Case report

Disseminated *Mycobacterium abscessus* infection and native valve endocarditis

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**ARTICLE INFO**

**Keywords:**
*Mycobacterium abscessus*
Endocarditis
Pulmonary cavity

**ABSTRACT**

*Mycobacterium abscessus* is a rapidly growing mycobacterium. It rarely causes disseminated infection or endocarditis. A 55-year-old male with a history of hepatitis C, liver cirrhosis, intravenous drug use (last use was four years ago), and chronic back pain presented with a three-week history of a right calf nodular lesion. He did not have a fever, chills, rash, dyspnea, or cough. Laboratory data showed mild leukocytosis. Computed tomography of the chest revealed bilateral cavitating nodules. Skin biopsy, sputum, and blood cultures grew *Mycobacterium abscessus*. Therapy with meropenem, tigecycline, and amikacin was initiated. He was re-admitted with worsening lower back pain. A lumbar magnetic resonance imaging showed destructive changes of L4 and L5 vertebral bodies concerning for osteomyelitis. Blood culture and bone biopsy grew *Mycobacterium abscessus* again. An echocardiogram was performed due to persistent bacteremia, which revealed large vegetation on the tricuspid valve and small vegetation on the mitral valve. Therapy was changed to eight weeks of amikacin, with cefoxitin and imipenem for twelve months based on drug susceptibility. Treatment of disseminated *Mycobacterium abscessus* is challenging due to antibiotic resistance. Typically, multidrug therapy is warranted with at least three active drugs. In severe valvular endocarditis, valve replacement may be required.

1. **Introduction**

*Mycobacterium abscessus* complex are rapidly growing mycobacteria, which are ubiquitous to the environment. They have a very low incidence of infection and are mostly described in the immunocompromised population with reduced CD4 count and complement levels [1]. Immunocompetent individuals with indwelling vascular catheters or disruption of normal anatomic barriers are at risk for developing disseminated infection [2].

2. **Case presentation**

A 55-year-old male with a history of hepatitis C, liver cirrhosis, intravenous drug use (last use was four years ago), and chronic back pain presented with a three-week history of a right calf nodular lesion. He denied fevers, chills, rash, dyspnea, or cough. He was unsuccessfully treated with a course of doxycycline as an outpatient. Of note, one month prior, he was on a prednisone taper for three weeks for back pain exacerbation. On presentation, he was afibrile with a blood pressure of 163/89 mmHg, heart rate of 92/minute, respiratory rate of 20 breaths/minute, and saturating 98% on ambient air. There was a right calf nodular lesion with peripheral induration, central ulceration with a black base, and mild serous discharge.

Laboratory data showed mild leukocytosis. Computed tomography of the chest revealed bilateral cavitating nodules, the largest in the superior segment of the left lower lobe (Fig. 1A). Skin biopsy, blood, and sputum cultures were obtained. Given skin and cavitary lung lesions, there was concern about methicillin-resistant *Staphylococcus aureus* (MRSA) infection, and empiric vancomycin was initiated. Skin biopsy, blood, and sputum cultures grew acid-fast bacilli, but *Mycobacterium tuberculosis* polymerase chain reaction assay was negative. The final result showed *Mycobacterium abscessus*. The human immunodeficiency virus antibody screen was negative. Therapy with meropenem, tigecycline, and amikacin was initiated after infectious diseases consultation,

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https://doi.org/10.1016/j.rmcr.2020.101331

Received 29 October 2020; Received in revised form 17 December 2020; Accepted 27 December 2020

Available online 1 January 2021

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therapy is employed when drug susceptibilities are available [6]. Drugs or radiological findings of pulmonary septic emboli. In a literature re-biopsy, prosthetic valve) should be performed [4]. Echocardiography bacilli stain of sputum, and histological sections (if available like skin,rarer. Prosthetic valves are commonly infected, and among native Disseminated rapidly-growing mycobacteria group causing pulmonary infections [3].

3. Discussion

*Mycobacterium abscessus* complex includes *M. chelonea*, and *M. abscessus*. *M. abscessus* is the most prevalent microorganism in the rapidly-growing mycobacteria group causing pulmonary infections [3]. Disseminated *M. abscessus* is rare, and mycobacterial endocarditis is rarer. Prosthetic valves are commonly infected, and among native valves, aortic and mitral valves are the most frequently affected [4]. Risk factors include indwelling vascular catheters, cardiac catheterization, intravenous drug users, immunocompromised due to human immuno-deficiency virus, hematological malignancies, or immunosuppressive agent use due to organ transplants. Recent corticosteroid use may have been the risk factor for our patient. Patients can present with non-specific symptoms or be asymptomatic. The most common presenting symptom is usually fever presenting as pyrexia of unknown origin, followed by chest pain or dyspnea. Blood cultures are highly sensitive, especially in cases of native valve endocarditis. Acid-fast bacilli stain of sputum, and histological sections (if available like skin biopsy, prosthetic valve) should be performed [4]. Echocardiography should be performed in patients with persistently positive blood cultures or radiological findings of pulmonary septic emboli. In a literature review of mycobacterial endocarditis, 15 out of 46 patients had a cardiac murmur at presentation, and echocardiography was used to confirm the presence of vegetations [4,5]. Treatment of *Mycobacterium abscessus* is challenging due to antibiotic resistance, including macrolides, aminoglycosides, rifamycins, tetracyclines, and β-lactams [3]. Evidence-based management of disseminated *M. abscessus* infection and endocarditis lacks due to the rarity of the condition. Usually, empiric treatment is started based on the in vitro susceptibility data, and later targeted therapy is employed when drug susceptibilities are available [6]. Drugs with in vitro activity include clarithromycin, amikacin, tigecycline, imipenem, and cefoxitin [5]. Treatment of pulmonary disease involves a multidrug regimen with at least three active drugs. Treatment duration ranges from 4 to 12 months depending on the severity of illness, and in refractory cases, surgical debridement may be required. Therefore, expert consultation is recommended [7]. Treatment of infective endocarditis requires a multidrug regimen for 6–12 months and is usually refractory, requiring early surgical intervention, especially in severe valvular endocarditis [4,5].

Declaration of competing interest

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