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Fig. 2. A roentgenogram of the excised mass shows extensive mineralization (calcium and bone) of the lesion

Fig. 3. A roentgenogram of the femur obtained in the recovery room after the surgical procedure shows that the mass has been excised. The medullary cavity of the upper end of the femur appears to be normal. Minimal periosteal reaction is observed on the lateral surface of the femur just opposite the lesser trochanter.

History

A twenty-year-old white man presented with pain in the proximal portion of the right thigh. On physical examination, fullness and firmness were noted posteriorly in the thigh. Roentgenograms of the upper end of the femur were obtained (Fig. 1A and B). A 15 cm x 15 cm bony mass was excised, and roentgenograms were obtained of the excised lesion (Fig. 2A). Following excision, radiological examination of the upper end of the femur was performed in the recovery room (Fig. 3).

* Presented by Dr. M. Sundaram at the 6th Annual Meeting of the International Skeletal Society in Munich, August 31-September 2, 1979

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Pathological Studies

Fig. 4A and B. A photomicrograph made from histological sections of the excised lesion (H and E stain, X150) shows undifferentiated malignant tumor cells lying adjacent to areas of chondroid material in which bizarre, enlarged and occasionally multiple nuclei within lacunae are observed. B A higher power photomicrograph of the same specimen (H and E stain, X350) demonstrates irregular osteoid which is distinguishable from a hyaline chondroid matrix in the lower half of the field.

Fig. 5. Twelve months after the initial excision, a soft tissue mass containing bone is present. A contour defect is noted on the outer aspect of the femur just below the greater trochanter.

Diagnosis: Periosteal Osteosarcoma of Femur

The differential diagnosis includes parosteal osteosarcoma, periosteal chondrosarcoma, chondroblastic osteosarcoma, osteochondroma, chondrosarcoma arising in an osteochondroma and post-traumatic mineralization (myositis ossificans).

Discussion

Periosteal osteosarcoma, as a distinct clinicopathological entity was first described by Unni et al. This rare neoplasm constitutes one of the variants of osteosarcoma. Only eleven cases in 5,000 primary bone tumors were observed at the Mayo Clinic, with 12 others obtained from their consultation file. The age range varies, but most lesions occur in the second decade of life. A slight female to male preponderance exists.

Painful swelling is the most common presenting symptom.

The tibia is the most commonly affected bone, followed by the femur. Although the metaphysis in