Case Report

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Are we missing the diagnosis of disseminated melioidosis? An unusual presentation of melioidosis with prostatic abscess

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Abstract:

Melioidosis, an emerging infectious disease in India is well known for its protean clinical manifestations. Definitive diagnosis can be made by isolation of non-fermentative Gram-negative bacilli from clinical specimens and identification of the isolate at the species level. We report a case of disseminated melioidosis with lymphadenitis and prostatic abscess. *Burkholderia pseudomallei* was isolated from bone marrow, pus aspirate, blood and urine, and the patient responded well to the treatment.

Keywords:

Burkholderia pseudomallei, Co-trimoxazole, disseminated melioidosis, prostatic abscess

Introduction

Melioidosis, a systemic infection with variable clinical presentations, is caused by an intracellular pathogen called *Burkholderia pseudomallei*. It is a non-fermentative Gram-negative bacillus found as an environmental saprophyte in the endemic regions of Southeast Asian countries and Northern Australia.[1,2] The disease is endemic in the Indian subcontinent, and documented case reports are few and sporadic.

The main modes of infection are percutaneous inoculation and inhalation of aerosolised bacteria. The pathogen, formerly known as *Pseudomonas pseudomallei / Bacillus pseudomallei* is intrinsically resistant to Penicillin, Ampicillin, first- and second-generation Cephalosporins, Aminoglycosides and Polymyxin B, a feature which not only aids in laboratory identification but also in the choice of treatment.

Melioidosis has been known as a 'remarkable imitator' as the disease can mimic tuberculosis, pyogenic bacterial infection or Gram-negative sepsis. Melioidosis can be classified as bacteraemic, disseminated, multifocal and localised.[1] In general, in all case series, pneumonia is the most common clinical presentation.[2,3] Common sites of internal abscesses are prostate, liver, spleen, skin and soft tissue, bone and joint, parotid and dental.[2-8] Apart from fever, the other symptoms are weight loss, chest pain, abdominal discomfort, bone and joint pain, dysuria, headache and seizure.

It is recommended that the patients should be treated with intravenous (IV) Ceftazidime or Carbapenems for a period of two weeks, followed by an eradication phase with Doxycycline or Co-trimoxazole for three–four months. Recurrent infection can occur after successful treatment in the form of relapse or reinfection and the mortality is as high as that of the initial episode. The risk factors associated with relapse are poor adherence to therapy, the use of Doxycycline

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monotherapy or Amoxicillin-Clavulanic acid in the eradication phase, severe disease or the duration of eradication phase of less than eight weeks.[1,9] We report a case of disseminated melioidosis with prostatic abscess which was successfully treated and is on follow-up.

Case Report

A 43-year-old male hailing from Pathanamthitta district, Kerala, presented with high-grade fever, chills and rigors of 10 days duration. He was recently diagnosed with type 2 diabetes mellitus and had the habit of consuming 60–90 ml of alcohol per day for the last 15 years. By occupation, he owns a shop and gave a history of occasional cattle farm visits. There was no history of cough, headache, dysuria, vomiting or diarrhoea. On examination, bilateral cervical lymphadenopathy was present. Ceftriaxone 1 g Q12H IV and Doxycycline 100 mg twice a day orally were started empirically. The patient was shifted to Intensive Care Unit following oxygen desaturation. Blood and urine cultures were sent to microbiology laboratory. Plenty of pus cells and Gram-negative bacilli were seen in urine Gram-staining. The results of laboratory parameters were as follows: Total leukocyte count (7600/cumm), platelet (61,000/cumm), total serum bilirubin level (4.5 mg/dL), serum creatinine (1.2 mg/dL) and procalcitonin (92 ng/mL). A provisional diagnosis of urosepsis with multiple organ dysfunction syndrome was made. Meropenem 1 g Q8H was started intravenously. Both blood and urine cultures grew non-fermentative Gram-negative bacilli which were susceptible to third-generation Cephalosporins, Carbapenems and resistant to Ampicillin, first-generation Cephalosporins and Gentamicin. In our microbiology laboratory, approximately 5400 urine and 4800 blood samples were processed in 2016. All the samples are processed in biosafety cabinet 2 by the technical staff with the additional use of personal protective equipment.

