

# An unusual presentation of tuberculous lymphadenopathy, paraspinal masses with spondylitis in a young boy

**Betsie van der Walt**

*FCRad (D) SA*

**Sonja Raven**

*MB ChB*

**Zarina Lockhat**

*FFRad (D) SA*

**Irma van de Werke**

*FRCR*

*Department of Radiology  
University of Pretoria*

## Laboratory examinations

Some special examinations were done: C-reactive protein (CRP) 120 mg/l, urea and electrolytes (U + E) normal, serum albumin 25 g/l, erythrocyte sedimentation rate (ESR) 100 mm/h, haemoglobin (Hb) 9.8 g/dl, white cell count (WCC)  $10 \times 10^9/l$  and platelets  $667 \times 10^9/l$ . No HIV test was performed.

## Imaging findings

### Chest radiograph

Posteroanterior (PA) and lateral views of the chest were taken.

### Computed tomography

Figs 3-9 are selected images ranging from the cervical area down to the upper abdomen depicting the extent of involvement.

## Diagnosis

The histological diagnosis of tuberculosis (TB) was made on lymphnode biopsy.

## Discussion

In 1979 Sir Percival Pott from England provided the first full written account of the skeletal manifestations of tuberculous infection, and his name continues in use to describe the spondylitis associated with this infection (Pott's disease).

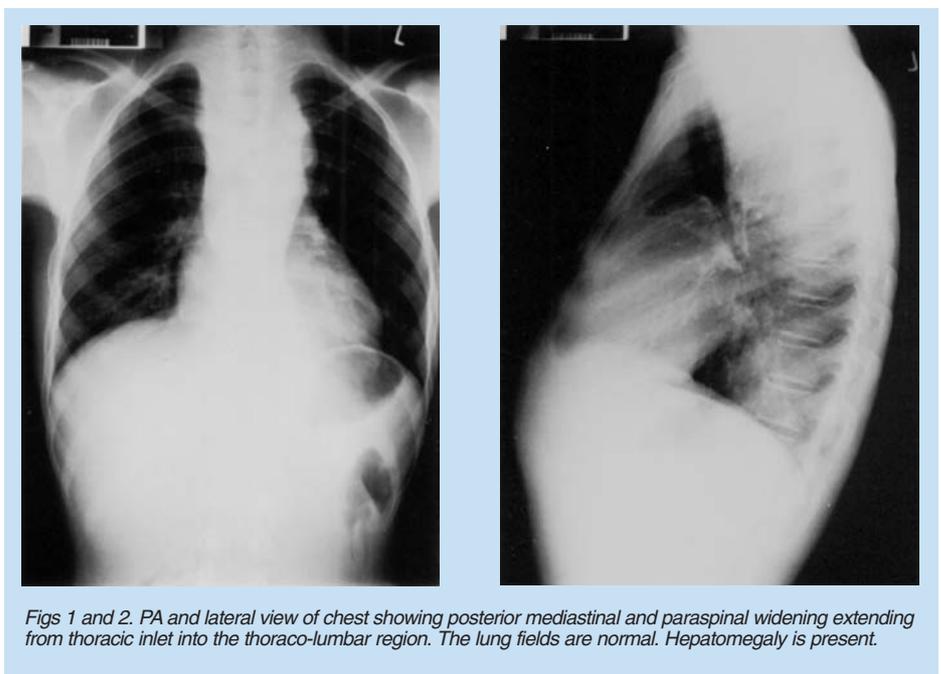
Tuberculous spondylitis is defined as an infection caused by *Mycobac-*

## History

A 15-year-old boy was referred from a peripheral clinic to Pretoria Academic Hospital with the history of a lump in his neck. He also had a 6-month history of malaise and weight loss.

## Clinical examination

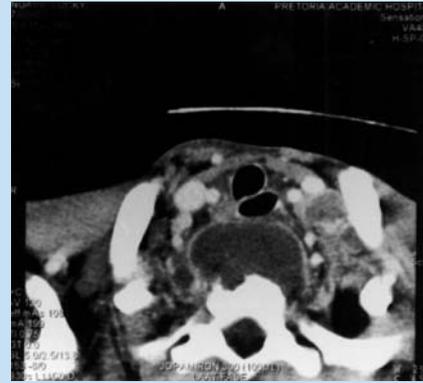
On clinical examination he was found to be feverish and appeared cachectic. He had a fluctuating mass in the right anterior triangle of his neck. He had tenderness over the thoracic and lumbar spine and also tenderness over his liver. Hepatomegaly was present.



