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BURKHOLDERIA PSEUDOMALLEI CAUSING URINARY TRACT INFECTION AND CELLULITIS: A CASE REPORT

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ABSTRACT

Introduction: *Burkholderia pseudomallei* causes protean manifestations. Though infection caused by this organism is rare, infection can be fatal. We present a case of urinary tract infection and cellulitis caused by *Burkholderia pseudomallei* who was admitted at a tertiary care hospital. The case is presented to highlight the identification of this rare pathogenic organism in the laboratory from the samples collected and to start the treatment early for better prognosis since the mortality is high without treatment. **Case presentation:** 68 Year old male presented to medicine Department with symptoms of urinary tract infection and also inflammation of the skin on the upper part of medial aspect of the left thigh. On examination patient had cellulitis on the medial side of the left thigh and also suspected urinary tract infection. Samples of urine, blood and pus collected using sterile swabs from the discharge of cellulitis was sent to microbiology laboratory for culture and antimicrobial susceptibility testing. Microbiological culture and identification revealed the etiologic agent to be *Burkholderia pseudomallei*. The organism was susceptible to amoxicillin-clavulanic acid (20µg/10 µg), ceftazidime(30µg), trimethoprim/sulfamethoxazole(1.25/23.75 µg). The strain was resistant to amikacillin(30 µg), and colistin(10 µg). His fasting blood glucose was 223mg/dl. Patient was started with ceftazidime (intravenous route) for two weeks followed by trimethoprim/sulfamethoxazole for twelve weeks. Pus at cellulitis area was also drained.

He was put on antidiabetic therapy. Second sample of urine and blood collected after a week was negative for culture. **Conclusion:** Urinary tract infection is common in diabetics, and in a diabetic patient *B. pseudomallei*, a rare pathogen can cause infection. This organism can be overlooked in routine cultures as contaminant especially if the bacterial growth on the culture plate is polymicrobial. Identification requires a great deal of clinical suspicion as well as alertness on the part of laboratory personnel. Melioidosis caused by should be considered in the differential diagnosis in diabetic men with urinary tract infection, especially if they come from areas where melioidosis is prevalent. Appropriate treatment must be initiated to prevent complications.

KEYWORDS: *Burkholderia pseudomallei*, urinary tract infection, cellulitis.

INTRODUCTION

Burkholderia pseudomallei is an aerobic gram-negative bacillus belonging to the Pseudomonas family. This causes infection called melioidosis, is not uncommon in Southeast Asia and Australia.[1] In recent years melioidosis has been increasingly reported from India.[2] The clinical features are protean and may include urinary tract infection and cellulitis. Diagnosis of the infection can be missed if awareness is low. Since this organism causes lethal effects, mortality can be minimized by starting specific antimicrobial therapy. Therefore diagnosis of this infection assumes importance and can be achieved by aerobic culture on ordinary media.

Since there are not many reports on urinary tract infection caused by *Burkholderia pseudomallei* and the awareness about this microorganism causing manifestation is low among practicing clinicians and laboratory personnel, we report a case of urinary tract infection caused by *Burkholderia pseudomallei* presenting as urinary tract infection also associated with cellulitis.

CASE

68 Year old male presented to medicine department with symptoms of urinary tract infection and also inflammation of the skin on the medial aspect of the left thigh . On examination patient had cellulitis on the medial aspect of the left thigh and also suspected urinary tract infection. Samples included urine, blood and swabs with pus collected from the discharge of cellulitis, which was sent to microbiology laboratory for culture and antimicrobial susceptibility testing after taking consent from the patient. Blood collected was also sent for

other investigations like blood sugar and haemotological findings apart from blood culture. Microbiological culture and identification revealed the etiologic agent as *Burkholderia pseudomallei* from all the samples. Identification was done according to Cowan and Steel.[3] Antibacterial susceptibility testing was done according to Kirby-Bauer disc diffusion test.[4] The organism was susceptible to amoxicillin-clavulanic acid (20µg/10 µg), ceftazidime (30µg), trimethoprim/sulfamethoxazole (1.25/23.75 µg), piperacillin (100 µg), imipenem (10 µg), piperacillin-Tazobactam (100 µg/10 µg), and tetracycline (30µg).Strain was resistant to amikacillin(30 µg), tobramycin (30 µg) and colistin(10 µg).These antibiotic discs were procured from Hi-media, Mumbai,India. His total leucocyte count was $21.7x10^3$/ µl and fasting blood glucose was 223mg/dl. Isolates were also confirmed as *Burkholderia pseudomallei* from swabs of cellulitis and urine using automated Vitex 2 systems (Biomeieux Inc, Hazelwood). Patient was started with ceftazidime (intravenous route) for two weeks followed by trimethoprim/sulfamethoxazole for twelve weeks. Pus formed at cellulitis area was also surgically drained. He was also supported with antidiabetic therapy. Second sample of urine and blood collected after a week was negative for culture.

DISCUSSIONS

Burkholderia pseudomallei is an environmental Gram-negative bacillus and cause melioidosis, which is prevalent across much of southeast Asia and northern Australia. Common features include bacteremia, pneumonia, hepatosplenic abscess, septic arthritis and skin or soft tissue infections, and mortality was 14 to 43%.[5] *B. pseudomallei* was innately resistant to a large number of antimicrobial agents, including all macrolides, all narrow-spectrum cephalosporins, most penicillins, all polymyxins and the aminoglycosides.[6] Since mortality was high in these cases and could be minimized by effective antimicrobial treatment at an early stage, isolation of this organism for the diagnosis of this infection plays a very important role for the laboratory personal. Since there were not many reports on genitourinary melioidosis and the awareness about this manifestation is low among practicing clinicians and laboratory personnel, we report our experience with a case. Melioidosis was common in diabetic patients, Nicole L.Podnecky et al in their study reported five cases of melioidosis with prostatic abscess and diabetes.[7] Our case study also opined this, our patient was also diabetic. Patient did not have a history of occupational hazard, he was not been exposed to handling soil, he had worked as porter earlier.

Isolate was susceptible to amoxicillin-clavulanic acid, ceftazidime, trimethoprim/sulphamethoxazole, piperacillin and imipenem. Strain was resistant to gentamicin, amikacin, netilmicin and colistin. Ceftazidime alone or a combination of clavulanate and amoxicillin was the treatment of choice. Imepenem and meropenem were safe and effective and could be considered as alternatives to ceftazidime.[8] Patient was started on ceftazidime for two weeks followed by trimethoprim/sulfamethoxazole for twelve weeks. Pus formed at cellulitis area was also surgically drained. He was also supported with antidiabetic therapy. Second sample of urine and blood collected after a week was negative for culture.

CONCLUSION

Urinary tract infection is common in diabetics, and in them *B. pseudomallei*, a rare pathogen can cause infection. This organism can be overlooked in routine cultures as contaminant especially if the bacterial growth on the culture plate is polymicrobial. Identification requires a great deal of clinical suspicion as well as alertness on the part of laboratory personnel. *B. pseudomallei* infection should be considered in the differential diagnosis in diabetic men with urinary tract infection, especially if they come from areas where melioidosis is prevalent. Appropriate treatment must be initiated to prevent complications.

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