Fever and backache in a haemodialysis patient

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Case

A 60-year-old Chinese woman presented in 1997 with end-stage renal failure as a consequence of chronic interstitial nephritis. Regular haemodialysis was initiated at an outpatient facility in September 1997. She suffered from back pain and lower extremity weakness following a fall in June 1999. She had been seen several times in the local hospital during the previous 2 months, and a compression fracture of the L1 vertebra was diagnosed (Figure 1a). Fever and chills developed subsequently. She was referred to our hospital for further management.

On examination, her laboratory investigations showed a white cell count of 15 300/mm³ with neutrophils 78.7% and lymphocytes 9.8%, and erythrocyte sedimentation rate was 100 mm/h. There were no evidence of pneumonia, urinary tract infection, or bacteraemia. Electromyography and nerve conduction velocity (EMG/NCV) study showed mild uraemic polyneuropathy and no evidence of radiculopathy. Magnetic resonance imaging (MRI) of the lumbar spine showed a partial collapse of the L1 vertebral body, but preserved disc space (Figures 1b and1c). A pathological fracture due to metastatic cancer or myeloma was first suspected. However, we could find no evidence for malignancy. Due to persisting fever and back pain, therefore, a computerized tomography (CT)-guided biopsy of L1 paravertebral soft tissue was performed. Light microscopy examination revealed numerous granulomas composed of epithelioid cells and occasional Langhans giant cells, although no acid-fast bacilli could be demonstrated (Figure 1d). Subsequently, polymerase chain reaction (PCR) assay [1] of the embedded tissue was positive for mycobacterium. Anti-tuberculous therapy with rifampin, isoniazid, ethambutol and pyrazinamide was started on August 30, 1999. Her fever subsided gradually. Her backache also diminished under a regular rehabilitation programme.

Comments

In uraemic patients, the incidence of tuberculous infection is 6–16 times greater than in the general population [2]. Moreover, extrapulmonary tuberculosis accounts for 64–92% of uraemic patients with tuberculous infection [3,4], but spinal tuberculosis is rare among the extrapulmonary cases. Clinical presentation in tuberculous patients often includes intermittent fever, body weight loss, anorexia, general malaise, and even central nervous system abnormalities [4]. These symptoms often mimic the uraemic complications of patients on maintenance dialysis. It often causes the diagnosis to be delayed. If delayed, the mortality rate may be as high as 75% [2]. Therefore, early diagnosis and prompt treatment are pivotal to reduce the high mortality of dialysis-related tuberculosis.

The nature of spinal tuberculosis is haematogenous, often starting from antero-inferior vertebral body, then spreading along the anterior longitudinal ligament. This results in the involvement of adjacent vertebral bodies, disc damage, and paravertebral and even psoas abscess formation [5]. Radiographically, the anatomical involvement of vertebral disc and the presence of a paravertebral soft tissue abscess are considered to be specific for spinal tuberculosis. In our case, spinal tuberculosis was not suspected initially due to the atypical presentation with preserved disc and no...
abscess formation. This may be another reason for late diagnosis.

In dialysis patients, the differential diagnosis of back pain includes myofascial pain, renal osteodystrophy, osteoporosis, traumatic fracture, $\beta_2$ microglobulin amyloidosis and spinal malignancy. According to the recent article by Amir-Anasari et al. [6], in dialysis patients who have a history of back pain and pyrexia, the diagnosis of osteomyelitis should be suspected. Due to trauma history and persistent backache with lower extremity weakness, our case was initially misdiagnosed as a compression fracture. Subsequently,
fever developed but serial examinations did not allow any conclusion as to the above-mentioned differential diagnoses. Since the incidence of extrapulmonary tuberculosis is high in dialysis patients with pyrexia, CT-guided biopsy was performed and the final diagnosis was proved by PCR assay.

Our case demonstrates that spinal tuberculosis may present only with fever and back pain. A high level of suspicion may require invasive procedures, such as a tissue biopsy and even a PCR assay to detect Mycobacterium [1]. This may be the only way to make the diagnosis of spinal tuberculosis as early as possible.

Teaching point

Although osteomyelitis may be one of the diagnostic alternatives in chronic dialysis patients with fever and back pain, physicians should always keep in mind the possible diagnosis of spinal tuberculosis. Once suspected, a vertebral or paravertebral biopsy with a subsequent PCR assay for Mycobacterium should be performed. Early detection and adequate treatment may prevent the disastrous sequelae of tuberculous infection in uraemic patients.

References