*Figs 1 and 2. PA and lateral view of chest showing posterior mediastinal and paraspinal widening extending from thoracic inlet into the thoraco-lumbar region. The lung fields are normal. Hepatomegaly is present.*



Fig. 3. Axial view of the neck at the thyroid level showing left cervical lymphadenopathy with necrosis, as well as right subcutaneous hypodensities with rim enhancement due to tuberculous abscesses.



Figs 4 and 5. Imaging done at the level of the thoracic inlet and superior mediastinum showing the massive paraspinal abscess displacing the oesophagus and trachea anteriorly. There is lymphadenopathy visible with necrosis and anterior vertebral body erosion.

*terium tuberculosis* involving one or more components of the spine, namely the vertebra, intervertebral discs, paraspinal soft tissues and epidural space.

## Clinical and pathological features

Symptoms and signs vary considerably and the medical history is not a reliable guide to the diagnosis. Except in children, there is typically a long latent period between the first episode of pulmonary infection and musculoskeletal manifestations. Approximately 50% of patients with extrapulmonary TB have normal chest films or the stigmata of old inactive pulmonary disease. Patients with musculo-skeletal involvement may be afebrile and free of systemic complaints until the late stage of infection. The illness typically pursues an indolent course. In spinal infections the presenting symptom is often persistent spinal pain and local tenderness, with limitation of spinal mobility on clinical examination. Fever may be present at this stage. The erythrocyte sedimenta-



Figs 6 and 7. Images at the subcarinal and heart level showing continuation of the paraspinal abscess with necrotic mediastinal lymphadenopathy and associated pericardial effusion.



Figs 8 and 9. Upper abdominal images demonstrating continuation of the paraspinal mass with a further abscess in the region of the spinous process. Para-aortic necrotic lymph nodes are also present. These abscesses continue into the psoas muscles.

tion rate (ESR) is elevated in more than 80% of cases and the tuberculin skin test is usually positive.

Paralysis results from spinal cord

compression caused by epidural tuberculous abscess formation, epidural tuberculous granulomatous tissue and/or bony fragments pro-

truding into the spinal canal. Endarteritis of the spinal arteries or intramedullary granulomas are also observed occasionally.

The vertebral column is affected in 25-60% of cases of skeletal tuberculosis with the thoracic and lumbar spine mainly involved, especially the thoraco-lumbar junction, with the sacrum and cervical spine being less frequently involved. Solitary vertebral lesions can occur, but it is usual to find more than one vertebral level affected. Skip lesions occur in up to 4% of cases.

The anterior aspect of the vertebral body is affected more frequently than the posterior. The route of infection is usually haematogenous rather than contiguous or from direct implantation. The infective mycobacterium initially lodges in the vascular marrow. The arterial route generally is recognised as the more important method of transmission although Batson's plexus has been implicated in certain cases as the route of infection. Direct involvement of the disc by bloodborne pathogens occurs only in the paediatric age group (< 20 years), because of the persistent fetal blood supply to the disc. Paravertebral soft-tissue abscesses reach a maximum size

within 2 months of presentation and can take up to 15 months to resolve.

## CT of tuberculous spondylitis

Axial CT cuts demonstrates bony destruction of the vertebral end plates with fragmentation. Bony fragments may migrate into surrounding structures, e.g. the spinal canal, paravertebral soft tissue and psoas muscles. If a pedicle is involved there may be associated destruction of the posterior aspect of the adjoining rib.

CT demonstrates disc space narrowing, paravertebral soft-tissue masses, multi-level involvement and kyphosis. Associated soft-tissue masses are usually larger than the extent of bony destruction and are well demonstrated on axial scans. Calcifications within or surrounding these abscesses are pathognomic of TB. These paraspinal soft-tissue lesions usually extend in an anterolateral direction, although direct posterior extension has been observed. The thick nodular rim of an abscess on a pre-contrast scan represents the hypervascular, hypercellular, fibrotic wall of the inflammatory cavity.

Following IV contrast strong rim enhancement is noted around low attenuation multiloculated fluid collections. These abscesses may extend into the superficial dorsal soft tissues, with loss of normal muscle/fat interfaces. Abscesses may burrow for a distance before perforating an internal organ or the skin. Tuberculous lumbar pus produces a psoas abscess that may extend inferiorly into the pelvis and penetrate into the groin.

In summary, CT depicts disturbances of bony integrity and enables precise evaluation of paraspinal soft-tissue involvement.

This case is unusual in presenting with a cervical mass, whilst imaging showed massive tubercular abscess involvement from the cervical to the lumbar region.

## Acknowledgement

We would like to thank Annelize Gates for her assistance in the preparation of this article.

## Reference

1. Hassn S, Sharif, John L. *et al.* Imaging of tuberculosis and cranio spinal tuberculosis. *Radiol Clin North Am* 1995; 33: 787-804.