

Short reports

Spontaneous fracture of the sternum and sternal tuberculosis

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Skeletal tuberculous osteomyelitis is an uncommon condition in the United Kingdom. Tuberculous osteomyelitis of the sternum is rare and has been infrequently reported since the introduction of antibiotics. The last major review was in 1952.¹ A recent review of primary sternal osteomyelitis documented only six cases since 1926.² Pathological fracture of the sternum has only rarely been reported in bacterial osteomyelitis³ and has not previously been reported in tuberculous osteomyelitis. We describe two cases of tuberculous osteomyelitis of the sternum, in one of which pathological fracture of the sternum occurred.

Case reports

CASE 1

A 40 year old Jamaican man presented with a three month history of midthoracic spinal pain radiating to the sternum, and an enlarging, non-tender swelling over the sternum. He had lost 10 kg in weight. On examination there was tenderness and restriction of movement in the cervical and thoracic spine. The sternoclavicular joints were slightly tender and swollen. A 4 cm diameter swelling was present over the body of the sternum in the midline at the level of the fifth ribs. Aspiration of this swelling yielded turbid fluid but no organisms were seen on direct stain.

The haemoglobin concentration was 11.5 g/dl and the erythrocyte sedimentation rate (Westergren) 87 mm in one hour. Posteroanterior and lateral radiographs of the chest and radiographs of the cervical and lumbar spine all showed normal appearances. He was admitted to hospital and was found to have a swinging pyrexia. Blood cultures were negative. On the fifth day he complained of sudden severe anterior chest pain and difficulty in breathing. Repeat posteroanterior and oblique chest radiographs showed a transverse fracture through the body of the sternum at the level of the fifth ribs (fig 1), the upper portion of which was displaced posteriorly. Surgical exploration of the sternum revealed a large abscess cavity, the walls of which contained granulomas; but no acid fast bacilli were seen or cultured from the specimen. A quadruple antituberculous drug regimen (rifampicin, isoniazid, ethambutol, and pyrazin-

amide) was started and he made a slow recovery. The sternal fracture healed well, without requiring further surgery. Six weeks after he had presented the presence of *Mycobacterium tuberculosis* was reported in a culture of pus aspirated from the sternal swelling.

CASE 2

A 49 year old Jamaican man presented with a six month history of neck and back pain. For three months he had noticed enlarging lumps on the anterior chest wall, drenching night sweats, and a weight loss of 6.3 kg. During the previous

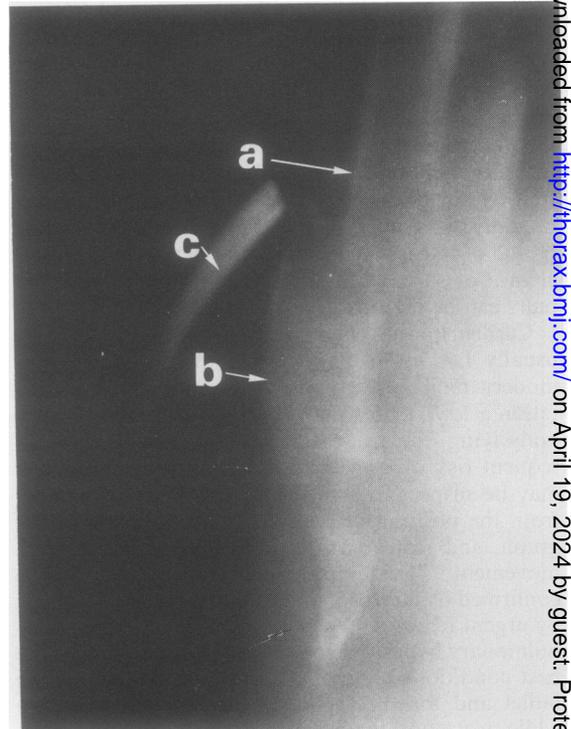


Fig 1 Case 1: Lateral radiograph of the sternum, showing a fracture through the sternum with the upper part (a) displaced posteriorly relative to the lower part (b). The line shadow (c) is a surgical drain.

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Accepted 23 April 1987

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week he had received naproxen and a reducing course of prednisolone. On examination his temperature was 38°C. Overlying the upper body of the sternum and manubrium were two cool, fluctuant masses (fig 2). A third mass was present over the right sixth rib in the midclavicular line. Neck movement was full but painful. There was local tenderness of the lumbar spine. Aspiration of each swelling yielded thick green pus, which was positive on direct staining for acid fast bacilli, and when cultured grew *Mycobacterium tuberculosis*. The white cell count was $11.0 \times 10^9/l$; the erythrocyte sedimentation rate (Westergren) 22 mm in one hour, rising to 64 mm over the next week; a random blood glucose estimation 13.4 mmol/l; and haemoglobin A₁ 10.9% (normal 6.5–8.5%). A posteroanterior chest radiograph showed a widened mediastinum; a lateral chest radiograph showed a soft tissue mass posterior to the body of the sternum; sternal tomography revealed a lytic defect in the body of the sternum; a radioisotope bone scan showed increased uptake in the sternum and right sixth rib; abdominal ultrasound showed a left paraspinal abscess.

Quadruple antituberculous chemotherapy was begun. The fever settled over the next five days. Insulin was required to control the hyperglycaemia. Two months later the patient was feeling well and gaining weight. The paraspinal abscess was now palpable at the thoracolumbar junction. This was aspirated and direct stain showed the presence of acid fast bacilli. He has subsequently remained well.



Fig 2 Case 2: Cold abscesses overlying the manubrium and body of the sternum.

Discussion

Sternal tuberculosis in West Indians is a rare condition. About 1% of cases of skeletal tuberculosis affect the sternum.⁴ In England and Wales the incidence of non-respiratory tuberculosis in West Indians lies between that of the Asian community and the indigenous white population.⁵

An unusual feature in case 1 was the occurrence of a spontaneous sternal fracture. Pathological fracture of the sternum has been well documented in malignant disease since Mr McBean's sternal fracture in 1844, which resulted in the discovery of an abnormal urinary protein by Bence-Jones.⁶ There has been one previous report of sternal fracture, in a man with pulmonary tuberculosis who sustained a spontaneous fracture of the sternum ascribed to violent coughing.⁷ No evidence of skeletal tuberculosis was found. In our case granulomas were seen in the wall of the abscess cavity and acid fast bacilli cultured from the aspirated fluid. To our knowledge this is the first well documented case of spontaneous fracture occurring in tuberculous osteomyelitis of the sternum.

In both cases the presence of bone destruction was difficult to establish. Plain radiographs (posteroanterior and lateral) were unhelpful, at least initially. The presence of a cold abscess overlying the sternum does not always indicate disease of the underlying bone. The abscess may have arisen in the mediastinum and tracked up to the surface lateral to the sternum before reaching the midline.⁸ In case 1 the presence of bone destruction was recognised only after the fracture had occurred, and in case 2 sternal tomography and a radioisotope bone scan were necessary for showing disease of the bone.

We thank the medical photography department of Whittington Hospital for preparing the illustrations and Miss Jeanette Hanoman for preparing the manuscript.

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