Management Dilemma Of Smear Negative Spinal Tuberculosis: Role Of QuantiFERON-TB Gold Test.

Norliyana M; Phang ZH; Jayamalar T; Ooi BH
Department Of Orthopaedic, Hospital Sultan Ismail, Johor

INTRODUCTION:

Mycobacterium tuberculosis (MTB) infection of the spine is difficult to diagnose and based on detection of MTB in acid-fast stain and cultures. However, conventional smear microscopy has a low sensitivity and mycobacterial culture vary from 30% to 80% and takes longer duration to yield results.[1]

CASE REPORT:

An 80 year-old man complained of progressive back pain with lower limb weakness, neurogenic bowel and bladder. There was no constitutional symptom. On examination, there was tenderness at upper lumbar region with gibbus deformity. He has motor deficit at level of L2 and L3 myotome.

Plain radiograph (Figure 1) showed compression fracture at T12 and L1 level with kyphotic deformity and end plate erosion. MRI of lumbar spine (Figure 2) revealed compression fractures of T12 and L1 with retropulsion and encroachment into the spinal canal, compression on the spinal cord complicated with thoracolumbar spondylitis, paravertebral and epidural abscesses. CT thorax showed tuberculosis infection based on the lungs changes, pleural effusion and lesions in left pleura, mediastinum, liver and paravetebral mass.

CT guided biopsy of the spine was done. The results were negative for Ziehl-Neelsen stain, para-aminosalicylic acid (PAS), and Mycobacterium TB culture. Mantoux test was negative. The patient was given diagnosis of smear negative disseminated tuberculosis and was started on anti- tuberculous treatment. Histopathological examination of the paravetebral tissue revealed granulomatous inflammation and was not conclusive of tuberculosis infection.

The dilemma whether to continue or stop the anti-tuberculous treatment was resolved as the QuantiFERON®-TB Gold test (QFT®) result was positive. He was offered surgery of posterior spinal decompression and instrumentation but patient refused. He was planned to complete anti tuberculous treatment for nine months.

DISCUSSIONS:

QuantiFERON-TB Gold (QFT®) is an interferon-gamma relative assay (IGRA) that employs synthetic M. tuberculosis proteins, early secretory antigenic target-6 and culture filtrate protein-10 and as specific antigen.

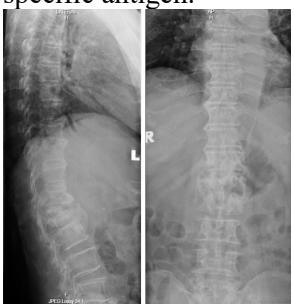

Figure 1: Plain radiograph of the spine showing compression fracture and end plate erosion.

Figure 2: MRI of the lumbar spine showing spinal cord compression.

When the infected blood is exposed with the M. tuberculosis-specific antigen in QFT, the cell-mediated immune response will react by secreting cytokine, interferon gamma (IFN-y). The concentration of IFN-y is measured using a sensitive ELISA. In comparison with tuberculin skin test (TST), a study among 50 cases of active pulmonary tuberculosis reported the sensitivity of QFT and TST were 80% and 28% respectively.[2]

CONCLUSION:

QuantiFERON-TB Gold test is a highly specific and sensitive test to confirm diagnosis of spinal tuberculosis and aid in management.

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