Melioidosis: Case report of rare pulmonary infection

Swapnil M. Thorve1, Harshita Mishra1, Siddharth R. Waghmare1, Sonal P. Karpe1, Jairaj P. Nair1

ABSTRACT
Melioidosis is a clinical disease caused by B. pseudomallei. Pulmonary melioidosis can be easily misdiagnosed as community-acquired pneumonia or tuberculosis, highlighting the importance of early recognition and appropriate treatment. This case report presents a 67-year-old farmer who presented with symptoms of cough, fever and chest pain for 15 days, and was diagnosed with pulmonary melioidosis. B. pseudomallei was isolated from the patient’s sputum, and the chest x-ray showed cavitary consolidation, which is a characteristic feature of melioidosis. The patient was successfully treated with intravenous antibiotics in the acute phase, followed by oral antibiotics for a duration of 3 months in the eradication phase.

INTRODUCTION
Melioidosis is a clinical disease caused by B. pseudomallei, which is endemic in South-East Asia and Northern Australia. The infection is usually acquired through percutaneous inoculation or inhalation of the bacterium present in soil and surface water in the endemic region1. Risk factors for melioidosis include diabetes, alcoholism, and chronic renal disease, which are associated with increased mortality.

Melioidosis is a great mimicker of many clinical conditions and commonly presents as community-acquired pneumonia (CAP), which is very worrying, as melioidosis present with pneumonia is associated with a high mortality rate2. At least 10% of cases present with a chronic respiratory illness, mimicking tuberculosis and often with upper lobe infiltrates and/or cavities on chest radiography3.

The proper data on incidence of lower respiratory tract infections are not available in India. But as per the WHO report, the mortality rate due to lower respiratory tract infections in individuals aged >65 years is 6.2 per 1000 deaths4. Melioidosis is still a rare disease in India where the incidence of CAP and pulmonary tuberculosis is very high. Since CAP and pulmonary tuberculosis are common conditions managed in primary care settings, it is imperative for doctors to understand the clinical presentation of melioidosis with pulmonary involvement.

Timely diagnosis of melioidosis is crucial in preventing mortality. Hence, we report a rare case of melioidosis that presented clinically and radiologically as community-acquired pneumonia. Timely diagnosis and treatment helped in complete recovery of the patient.

CASE PRESENTATION
A 65-year-old farmer from a coastal region of India, who was a known diabetic, presented with symptoms of cough, fever and chest pain for 15 days, and was diagnosed with pulmonary melioidosis. B. pseudomallei was isolated from the patient’s sputum, and the chest x-ray showed cavitary consolidation, which is a characteristic feature of melioidosis. The patient was successfully treated with intravenous antibiotics in the acute phase, followed by oral antibiotics for a duration of 3 months in the eradication phase.

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Figure 1. At start of treatment (top left), 1 month after treatment (top right), 2 months after treatment (bottom left), and after completion of 3 months of treatment (bottom right).

Figure 2. Plain and high resolution cuts showing cavitary consolidation.
1 week of starting treatment. Bronchoscopy was done after 2 months to confirm eradication of the bacterium, and sputum gram stain and aerobic culture showed no growth. Trimethoprim/sulfamethoxazole and doxycycline were continued for 3 months. Complete clinical improvement and almost complete radiological resolution were seen.

DISCUSSION
Meliodosis is a clinical disease caused by B. pseudomallei. It is a facultative, intracellular, saprophytic, gram-negative organism widely present in soil and surface water. Individuals at risk are those who are exposed to wet soil or surface water like farming, agriculture, gardening and fishing. The portal of entry for the bacterium is direct inoculation from damaged skin or inhalation. It is endemic to tropical regions of South-East Asia, Asia and subtropical areas of Australia. In India, most of the cases were reported from the coastal region, though melioidosis may be more widely prevalent.

Diabetes mellitus, alcoholism and chronic renal disease are the identified comorbidities which are the risk factors in the majority of melioidosis cases and are associated with increased mortality. DM has been found to be one of the most frequent predisposing factors. One study from India found a 76% correlation of diabetes with melioidosis.

Melioidosis can have 2 major presentations; acute infection (symptoms lasting <2 months) and chronic infections (symptoms lasting >2 months). Melioidosis can present as septicemia, localized infection with/without abscesses and ulcers, asymptomatic infections, pneumonia, visceral abscesses, neurologic infection, and musculoskeletal infections. Melioidosis is a systemic disease with pulmonary involvement being the commonest manifestation. It is also associated with liver and spleen related manifestation.

Pulmonary melioidosis presents with symptoms of cough, fever, chest pain, and headache. Disseminated infection presents with weight loss, abdominal pain, muscle and joint pain, and seizures.

The standard method for diagnosing melioidosis is the isolation of B. pseudomallei from clinical specimens using culture. However, this bacterium if often misidentified as a species of Pseudomonas, which can lead to misinterpretation of the disease as hospital-acquired and underestimation of its true incidence. Most patients with melioidosis exhibit clinical and radiological symptoms of pneumonia, and commonly use antipseudomonal antibiotics like meropenem, ceftazidime, levofloxacin, and amikacin, which can be effective against B. pseudomallei. More sensitive diagnostic tests are available, such as PCR-based methods and rapid identification technologies like gene sequencing and matrix-assisted laser desorption ionization time of flight mass spectrometry (MALDI-TOF MS).

CONCLUSION
The treatment of melioidosis is prolonged, and includes 2 phases: intensive treatment with intravenous antimicrobial therapy for 10–14 days and eradication phase with oral antibiotics. Meropenem and ceftazidime have shown to be effective in acute stages. At least a 10-day intravenous therapy is recommended. In a study, 4% of infected patients who were treated with intravenous antibiotics had a relapse of infection due to the persistence of the organism in the body. In a study from Thailand, relapse rate was 9.7% and it was not associated with duration of intensive treatment. Hence, an eradication phase with oral antimicrobial therapy for 3–6 months with trimethoprim/sulfamethoxazole is recommended. Doxycycline is used as second line drug if trimethoprim/sulfamethoxazole cannot be used or is not tolerated.

CONFLICTS OF INTEREST
The authors have completed and submitted the ICMJE Form for disclosure of Potential Conflicts of Interest and none was reported.

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ETHICAL APPROVAL AND INFORMED CONSENT
Ethical approval was not required for this study. The patient gave informed consent.

DATA AVAILABILITY
The data supporting this research are available from the authors on reasonable request.

PROVENANCE AND PEER REVIEW
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REFERENCES


