

Musculoskeletal case 18. Diagnosis

Radiation-induced osteosarcoma of the sacrum

The clinical history of radiotherapy in this case is paramount in making the correct diagnosis. Based on plain radiography and computed tomography, the findings were compatible with either radiation necrosis or radiation-induced osteosarcoma. The lack of a soft-tissue mass militated somewhat against the diagnosis of an osteosarcoma. However, the key differentiating feature in making the correct diagnosis in this case was the isotope bone scan. Such markedly increased uptake within bone is unlikely in uncomplicated radiation necrosis, whereas it is almost always present in osteosarcomas. The diagnosis was confirmed by biopsy.

Radiation-associated sarcomas constitute less than 5% of all sarcomas.¹ These secondary sarcomas occur in equal proportion in both sexes and are most commonly seen in adults in the sixth decade of life. Children appear to be more susceptible to sarcoma induction than adults.² Postradiation osteogenic sarcomas most frequently arise in the bones of the pelvic and shoulder re-

gions. The commonest underlying diseases for which radiation is given are breast cancer (26%), lymphoma (25%) and carcinoma of the cervix (14%).¹ The median time to the development of sarcoma after radiotherapy is 11 years.³ Although most radiation-induced sarcomas are associated with a poor prognosis, if a wide surgical margin can be achieved, the prognosis is improved.⁴ Overall, the cumulative disease-free survival rate at 5 years is 17%, with a median survival estimate of 1 year. This reflects the poor prognostic factors (size, grade and site) present at the time of diagnosis. Most of the tumours (87%) are of high grade, and the histologic types include osteogenic sarcoma (21%), malignant fibrous histiocytoma (16%) and angiosarcoma or lymphangiosarcoma (15%).¹ Radiographically, most tumours show a destructive bone lesion, with or without signs of radiation osteitis. A purely lytic or purely sclerotic pattern is commoner than a mixed lytic and sclerotic appearance.⁵ An associated soft-tissue mass is usually present, but, as in the case we describe, may not be present. Radiologic evaluation should always in-

clude plain radiography followed by computed tomography or magnetic resonance imaging. Radioisotope bone scanning may help to distinguish simple radionecrosis from osteogenic sarcoma in difficult cases. Ultimately, a biopsy, performed either under radiologic guidance or by surgical means, is required to establish the exact diagnosis.

References

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