



A case report of melioidosis in a diabetic patient in a union territory

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CASE REPORT

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Abstract

Melioidosis is an emerging disease in India. Cases have also been reported from South East Asia, Australia and Japan. Major risk factors for melioidosis are diabetes mellitus, pre-existing renal disease and thalassemia. Exposure to contaminated soil and water are also significant occupational hazards associated with the disease. A patient with diabetes of six years duration on regular medication presented with fever, generalised myalgia and headache for a week. Blood and bone marrow culture yielded *Burkholderia pseudomallei*. A Computed tomography (CT) study of the thorax also revealed multiple scattered nodules in both lungs. The patient was treated with imipenem and doxycycline. His condition improved gradually and he was advised oral sulfamethoxazole/trimethoprim and doxycycline for a period of three months and has been followed up regularly.

Key Words

Melioidosis, *Burkholderia pseudomallei*, Diabetes mellitus, Bone marrow culture

Implications for Practice:

1. What is known about this subject?

Melioidosis is common in South East Asia, Australia and Japan. However, it is largely under reported in India. Blood

and pus cultures remain the mainstay of diagnosis of this condition.

2. What is the key finding in this case report?

In this patient *Burkholderia pseudomallei* was isolated from both blood culture and bone marrow. Our isolate was susceptible to ceftazidime.

3. What are the implications for future practice?

Bone marrow culture may be a useful diagnostic tool in blood culture negative patients with melioidosis.

Ceftazidime can still be considered as the drug of choice for treatment of melioidosis.

Background

Melioidosis caused by *Burkholderia pseudomallei* is an infectious disease of the tropics and subtropics including parts of South East Asia and outbacks of Australia.^{1,2} The clinical presentation of the disease is quite varied and can manifest as chronic suppurative lesions, septicemia and pneumonia.^{3,4} In order to prevent a relapse prolonged treatment with antibiotics for as long as two months is mandatory. Relapses are more severe with a high mortality rate of 30% and are common with incomplete treatment.

We report melioidosis in a diabetic male who presented with septicemia and pneumonia and was successfully treated with intravascular antibiotics like ceftazidime and oral antibiotics like sulfamethoxazole plus trimethoprim and doxycycline.

Case details

A 37-year-old male was admitted in the emergency ward with complaints of fever, headache, vomiting and abdomen pain for a week. The fever was high grade and associated with headache and blurring of vision. The abdominal pain was localized to the right flank and was continuous with no aggravating or relieving factors. Patient was a known diabetic and was on regular oral hypoglycemic agents like metformin. There was no history of hypertension or ischemic heart disease.

On general examination, the patient was conscious, oriented afebrile with BP 140/100mmHg, pulse 125/min and with no pallor/icterus/clubbing/cyanosis/lymphadenopathy, and oedema. On systemic examination, the cardiovascular



pseudomallei. The bone marrow aspirate also grew *B. pseudomallei* a week after the admission.

A diagnosis of melioidosis was made based on the laboratory findings of blood, bone marrow culture reports, clinical findings and CT reports. The patient was started on Inj imipenem which was continued for the rest of his stay in the hospital. The patient improved and was afebrile within a week of starting the antibiotic. He was discharged on day 10 with Inj ceftazidime 2gm thrice daily for 10 days and with oral antibiotics like sulfamethoxazole plus trimethoprim and doxycycline for a period of three months and subcutaneous administration of insulin.

Discussion

Melioidosis is widespread in India and is prevalent in Maharashtra, Tamilnadu, Orissa, Tripura, Kerala, West Bengal and North Eastern states.⁵ The presence of an underlying disease is an important risk factor for melioidosis in 76% of the cases including Diabetes mellitus where in the relative risk is 100 fold.⁶ There is conclusive clinical evidence of insulin-dependent (type I) diabetes predisposing to melioidosis.^{7,8} In the present case Diabetes mellitus was the contributing risk factor for melioidosis. Other major risk factors for melioidosis are alcoholism, chronic renal failure, chronic lung disease, HIV/AIDS and other immunocompromised state.⁹ The common mode of infection of *B. pseudomallei* is through the close association of soil.

