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Case Report

Burkholderia Pseudomallei - An Underdiagnosed Infectious Agent

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Abstract

Melioidosis is an emerging infectious disease caused by Gram negative, non-sporing saprophytic bacterium *Burkholderia pseudomallei*. This organism is found distributed mainly in soil and water and can cause potential infection in humans and animals.

We report a case of 56-year-old male patient who was farmer by occupation and came with complaints of fever for the past 8 days with headache. On ultrasound abdomen, splenic enlargement with multiple hyper echoic lesions was found. Pus obtained after ultrasound guided aspiration was sent for bacterial culture and sensitivity and *Burkholderia pseudomallei* was isolated.

Keywords: *Burkholderia pseudomallei*; Melioidosis; Splenomegaly

Introduction

Melioidosis is an emerging infectious disease in south East Asian countries such as India [1,2]. It is an underdiagnosed disease due to lack of awareness of the burden of the disease and also due to lack of sensitive testing modalities. Though bacterial culture and sensitivity is considered as gold standard for diagnosis despite low sensitivity, it requires keen observation and suspicion from clinicians as well [3]. Clinical Microbiologists should also be equally aware of this infection as most of the times these organisms are misinterpreted as laboratory contaminants [4].

Melioidosis is a notorious disease as signs and symptoms can vary greatly and may mimic those of tuberculosis or common forms of pneumonia. A study in 2016 estimated that about 1,65,000 people got infected with Melioidosis every year, with 46% being reported from southeast Asian countries such as India, Pakistan, Bangladesh [5]. In India, majority of cases were reported from Kerala and Tamil Nadu [6,7]. Patients who are immunocompromised such as those with diabetes, malignancy, on steroids or cytotoxic drugs are more susceptible to acquire infection with this organism [8,9]. This alone can be misleading to treating Physicians and by the time diagnosis is made, patient would have progressed to advanced stages of disease with multiple internal abscesses such as splenic abscess, hepatic abscess or disseminated blood stream infections leading to nervous system and cardiovascular complications such as Acute Parkinsonism, Guillain barre syndrome, constrictive pericarditis, acute renal failure, pace maker infections with high morbidity and mortality [10].

Case Report

We report a case of 56-year-old male patient who was farmer by occupation with complaints of fever for 8 days which was insidious in onset, intermittent in character with chills and rigors. The fever was associated with headache and myalgia. There was no complaints of pain abdomen, vomiting, loose stools, cough or dyspnea. The patient was found to be a known case of type 2 diabetes and hypertension and was put on tablet Vildagliptin 500mg for 2 years.

The patient was also a chronic alcoholic and smoker. The patient was a farmer by occupation who was prone to develop skin abrasions while working in fields with no protective equipment's such as gloves or shoes and was in frequent contact with contaminated dust and water. On physical examination, patient was found to be oriented to time, place and person and was found to be mildly icteric and mild pallor was noted on lower palpebral conjunctiva. There was no lymphadenopathy, cyanosis or edema. His Blood pressure was 120/80 mmHg, pulse 90bpm, respiratory rate 18 cpm, temperature 370 c. Patient was dehydrated. On Respiratory system examination, bilateral air entry was normal, on Cardio vascular examination, S1 and S2 were heard, no murmurs, on nervous system examination, GCS- 15/15, on per abdomen examination, abdomen was soft, left hypochondriac region was nontender, non-distended and bowel sounds were heard. Patient was admitted and was put on diabetic diet and blood samples were collected and were then put on injection Ceftriaxone 1g IV once a day along with Tablet paracetamol 650mg thrice daily and tablet pantaprazole 40mg once daily one hour before food and his sugars were monitored

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and was put on Regular Insulin injection. On day 2, patient was sent for routine ultrasound abdominal investigation and the report showed Splenomegaly with multiple hyper echoic lesions. Then the patient underwent ultrasound guided aspiration and pus was sent for bacterial culture and sensitivity. The Gram staining showed Gram negative bacilli with characteristic bipolar staining of *Burkholderia* giving a classic safety pin appearance and a presumptive identification of organism was done. After 24 hours of incubation, macconkey agar incubated aerobically showed non lactose fermenting, circular, colorless and wrinkled colonies while blood agar showed non hemolytic colonies. But no growth was seen on anaerobic plates. Biochemical reactions were put up such as indole, Triple sugar iron agar, mannitol motility, oxidase, catalase, oxidation-fermentation, amino acid decarboxylation and found that the organism was inert, typical of Burkholderia. Antibiotic sensitivity was put up and the organism was found to be sensitive to Doxycycline, Cotrimoxazole, Ceftazidime, Ceftriaxone, Meropenem and Imipenem. Based on microbiological culture and sensitivity and clinical and radiological investigations, a diagnosis of Melioidosis was made and organism was confirmed as *Burkholderia pseudomallei* on VITEK. Blood sample was also sent with pus and organism was isolated in blood as well. Patient underwent splenectomy under antibiotic cover and then injection ceftriaxone IV 1g was continued post operatively. Patient responded well and his general condition improved and was then put on tablet Cotrimoxazole 240mg once daily and tablet Doxycycline 100mg once daily on discharge for 14 days.

Discussion

Burkholderia pseudomallei are an environmental pathogen which is widely distributed in soil and water [1]. It is most commonly seen in south East Asian countries such as India [2]. Due to lack of specific signs and symptoms and varied range of manifestations, diagnosis of Melioidosis remains challenge to treating physicians and microbiologists. A lack of awareness among clinical microbiologists has led to misinterpretation of these organisms as common laboratory contaminants [4]. The incidence of melioidosis in India is about 42 -46% [5]. In India, it is mainly prevalent in southern states like Kerala and Tamil Nadu [6,7]. It mostly affects immunocompromised patients such as those on corticosteroids, who are transplant recipients and with underlying comorbidities [8,9]. However, delay in diagnosis and management results in various life-threatening complications resulting in high morbidity and mortality [10]. Therefore, it is important to consider *Burkholderia pseudomallei* as a causative agent of organ abscess in any patient with co morbidities and risk factors after excluding other illnesses. It is also important to process this organism as a potential pathogen instead of neglecting as common laboratory contaminant.

Conclusion

This case study was done to highlight the importance of Melioidosis which is emerging as an important infectious disease in the community. With proper and early diagnosis and treatment, this disease can be easily controlled. This will lead to reduction in mortality associated with the disease.

Author Statements

Consent

Informed consent is taken from patient and his family

Contribution

Dr Megha G (corresponding author and guarantor) – Relevant history and data collection, critical revision and final approval of version of article.

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