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CASE REPORT

Osteomyelitis of the spine caused by mycobacterium avium complex in an immunocompetent patient

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Introduction

Mycobacterium avium complex (MAC)-associated extrapulmonary infections, for example osteomyelitis, are relatively rare [1, 2], although they are among the most common opportunistic infections in patients with acquired immunodeficiency syndrome [3, 4]. Furthermore, abscess and fistula formation after surgical procedures are common in mycobacterium osteomyelitis [1, 5]. In this paper, we report a case of an immunocompetent patient who had multiple osteomyelitis and paraspinous abscess because of MAC infection.

This case report is important for two reasons. First, we describe a rare clinical entity of disseminated osteomyelitis caused by MAC presenting primarily in an immunocompetent host without trauma. Second, as far as we are aware, this is the first reported case in which paraspinous abscess secondary to lumbar vertebral biopsy was successfully treated with computer tomography-guided percutaneous catheter drainage and intermittent irrigation with povidone–iodine solution.

The patient was informed that his case report would be submitted for publication and he gave consent.

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Case report

A 67-year-old man was admitted to our service for evaluation of worsening back pain that had lasted 4 months. The patient had no history of disease except for diabetes mellitus that had been effectively treated by diet alone. On physical examination, diffuse tenderness of his back muscles was observed, but no neurological deficit was detected. The patient's temperature was 36.5°C. Laboratory data showed a sedimentation rate of 61 mm/h, white blood cell count (WBC) of 8,100/μL, red blood cell count of 478×10^4/μL, hemoglobin of 14.1 g/dL, platelet count of 32.6×10^4/μL, and a C-reactive protein level (CRP) of 3.6 mg/dL. Human immunodeficiency virus testing was negative. The standard tuberculin skin test was slightly positive. Magnetic resonance imaging (MRI) of the spine showed intensity changes on multiple vertebrae from the thoracic to the sacral region (Fig. 1). A technetium 99m bone scan demonstrated multiple areas of increased uptake involving the thoracic and lumbar spine, several ribs, and pelvis (Fig. 2).

We first suspected the disease to be metastases of malignant tumors, however, examinations for malignant diseases including computed tomography (CT) scan of the whole body and tumor marker analysis including carcinoembryonic antigen, squamous cell carcinoma antigen, prostate-specific antigen, α-fetoprotein, CA19-9, CA125, PIVKA-II, and progastrin-releasing peptide could not detect the primary lesion.

An open biopsy of the L3 vertebral body through the left pedicle revealed only a finding of "granulomatous inflammation" without evidence of epithelial malignant disease (Fig. 3). Under suspicion of hematopoietic malignancy, he was transferred to the department of internal medicine at our hospital. During the hospital stay, high