The patient was a male farmer and thus had increased chances of being infected with *B. pseudomallei*. The first case of melioidosis reported in Pondicherry in 2002, was also a middle aged male agricultural worker.¹⁰ The patient presented with subcutaneous nodules in the limbs where as in the present scenario the patient presented with vague abdominal pain. Thus highlighting the diversity of clinical presentation of *B. pseudomallei*. The diverse clinical features of melioidosis includes pneumonia, septic arthritis, skin abscess, prostatic abscess, liver abscess, splenic abscess and osteomyelitis.¹¹

In the present case the chief complaint was fever along with abdominal pain with no respiratory symptoms even though the CT thorax showed small scattered nodules throughout the lung.

Patients with melioidosis develop secondary abscesses which predominate the clinical picture. In the present case, the patient was diagnosed to have a psoas abscess in the CT abdomen contrast which is the seat of infection. Melioidosis can present acutely within 24 hours of a presumed aspiration or penetrating injuries and has an incubation

period of 1-21 days.¹² Chronic presentations of melioidosis is not rare. At times 13% of the patients will have symptoms which exceed for more than two months before presentation.¹³ Melioidosis can present as multifocal infection with septicaemia, localised infection with septicaemia, localised infection, or sometimes a transient septicaemia.¹⁴ *Burkholderia pseudomallei* can cause a variety of neurological manifestations most common being cerebral abscess.¹⁵ Our patient did not present with any neurological symptoms.

Melioidosis and tuberculosis have similar clinical manifestations and radiological findings. The X-ray finding of tuberculoma looks like rounded shadow with precise contours. In our case the X-ray and CT Thorax of the chest revealed small scattered nodules with irregular speculated margins. Tubercle bacilli was not demonstrated in the sputum as well. Often melioidosis is misdiagnosed as tuberculosis because of the similar clinical presentation especially in India where melioidosis is underdiagnosed due to a lack of awareness.¹⁶ Melioidosis can also be confused with staphylococcal abscesses in the acute form, however staphylococcal infection of the lung parenchyma is a localised abscess. In case of melioidosis there is widespread development of multiple abscesses in the lungs as well as the other organs like liver, spleen and bone.¹⁷ This clinical dilemma can only be dealt with a positive blood culture.

In our case the conclusive evidence for a clear-cut diagnosis was the isolation of *Burkholderia pseudomallei* from the blood and bone marrow cultures. Bone marrow culture isolation is not so common. Although, bone marrow culture is not routinely necessary for diagnosis of melioidosis, it may be a worthwhile diagnostic tool in certain blood culture negative patients.¹⁸ Indirect haemagglutination assay and PCR based assays though tending to have a low sensitivity are few of the tests that can be used to identify this organism.¹⁹

Ceftazidime is the drug of choice for the treatment of melioidosis. This patient was initially treated with Inj imipenem for 10 days and was discharged on Inj ceftazidime for 10 days and with oral antibiotics sulfamethoxazole plus trimethoprim and doxycycline for three months to prevent relapse. The regime for eradication of the disease for patients with normal renal functions is a combination of trimethoprim and sulfamethoxazole at 8/40mg/kg every 12 hours for a period of 3-4 months.²⁰ Several clinical trials support the use of sulfamethoxazole plus trimethoprim and doxycycline for eradication purposes.²¹ Recent reports on ceftazidime resistance from South India have given us cause to treat this disease carefully and judiciously.²² Fortunately in our case there was



no resistance to ceftazidime and the patient responded well to the treatment. There are no vaccines available for *Burkholderia pseudomallei* in the present era of medicine. We are entirely dependent on antibiotics which could become resistant to the organism at any given time.²³

Recent studies on animals have shown that immunisation with dendritic cells pulsed with heat killed *Burkholderia pseudomallei* strain K9624 can initiate a protective and an effective immune response.²⁴ How this knowledge can be used for human vaccination is something to be worked upon. As vaccines are yet to be put in use precautions against the disease should be taken especially by people who work in close association with the soil. Our patient did not have any relapse so far and is followed up regularly

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PEER REVIEW

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CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

PATIENT CONSENT

The authors, Esther P, Sudhagar M, Anandhalakshmi S, Shanthy M, declare that:

1. They have obtained written, informed consent for the publication of the details relating to the patient(s) in this report.
2. All possible steps have been taken to safeguard the identity of the patient(s).
3. This submission is compliant with the requirements of local research ethics committees.