LOCAL OSTEO-ARTICULAR TUBERCULOSIS COMPLICATING CLOSED FRACTURES
REPORT OF TWO CASES

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The localisation of acute haematogenous pyogenic osteomyelitis following a local injury is well known. Whilst there is often a history of trauma in patients developing bone and joint tuberculosis, its role is obscure. Two patients are reported who developed histologically proven tuberculosis in the vicinity of closed fractures during the healing process. These two patients make a total of four so far reported.

CASE REPORTS

Case 1—An Iranian girl aged eight sustained supracondylar fractures of both femora in a car accident. The original radiographs are unavailable. Later radiographs showed the fractures healing after two and a half months' immobilisation in plaster (Fig. 1). Both knees quickly regained mobility and she did well.

Four months after the injuries she began to limp and had difficulty in straightening the left knee. The thigh and the knee became swollen, and there was increasing pain. Fluid was aspirated from the knee repeatedly.

Twenty-two months after the initial injuries she sustained a pathological fracture of the supracondylar region of the left femur (Fig. 2). In hospital the leg was manipulated and immobilised in plaster-of-Paris. She became ill, febrile, and lost weight, so that nine months later she weighed only twenty-three kilograms compared with forty-two kilograms at the time of the accident two and a half years previously. The erythrocyte sedimentation rate was 56 millimetres in the first hour (Westergren).

During the next month the girl's condition deteriorated and she was in a state of gross overcrowding, showing a high fever of 40°C or 41°C, and divided her time between bed and the bedside. Three weeks after admission the left knee became swollen and severely painful. At the same time the girl became febrile, and for the next two months she continued to lose weight, and the fluid was aspirated from the knee repeatedly. After this period her health improved and the knee became normal in appearance.

Case 2—An Indian woman, first seen at the age of twenty-seven years, reported that three years previously she had fallen when the second floor balcony of a house collapsed. She sustained injuries to both lower limbs: there were spiral fractures of the left tibia and fibula, and a comminuted compression fracture of the right calcaneus with a hairline fracture also at the neck of the talus (Fig. 3). Both lower limbs were immobilised in plaster splints. The fractures of the left tibia and fibula did well, but four months after the accident an abscess on the medial aspect of the right ankle was drained. Eight months later a persisting sinus was excised, and the sinus then healed. Histological examination showed "chronic inflammation".

The left leg was considerably swollen and warm in the thigh above the knee. Overlying veins were dilated. The knee range was from 20 to 60 degrees.

At operation a large abscess was found, with tuberculous caseating material extruding from the bone. The bone lesion was in the metaphysial region and did not communicate with the knee. Histology showed caseating epithelioid and giant-cell tubercles, typical of tuberculosis. Culture was also positive for tuberculosis.

After treatment by antibiotics (streptomycin, I.N.A.H. and P.A.S.) and immobilisation the patient made a good recovery with knee flexion from 10 to 90 degrees.

At the time of examination the patient reported that pain in the right ankle had persisted ever since the accident three years before. Otherwise she was healthy. The right ankle was thickened and generally tender, with no inflammation and no sinus. There was a 30 degrees' equinus deformity.
with only a few degrees of movement at the ankle joint. The subtalar joint was rigid. There was no lymph node enlargement.

Radiographs (Fig. 4) showed that the talus was rather sclerotic and slightly collapsed. The calcaneus had lost Bohler’s critical angle. The ankle joint showed destructive changes typical of tuberculosis.

Operation—The right ankle joint was explored and sections were taken for histology. The subtalar joint was found to be ankylosed. The ankle joint was excised and a formal fusion carried out, using a long vertical olecranon-type screw. The limb was immobilised in plaster. Treatment by antibiotics (streptomycin and thiazine) was continued for eighteen months.

Histology—The sections showed typical tuberculous granulation tissue.

Radiographs two and a half years after operation showed that the arthrodesis was successful. Clinically she did well, with complete relief of pain.

DISCUSSION

Both these patients presented with skeletal tuberculosis during the months following recovery from closed fractures of the lower limbs. The lesion in one patient developed in the immediate vicinity of the fracture, and in the other at an adjacent joint. Both patients were apparently perfectly well at the time of their severe injuries. Rather unusually each patient had moved between several countries before the diagnosis was made.

In both, the first sign of infection became evident about four months after injury. Presenting clinical signs—an effusion in one patient and an abscess in the other—developed when they would have had some symptoms from their injuries. As tuberculosis developed at the site of these injuries, it seems reasonable to assume that trauma must have contributed to the localisation of the infection. There are obvious and important medico-legal implications of this association.

It is probable that the infection in these patients was blood-borne and associated with activation of a latent tuberculous focus, most likely a previous primary infection of the lungs. Both these patients had calcified pulmonary foci. In Case 1, however, multiple foci were identified in the left lung hilar region on lateral radiographs taken when she became ill.

The second patient had a calcified focus in the left lower lung field. Neither of these patients developed overt pulmonary tuberculosis or obvious tuberculosis of any other organ.

Metaphysial tuberculosis is uncommon. In this respect the site is similar to that seen in acute haematogenous (pyogenic) osteomyelitis in which trauma is acknowledged to play a part in the localisation of the osteitis. These two patients sustained major fractures, as opposed to the usual relatively minor injury associated with acute haematogenous osteomyelitis.

A search of the literature over the last twelve years has revealed only one other report, again of two patients, by Corniola and Girone (1970). These patients also developed tuberculosis at the site of their injuries.

The apparent rarity of tuberculosis complicating closed fractures, even in countries where pulmonary tuberculosis is common, leads one to suppose that the occurrence, here reported, was coincidental. However, the localisation of the infection at the site of the fracture is significant. It may be that trauma plays a much more important role than has previously been accepted in establishing the site of a skeletal tuberculous lesion.

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REFERENCE