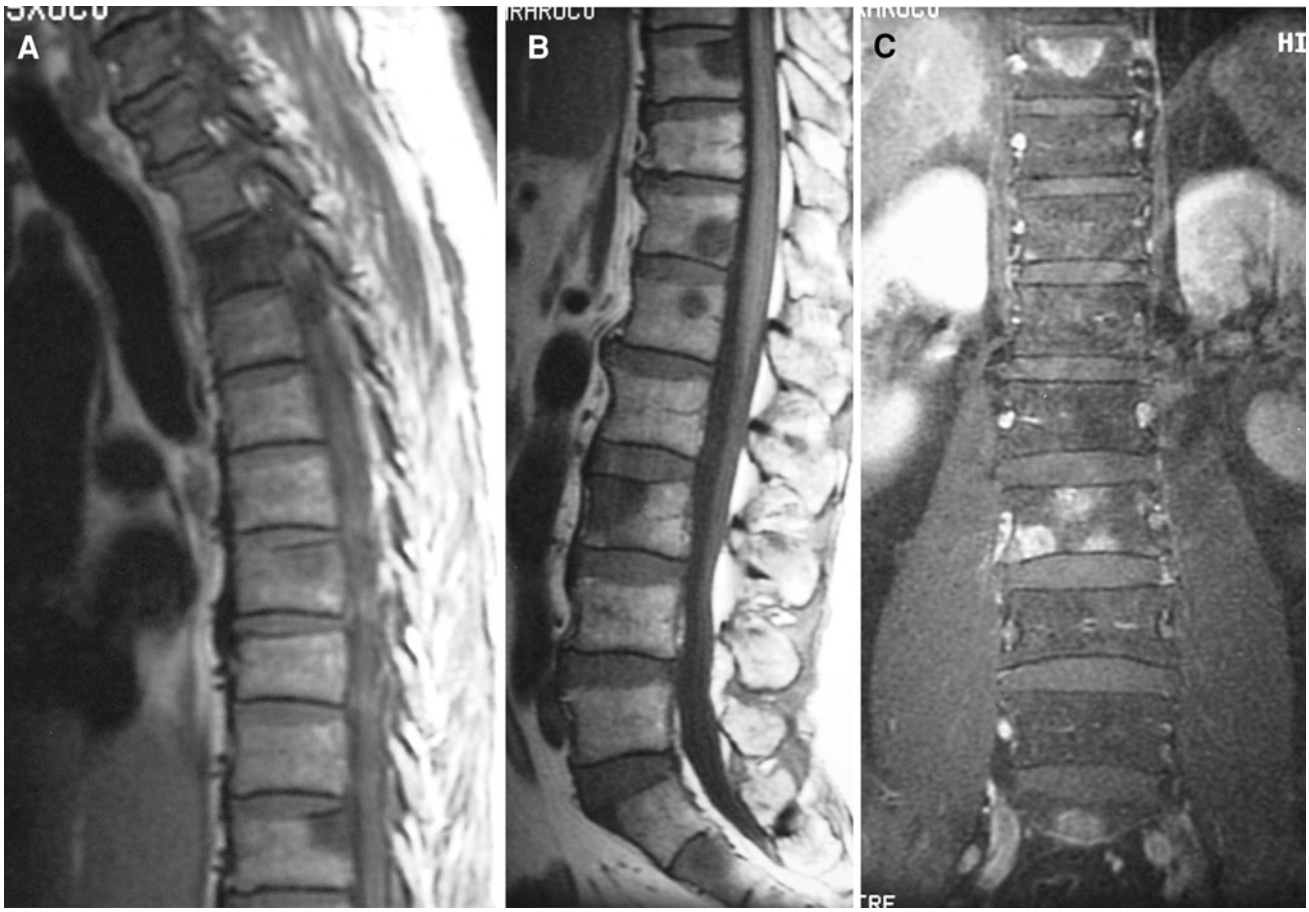

Fig. 1 Magnetic resonance images (MRI) of the spine showed intensity changes in multilevel vertebrae without destruction of endplates. **a** Sagittal T1-weighted image of the thoracic spine. **b** Sagittal T1-weighted image of the lumbar spine. **c** Coronal Gd-DTPA-enhanced image of the lumbar spine

fever and inflammatory findings on laboratory data were observed. Despite further examination, no hematopoietic malignancy or immunodeficiency was detected.

After 2 months of open biopsy, a draining fistula appeared in the middle of the biopsy scar. Polymerase chain reaction (PCR) analysis of the pus identified MAC. The patient was started on a regimen of rifampicin, isoniazid, ethambutol and clarithromycin. The patient's fever diminished, but drainage from the wound persisted and his health gradually deteriorated to a marasmic state. His weight had decreased by 20 kg since the initial presentation and he was unable to dress himself. Subsequent MRI revealed abscesses in the left psoas and paravertebral muscles. Meanwhile, other lesions without surgical invasion, for example thoracic or pelvic regions, showed no evidence of worsening of findings clinically and radiologically.

Surgical debridement of the paravertebral muscle and L3 body and installation of a draining tube were performed. Nine days after the operation, no exudate was seen, and the tube was removed. However, a week after removal, larger abscesses appeared in the same muscles on CT scans (Fig. 4). A susceptibility test indicated resistance to all anti-tuberculosis drugs except cycloserine and ethionamide. Isoniazid was discontinued, and cycloserine and streptomycin sulfate were added to the regimen.

Percutaneous catheter drainage of the psoas and paravertebral abscess guided by CT scanning was performed 4 weeks after the previous debridement surgery. In the first 3 weeks, the abscesses were irrigated intermittently by the injection–aspiration method with 200 mL saline solution in 20 mL-syringes once a day. No improvement was seen in the laboratory data. Consequently, 0.2% povidone–iodine solution (Hypojin Solution®: 4 mL + saline solution: 196 mL) was used for the pumping irrigation. Laboratory findings, including WBC and CRP, improved and normalized within the next 8 weeks (Fig. 5). The irrigation was continued for 12 weeks, until the exudation was confirmed as negative on PCR analysis.

He showed no adverse effects of the chemotherapy. He was transferred to a rehabilitation hospital 11 months after the initial presentation. He has been able to walk without