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Multifocal tuberculous spondylitis with rib involvement

A case report and review of the literature

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Abstract

Tuberculosis is a common diagnosis in the developing world. Its incidence is increasing in the developed world due to immigrants from endemic regions, increased cases of immune-compromised patients, multi-drug resistance and low socio-economic status. Tuberculous spondylitis is the commonest extra-pulmonary manifestation of tuberculosis. The rib is only very rarely involved. We present a case of multifocal tuberculous spondylitis in the T6-9 and L3 regions with involvement of the ninth rib.

Key words: tuberculosis, spine, ribs, surgery, multifocal

Introduction

Tuberculosis is common in the developing world and its incidence is increasing. Three to five per cent of patients have skeletal tuberculosis, of whom about half have tuberculous spondylitis.¹ Spinal tuberculosis is associated with great potential morbidity and mortality hence the importance of proper and quick diagnosis.²

Case report

A 32-year-old man was admitted with a three-month history of back pain and a week's history of inability to use the lower limbs. He had no history of trauma and denied history of fever, cough, night sweats or weight loss. He is a long distance taxi driver and had initially attributed his lower back symptoms to fatigue due to long hours of driving. Examination revealed tenderness in the mid and lower thoracic spine region with reduced lower limb power judged to be grade 3 and sensation was reduced to grade 1 in the ASIA classification system.³

Examination of the respiratory system was normal. Laboratory investigations revealed an ESR of 70 mm in the first hour and negative serology to HIV. The haemoglobin level and white blood cell counts were within the reference ranges.

Plain myelography showed multiple hypodense lytic lesions in the thoracic spine region from T6-9 associated with a paravertebral shadow. There was anterior collapse with a kyphotic deformity. It also revealed blockage of contrast media at the T8/9 level (*Figure 1*). Computerised tomography demonstrated the involvement of the thoracic vertebrae as seen on plain radiographs and revealed further lesion in the posterior aspect of the left ninth rib and a lesion in the third lumbar vertebral body (*Figures 2, 3 and 4*). The chest radiograph did not reveal any active pulmonary lesions (*Figure 5*).

Spinal tuberculosis is associated with great potential morbidity and mortality



Figure 1. An AP and lateral view of a plain myelogram of the patient



Figure 3. An axial view through the 9th vertebral body and rib showing the involvement of the rib on the left side



Figure 2. A sagittal view and a 3D reconstruction of the spine of the patient

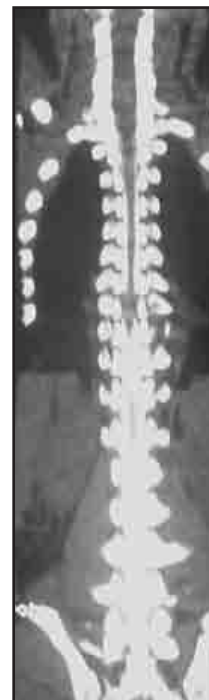


Figure 4. Coronal CT scan of the entire spine clearly showing the paravertebral abscess in the thoracic region



Figure 5. PA chest radiograph with no evidence of active pulmonary lesions

A diagnosis of tuberculous spondylitis with osteitis of the rib was made and the differential diagnosis of metastatic malignancy, lymphoma, multiple myeloma, chordoma, sarcoidosis, brucellosis, fungal disease and bacterial spondylitis were entertained.

An open biopsy was planned to obtain tissue for histology and microbiology. This was also intended to drain any paravertebral abscess that was to be encountered as part of decompression of the neural structures.

The spine was approached posteriorly with the incision centred over T9. On exposure of the transverse process a pocket of pus was encountered and we drained about 30 ml. Macroscopic appearance was that of a caseous nature. Samples were obtained for bacteriology. Biopsy of the transverse process of T9 was also taken for histology. A costotransversectomy was done and aggressive surgery was avoided due to the extensive nature of the lesion.

The bacteriology report did not report any organisms on staining or on culture. Histology showed caseating epitheloid tubercles with Langerhans' giant cells pathognomonic of tuberculosis.

A diagnosis of tuberculosis was made and the patient started on chemotherapy according to the Uganda National Tuberculosis and Leprosy programme treatment guidelines.

The patient has not shown any neurological deterioration and the quality of sensation has improved. Good response has been noted on chemotherapy and he is currently ambulating with the aid of crutches.

In endemic countries it is possible to encounter the more rare presentations of the disease and TB should remain at the top of the list of differential diagnosis

Discussion

Osteoarticular tuberculosis is the commonest manifestation of extra-pulmonary tuberculosis occurring in about 1–5% of all TB cases. Multifocal skeletal tuberculosis has osteoarticular lesions that occur simultaneously at two or more locations and are usually associated with disseminated disease.⁴ The initial route of entry of *M. tuberculosis* is usually the respiratory tract, followed by haematogenous dissemination. Spread to the spine can occur via secondary haematogenous seeding from a silent focus in the body (e.g. gut, kidney, and tonsil) or spread from involved contiguous para-aortic lymph nodes. Haematogenous seeding can occur via intercostal and lumbar arteries and the Batson's plexus.

The tubercle bacillus begins its destruction in cancellous bone and eventually extends to the cortex. The infection gradually spreads to adjacent vertebrae via the disc space. In advanced stages of the disease, progressive vertebral collapse occurs, resulting in kyphosis and gibbus formation.

TB spine usually involves the thoracic and lumbar regions and infrequently the cervical spine. Though up to 100% of patients with spinal TB will present with back pain, only about 19–29% will have musculoskeletal and neurological signs.⁵ Multifocal involvement of the spine is seen in less than 5%.⁶ Rib tuberculosis is seen in only 0.1% of all tuberculosis infections.⁷ Multifocal spine involvement has been noted by several authors and raises diagnostic difficulty.^{8–10} Our case demonstrates that in endemic countries it is possible to encounter the more rare presentations of the disease and TB should remain at the top of the list of differential diagnosis.

Multifocal tuberculous spondylitis is a rare presentation and should always be in the list of differential diagnosis of a multifocal spine lesion. The combination with a lesion of the ribs is even rarer. All clinicians should acquaint themselves with these manifestations and the difficulties of making a diagnosis. Further research is needed to ascertain the true prevalence of these disease presentations.

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