[7] The treatment of choice of primary leiomyosarcoma of bone is surgical resection with wide margins. About 50% of patients succumb to metastasis within 33 months, with deaths in most cases being related to lung metastasis.[8]

Competing interests: None declared.

References

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