



Spontaneous resolution of *Mycobacterium kansasii* presenting as a spiculated lung mass

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ABSTRACT

A 68-year old woman with a long smoking history underwent lung cancer screening by low-dose computed tomography. This detected a 3.0 cm spiculated mass in the left upper lobe. Transbronchial biopsy revealed necrotizing granulomatous inflammation and cultures grew *Mycobacterium kansasii*. Given lack of symptoms and concerns over drug toxicity, the patient declined antimicrobial therapy and she was monitored radiographically. Serial CT scans at six and twenty-two months showed progressive resolution of the mass. We present the first report of *Mycobacterium kansasii* presenting as a solitary lung nodule that spontaneously resolved without treatment.

1. Introduction

Mycobacterium kansasii is the second-most common non-tuberculous mycobacterium. Pulmonary infection takes various forms including fibrocavitary disease, nodules, bronchiectasis, and pleural involvement. The natural history is typically marked by clinical and radiographic progression; treatment is prolonged and involves multiple drugs. Presentation as a solitary, spiculated lung nodule has been infrequently reported. More rare is the report of spontaneous resolution of this infection without treatment. We describe an unusual case of *M. kansasii* presenting as a spiculated lung mass that spontaneously resolved without intervention.

2. Case report

A 68-year old woman with a 30-pack-year smoking history presented to our clinic for management of previously diagnosed chronic obstructive pulmonary disease (COPD). She had mild, stable dyspnea on exertion but no cough, fevers, chills, or night sweats. As part of her care, a low-dose computed tomography (CT) scan for lung cancer screening was performed, revealing a 3.0 × 2.8 × 1.8-cm spiculated mass in the left upper lobe (Fig. 1A). No other suspicious nodules or adenopathy were present. She did not have any previous radiological imaging for comparison.

Primary lung cancer was highly suspected and a diagnostic

bronchoscopy with transbronchial biopsy of the lesion was performed. Rapid on-site examination of the samples showed necrotizing granulomatous inflammation but no malignant cells (Fig. 2). Systematic endobronchial ultrasound examination of mediastinal and hilar lymph nodes was performed but no adenopathy was present. Ultimately, cultures from the biopsy sample grew *Mycobacterium kansasii*. The patient was reluctant to start therapy due to concerns about therapy-associated toxicity and given lack of any acute symptoms. Thus, the decision was made to monitor her closely. Repeat CT approximately six months later showed marked improvement in the lesion (Fig. 1B). Serial CT scans thereafter showed continuous improvement with what appeared to only be residual scarring as far twenty-two months from initial diagnosis (Fig. 1C). She remained stable and without new symptoms as of last follow-up.

3. Discussion

Mycobacterium kansasii is a non-tuberculous mycobacterium (NTM) found in soil, dust, and water, but isolated almost exclusively from treated water sources [1]. There is no documented human-to-human transmission. Environmental exposure is suspected to cause human disease. The overall incidence rate of NTM ranges from 1.0 to 1.8 cases per 100,000 persons. It is the second most common cause of NTM in the United States after *Mycobacterium avium* complex [1].

The natural history of *M. kansasii* infection is often marked by clinical

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Fig. 1. (A) A 3.0 × 2.8 × 1.8-cm spiculated mass detected in the left upper lobe on low dose computed tomography (CT) scan performed for lung cancer screening. (B) Repeat CT approximately 6 months later showing marked improvement in the lesion without treatment. (C) CT scan 22 months later showing only residual scarring.

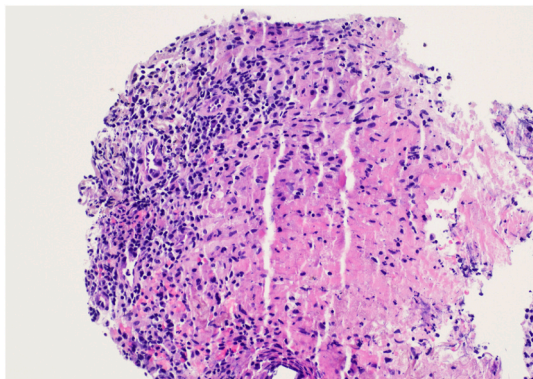


Fig. 2. Representative sample of transbronchial biopsy specimen showing necrotizing granulomatous inflammation but no malignant cells (40x, hematoxylin and eosin stain).

and radiographic progression. Structural lung disease, heavy smoking, and an immunocompromised state are all risk factors [2]. Symptoms of pulmonary infection include chronic cough, chest pain, dyspnea, hemoptysis, and weight loss [3]. Radiographic findings include fibrocavitary disease, as well as nodules, bronchiectasis, and pleural involvement [3].

A combination of rifampicin, ethambutol, and a macrolide is the recommended therapy for rifampicin-susceptible noncavitary nodular *M. kansasii*. The duration of therapy is for at least 12 months [4]. Our patient was concerned about adverse effects from a prolonged and possibly toxic treatment regimen. Thus, the decision was made to observe her closely—both clinically and radiographically. She developed no new or worsening symptoms and had resolution of the lung nodule leaving only scar as residua.

To our knowledge, there have only been six reports of spontaneous resolution of *M. kansasii*. Throughout the literature, most cases of *M. kansasii* have been treated. Select patients with intact immune systems and good follow-up have been observed without treatment. Patients with compromised immune systems seem to do poorly without treatment [5]. Also of interest in our case is that the *M. kansasii* presented as a solitary mass. Such a presentation has been infrequently reported. To our knowledge, this is the first report of *Mycobacterium kansasii* presenting as a spiculated lesion that subsequently resolved without treatment.

Declaration of competing interest

The authors have no conflicts of interest and contributed equally to this work.

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