Osteoradionecrosis of the skull simulating bone metastases

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Summary

Multiple skull erosions which simulated bone metastases developed in a 54-year-old patient who had been treated for favus by radiotherapy 40 years earlier. Radiation necrosis should be recognized and differentiated from defects and erosions due to malignant or infectious process in order to prevent unnecessary procedures and treatment.

Introduction

Erosions of the skull are usually, but not always, caused by tumour. The following reported patient had skull erosions secondary to radiation which had been given 40 years earlier as a treatment for favus.

Case report

A 54-year-old woman was admitted for dyspnoea, palpitations and vertigo which had started a few days before. Past history was non-revealing except for poliomyelitis in childhood involving the left leg, and appendectomy at the age of 17 years.

Physical examination revealed areas of alopecia on the scalp. Blood pressure 150/80 mmHg, pulse 80/min regular. There was a mild shortening and deformity of the left leg. The rest of the physical examination, including neurological examination, were within normal limits. Chest X-ray was normal. X-ray of the skull revealed several lytic areas of different sizes (Fig. 1).

Laboratory examinations were all normal including, urea, glucose, haemoglobin, leucocytes, ESR, blood calcium, phosphorus, cholesterol protein, electrophoresis, immunoelectrophoresis, urinalysis, bone marrow examination, electrocardiogram and electroencephalogram.

A skull biopsy was considered in order to identify the nature of what was thought to be a malignant process, but when she was questioned again about

her past history, specifically about irradiation of her head, she added the fact that her skull was irradiated in childhood for favus. In retrospect the X-ray findings were compatible with post-irradiation injury.

During her admission all the complaints disappeared and she was discharged feeling well and with no therapy.

Discussion

The patient demonstrated the appearance of radiation osteitis following radiotherapy for favus. In the past, fungal infections of the scalp were treated either by topical epilation or by high dose irradiation (Sams, 1960).

Radiation osteitis, which is one of many complications of radiotherapy, is gradually seen more frequently, as the use of external radiation becomes more common. Necrosis of the bone is a result of severe vascular damage and destruction of the cellular elements (Bragg *et al.*, 1970). In adults the threshold dose liable to induce bone changes is in the range of 3000 rad (Murray and Jacobson, 1977). The relatively long period which evolves between irradiation of bone and the radiographic detection of osseous changes results from the fact that the metabolic turnover of bones is relatively slow and thus the tolerance to irradiation is greater. The relative insensitivity of radiographs in detecting demineralization and abnormalities involving bones adds to the difficulties of early identification of irradiation necrosis.

The common sites for osteoradionecrosis are the jaws, ribs, spine and pelvis (Bragg *et al.*, 1970; Graupera, 1977; Riseborough, 1977; Schofield, 1978). Lesions of the skull are rare, and appear as marginal and central bony erosions which look like metastases or infection (Sutton and Grainger, 1975). The diagnosis of radiation osteitis is based, among

FIG. 1. Skull X-ray showing several lytic areas of different sizes.

others, on the lack of radiographic changes during a follow-up period, and should be recognized and differentiated from defects and erosions due to other causes, in order to prevent unnecessary procedures and treatments.

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