



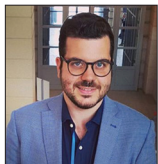
Case Report

Rare spondylodiscitis due to *Mycobacterium mucogenicum*

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ABSTRACT

Background: Nontuberculous mycobacteria (NTM) represents an important cause of infection, particularly in immunocompromised patients. Spondylodiscitis is unusual and may be associated with underlying causes such as drug abuse. Timely diagnosis and treatment are critical, as without this, patients will demonstrate progressive neurological deterioration. Here, we present a rare case of *Mycobacterium mucogenicum* spondylodiscitis in a 36-year-old male, along with a focused literature review.

Case Description: A 36-year-old female with previous drug abuse presented with 3-years of progressive thoracolumbar pain. The MRI of the spine revealed paravertebral abscesses from Th10–L1 with vertebral lesions involving Th11–Th12 levels (e.g., vertebral body collapse/deformity and destruction of the posterior vertebral walls). After a needle CT-guided biopsy of the paravertebral tissues, real time-polymerase chain reaction (RT-PCR) amplification documented NTM; the final identification was *M. mucogenicum*. The patient then underwent a Th11–Th12 decompressive laminectomy, facetectomy, granulomatous tissue debridement, and posterior pedicle screw fusion from Th8–Th10, and L1–L3. Postoperatively, the patient's pain resolved, and she was left with residual lower extremities dysesthesias; 6-months later, she could walk without assistance.

Conclusion: Spondylodiscitis caused by *M. mucogenicum* is rare, and the medical and surgical treatment is comparable to that for other NTM groups.

Keywords: Mycobacteria, Spondylodiscitis, Deformity, Posterior fixation, Corpectomy

INTRODUCTION

Rapidly growing nontuberculous mycobacteria (NTM) represents an important cause of infection, particularly in immunocompromised patients.^[1] The most common infection site in the immunocompetent patient is the respiratory tract; other sites include the skin, soft tissues, lymph nodes, and bones.^[2] Localized infections such as spondylodiscitis are unusual and are often attributed to drug abuse. In most cases, clinical features of NTM spondylodiscitis are indistinguishable from those of pyogenic or tuberculous osteomyelitis.^[3] Early diagnosis and treatment of these infections are critical to avoid progressive neurological worsening. Here, we report a rare case of *M. mucogenicum* spondylodiscitis adequately treated with decompressive surgery/fusion.

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MATERIALS AND METHODS

Our literature search from PubMed and Scopus databases (Mesh terms: vertebral osteomyelitis OR spondylodiscitis AND mycobacterium chelonae OR *M. mucogenicum*) revealed six case reports focused on vertebral osteomyelitis/spondylodiscitis caused by *M. mucogenicum* subgroup (1993-2020).^[2-7]

CASE DESCRIPTION

A 36-year-old female with chronic hepatitis C and previous drug abuse presented with a 3-year history of progressive thoracolumbar pain. On admission, she was febrile, had lower extremities dysesthesias with weakness. The white blood cell count (WBC) was slightly elevated at 12,000/ μ L, while the erythrocyte sedimentation rate (ESR) (40 mm/h) and a C-reactive protein (CRP) serum levels (49 mg/L) were high.

The thoracic MRI showed Th11–Th12 vertebral body collapse, (vertebral deformity with a Th11–Th12 sagittal Cobb angle of 53°) involvement of the posterior vertebral walls, and paravertebral abscesses at Th10–L1 [Figure 1]. Furthermore, the thoracolumbar CT scan with 3D reconstruction showed partial Th11–Th12 vertebral body fusion [Figure 2].

Radiological and laboratory diagnosis of NTM

First, a needle-guided CT-guided biopsy was performed of the paravertebral tissues; this revealed fibrofatty tissue with chronic nonspecific inflammation and areas of hemorrhagic dissociation with histiocytes, but the tissue culture was negative. In a second phase, real time-polymerase chain reaction (RT-PCR) amplification showed positive results for NTM. The “Genotype CMdirect” molecular test was carried out [Figure 3], with the identification and isolation

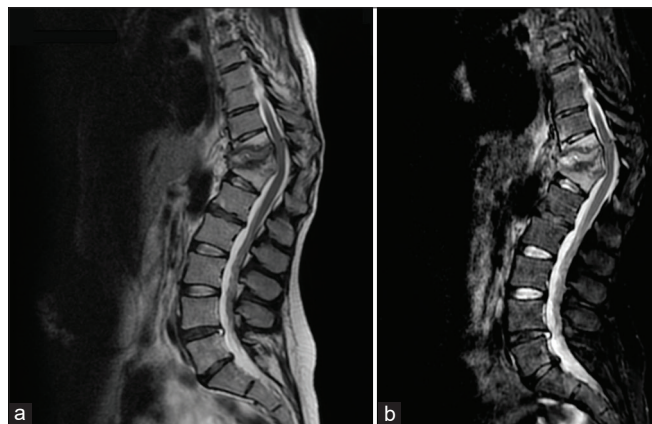


Figure 1: Preoperative sagittal T2-weighted (a) and STIR (b) thoracolumbar spine MRI showing Th11–Th12 vertebral body collapse and associated vertebral deformity, injured posterior walls, and paravertebral abscesses at Th10–L1.

of *M. mucogenicum* [Figure 4]. The patient started on piperacillin-tazobactam 4.5 g IV q6h.