Serum for dengue IgM, Leptospira IgM, scrub IgM and Widal test and screening for HIV, HBsAg and hepatitis C virus were non-reactive. Bone marrow aspirate was sent for culture, and *B. pseudomallei* was isolated based on the colony morphology, 'safety pin' appearance on Gram-staining and biochemical tests. Identification was confirmed in VITEK 2 compact. It was found to be susceptible to Ceftazidime, Amoxicillin-Clavulanic acid, Carbapenems, Fluoroquinolones and resistant to Aminoglycosides, Ampicillin, first-generation Cephalosporins and Polymyxin B. AFB staining of bone marrow was negative for acid-fast bacilli. The non-fermentative bacilli isolated from blood and urine samples were identified later as *B. pseudomallei* by VITEK 2 compact. Ultrasonography abdomen and contrast-enhanced computer tomography abdomen revealed prostatic abscess [Figures 1 and 2]. Pus aspirate from prostatic abscess was cultured, and *B. pseudomallei* with similar antibiotic sensitivity pattern was isolated. Meropenem IV was continued for a period of two weeks, during which fever was subsided and pus collections reduced. Adequate contact precaution measures were taken by the healthcare workers during the hospital stay of the patient. The patient was discharged with advice on oral Co-trimoxazole (1600/320 mg twice daily) for five months and he is on regular follow-up.

Discussion

Melioidosis is known for its protean clinical manifestations, and prostatic abscess is one among them which is well documented in Darwin study.[2] Prostate as the common site in urogenital melioidosis has been reported from Brunei, and there have been reports of the disease in India from Vellore and Manipal with urogenital involvement.[3,7,10] Most of the cases responded well, after surgical drainage of pus and antibiotic therapy.

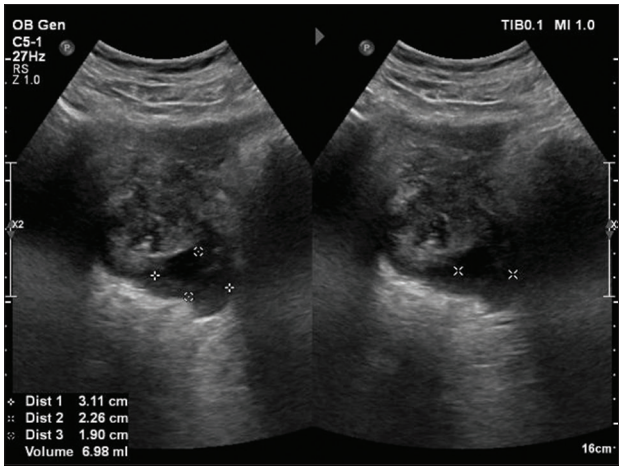

Figure 1: Ultrasonography abdomen showing prostatic collection

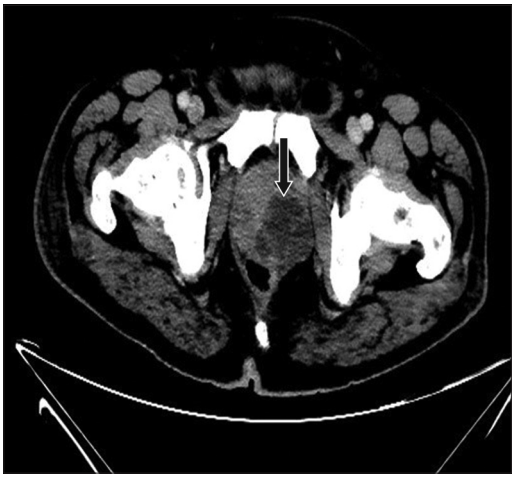

Figure 2: Contrast-enhanced computed tomography abdomen revealing prostatic abscess

The patient was a 43-year-old male, diabetic and gave a history of alcohol consumption and occupational exposure. Age >40 years, male gender, diabetes mellitus, alcoholism and occupational exposure to the natural habitats of *B. pseudomallei* such as damp soil are the frequently noted risk factors of melioidosis in various studies.[2,3] The association between rainfall and melioidosis (particularly pneumonia) has long been reported in various studies.[2,3] Here, the patient presented to our hospital in the month of September (towards the end of southwest monsoon in Kerala), and the mode of infection could be occupational exposure to wet soil (soil testing to examine the presence of *B. pseudomallei* was not performed).

Although relatively rare, resistance to clinically significant antibiotics has emerged during treatment. Resistance to Ceftazidime, Amoxicillin-Clavulanic acid or both drugs was reported in 0.6% of the isolates from Thailand over two decades.[11] Only documented report of antibiotic resistance from India is Ceftazidime resistance from Andhra Pradesh.[12] Our strain was susceptible to the clinically significant antibiotics.

To prevent reinfection and relapse, the patient should be advised on the importance of completion of eradication phase of treatment, regular follow-up and lifestyle modifications, such as avoidance of alcohol, control of diabetes mellitus and usage of appropriate footwear and gloves while working in paddy fields.[13] Scrupulous correlation and identification of non-fermentative Gram-negative bacilli isolated in cultures from patients with suspected history are warranted for the laboratory diagnosis. The factors that have saved our patient's life were the prompt etiological diagnosis and the right management with urological and medical interventions.

Conclusion

The medical fraternity should be highly vigilant to include melioidosis as a differential diagnosis of acute febrile illnesses and Pyrexia of Unknown Origin in endemic areas. Establishing a fair interaction between the physician and the clinical microbiologist can enable the early and right diagnosis of such emerging infectious diseases.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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