Treatment of a second bone osteosarcoma

3 cases and an unusual MRI finding

Ralph C Marcove[1], Robert Heelan[2], Bennie Lindeque[3], John Healey[1] and Gerald Rosen[4]

We report 3 patients with a second bone involved with osteosarcoma. They were found among approximately 200 cases of limb-sparing surgery with chemotherapy. 1 patient had the unusual finding of a positive MRI scan with all other routine tests negative. The first and then the second bone tumor were successfully removed with limb-sparing surgery. All 3 patients are doing well, with no evidence of disease.

Departments of [1]Orthopedics and [2]Radiology, Memorial Sloan Kettering Cancer Center, New York, NY 10021, USA; [3]Musculoskeletal Tumor Unit, University of Pretoria, South Africa; [4]Cedars-Sinai Comprehensive Cancer Center, Los Angeles, CA 90048, USA. Correspondence: Dr. Ralph C Marcove, 517 East 71 Street, New York, NY 10021, USA
Tel +1 212-535 2514. Fax -861 6910
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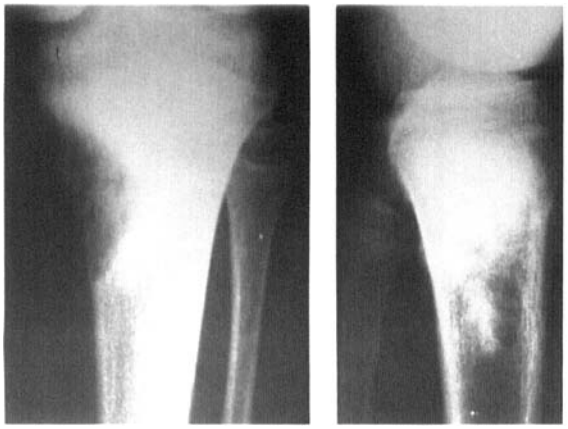
Case 1

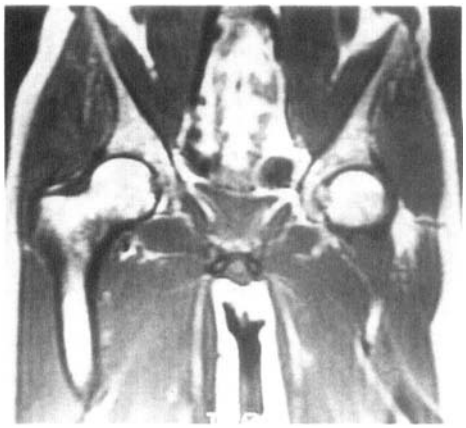
The first case, first seen at the age of 15 in June 1982, had a 2-month history of pain and swelling of his left knee (Figure 1). A biopsy of his left proximal tibia revealed a fully malignant osteosarcoma, Enneking Type IIB. Metastatic work-up was negative and he was started on the Marcove-Rosen type of pre-operative chemotherapy with good clinical and radiological response (Rosen et al. 1979). In September 1982, an en bloc resection of the left distal femur, proximal tibia and fibula was performed, with insertion of a modular knee prosthesis. The tumor was a sclerotic, largely necrotic osteosarcoma (Grade III, advanced necrosis). The post-operative course was uneventful and he remained free of disease until March 1987.

At that time, because of mild pain in the ipsilateral, left hip, a radionuclide scan was done (Goldman et al. 1975). Radiographic examinations of both hips were normal. The left hip had an initial high-scan uptake, but this was confusing since there was a urine-isotope spill on the skin over that hip. A repeat

Figure 1. Case 1.



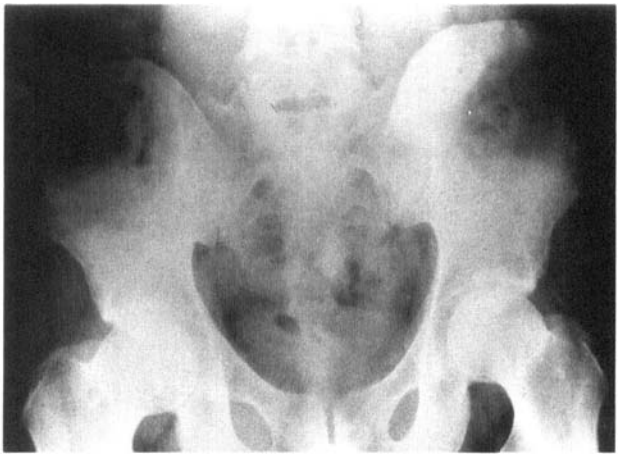
Osteosarcoma of the left proximal tibia.



MRI revealing an abnormal signal in the right intertrochanteric area, compatible with metastatic disease or a primary second bone tumor.

Figure 2. Case 2.

Osteosarcoma of the right upper humerus.



The right ilium showing an osteosarcoma and a small focus in the left ilium.

bone scan, bilateral hip CT scans, and MRI examinations were performed. All examinations were normal on the suspected side, but only the MRI study showed a lesion in the opposite, right, painless hip (Figure 1).

An en bloc excision of the upper femur was reconstructed with a hip prosthesis. Pathologic analysis revealed a well resected second bone lesion of osteosarcoma. Chemotherapy was repeated. Now after 6 years and 3 months since his last surgery, he is doing well and is free of disease. He walks with a minimal gluteus limp of the right leg.

Case 2

The second case was first seen at the age of 23 in April 1987, with a 7-month history of pain in the right shoulder and upper arm (Figure 2). A biopsy of the right proximal humerus revealed a fully malignant osteosarcoma. After a course of pre-operative chemotherapy, a wide resection of the right scapula and upper humerus was performed with insertion of a Küntscher nail for elbow stabilization. The post-operative course was uneventful.

In July 1980, 2 years after initial surgery, a second osteosarcoma appeared in the right ilium and a small nodule which was positive for osteosarcoma was seen in the left ilium (Figure 2). The larger right lesion was treated by wide resection and the left nodule was treated by local curettage and cryosurgery. Curettage and cryosurgery alone had been successfully accomplished at our hospital before for a solitary osteosarcoma. Now, 13 years since surgery, he is doing well with no evidence of disease.

Case 3

Our third case was first seen in September 1974 at the age of 15 with a 1-month history of pain in the right upper fibula. An open biopsy and resection of the entire right fibula and adjacent tibial condyle were performed. Pathologic examination showed an osteosarcoma removed with clear margins. The patient also received a course of chemoterapy.

2.5 years later, in March 1977, a second osteosarcoma was detected in the right upper tibial condyle on the medial side not connected with the previous surgery. In April 1977, the patient underwent a radical excision of the right knee joint with insertion of a Guepar knee prosthesis. Additional chemotherapy was then given. She has lived 16 years since surgery and has remained well to date.

Discussion

The prognosis after metastasis in osteosarcoma is generally poor. Multiple-bone involvement is well known (Ackerman 1948, Amstutz 1969, Galasko 1972, Charles 1973, Goldman et al. 1975, Bowerman and Crawford 1977, Gilday et al. 1977) but a single-bone metastasis in osteosarcoma is rare.

Our first case illustrates valuable detection of an otherwise unnoticed metastasis of osteosarcoma to the opposite limb by MRI (Ackerman 1948, Marcove and Arlen 1992). The other clinical and radiological examinations were all normal and the diagnosis was confirmed by histological examination of the resected specimen.

We wish to emphasize that a second bone involvement in osteosarcoma is not a hopeless complication, and should be effectively resected.

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