Surgery

We performed a Th11–Th12 decompressive laminectomy, facetectomy, and granulomatous tissue debridement; a posterior pedicle screw fusion was performed at both the Th8–Th10 and L1–L3. The bacterial specimens confirming the diagnosis of *M. mucogenicum*. Postoperatively, the patient improved, with gradual alleviation of back pain, and lower extremities dysesthesias. She was continued on medical therapy (e.g., amoxicillin-clavulanic acid 1000/125 mg twice daily) for 3 weeks. At 6-months, she was able to walk without assistance, and the MRI and CT scans confirmed adequate neural decompression/fusion (e.g., complete Th11–Th12 vertebral fusion, with a sagittal Cobb angle of 38°) without recurrence of infection [Figure 5].

DISCUSSION

M. mucogenicum is frequently found in tap water, including ice machines and this can contribute to the transient colonization or contamination of sputum samples.^[1] In 62% of cases, *M. mucogenicum* is responsible for respiratory tract infections, the remaining 38% includes the skin, particularly wounds, soft tissues, bone, and the central nervous system.^[2] In the case of vertebral bone involvement, as our case, central variant type involves abscess formation in the middle of the vertebral body, leading to significant vertebral body collapse, resulting in subsequent severe spinal deformity.^[3] They are responders to most antimicrobial agents, but they are resistant to first line anti-tuberculous drugs (e.g., isoniazid, rifampin, and pyrazinamide).

In the case of surgical treatment, there is still no uniform indication of the type of approach to choose, as anterior, posterior, combined in a single stage or deferred. Some authors stated that the advantages of a posterior approach include beyond decompression of nerve structures, correction of spinal deformity, reduced surgical times, less blood loss, reduced postoperative pain, less hospital stay, and overall a better quality of life for the patient.^[8]



Figure 2: Preoperative sagittal (a) and axial (b) thoracolumbar CT scan with 3D reconstruction (c) showing vertebral deformity and a partial Th11–Th12 vertebral bodies fusion.

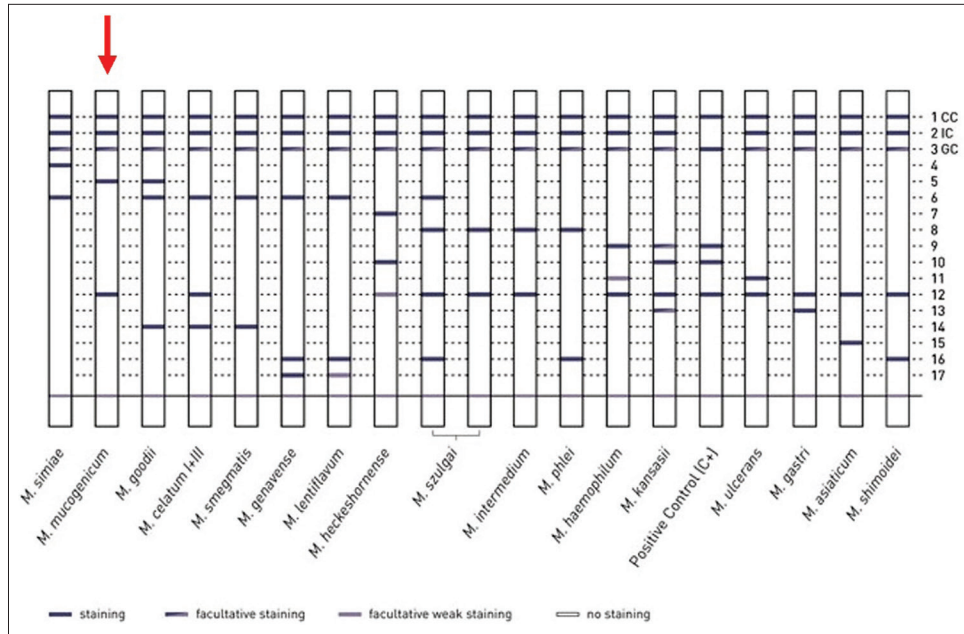


Figure 3: The genotype CM direct molecular test system for the detection and differentiation of 19 clinically relevant NTM from cultivated material. (https://www.hain-lifescience.de/uploadfiles/image/produkte/mikrobiologie/mykobakterien/reaction_myc_as.jpg).

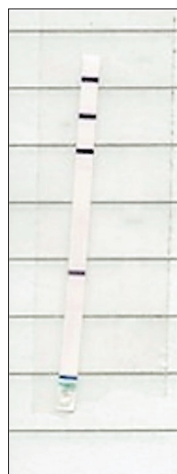


Figure 4: Identification and isolation of *Mycobacterium mucogenicum* based on genotype CM direct test.

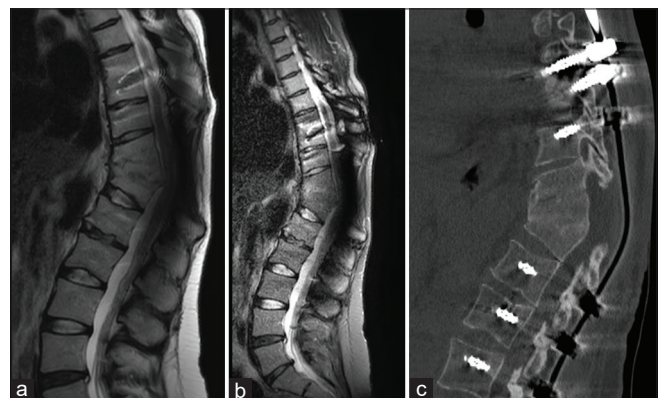


Figure 5: Six-month postoperative sagittal T2-weighted (a) and STIR (b) thoracolumbar spine MRI, and sagittal spine CT scan (c) showing an extensive decompression of the nerve structures, complete Th11–Th12 vertebral fusion, with a reduced sagittal Cobb angle and improved thoracic kyphosis.

CONCLUSION

Spondylodiscitis caused by *M. mucogenicum* is rare and, here, was appropriately treated with posterior decompression and fusion.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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