

CASE REPORT

A Rare Case of Multifocal Burkholderia cepacia and Burkholderia pseudomallei Infection Presenting with Thigh Abscess and Bacteremia

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Abstract: *Background:* Burkholderia cepacia and Burkholderia pseudomallei are uncommon but highly virulent Gram-negative bacilli that pose significant diagnostic and therapeutic challenges. B. pseudomallei causes melioidosis, a potentially fatal infection prevalent in tropical regions, whereas B. cepacia complex organisms are known for nosocomial outbreaks and intrinsic multidrug resistance. *Case Presentation:* We report a 51-year-old man presenting with a right thigh abscess and persistent fever following incision and drainage performed elsewhere. Despite multiple antibiotic regimens, the patient continued to have fever, with serial cultures revealing B. cepacia bacteremia and later, B. pseudomallei isolated from new abscesses in the neck and ankle. The patient required repeated debridement and prolonged therapy with intravenous meropenem and oral cotrimoxazole, following which he recovered completely. *Conclusion:* This case highlights the diagnostic complexity of polymicrobial Burkholderia infections, the need for microbiological vigilance in persistent wound infections, and the importance of prolonged, targeted antimicrobial therapy in endemic regions such as South India.

Keywords: Burkholderia cepacia, Burkholderia pseudomallei, melioidosis, bacteremia, surgical infection, antibiotic resistance

INTRODUCTION

Burkholderia pseudomallei is a motile, Gram-negative bacillus that causes melioidosis — a potentially fatal infection endemic to Southeast Asia and northern Australia. It has been increasingly recognized in India over the past two decades (1,2). The disease manifests variably, from localized abscesses to pneumonia and fulminant sepsis, particularly in diabetic or immunocompromised hosts (3,4). Due to its ability to survive in soil and water, infection occurs primarily via percutaneous inoculation or inhalation (5,6).

Burkholderia cepacia complex (BCC), another non-fermenting Gram-negative bacillus, is commonly associated with chronic lung infections in cystic fibrosis and has emerged as a nosocomial pathogen. BCC species are intrinsically resistant to many antibiotics and can survive in aqueous hospital environments, leading to outbreaks linked to contaminated disinfectants, intravenous fluids, and medical devices (7–9).

Co-infection by B. cepacia and B. pseudomallei is exceedingly rare. We present an unusual case of multifocal abscesses and bacteremia due to both organisms in a middle-aged male without major comorbidities, managed successfully with surgical debridement and prolonged combination antimicrobial therapy.

CASE PRESENTATION

A 51-year-old male milkman from Madavelagam, Thireni, presented to the emergency department on 14/11/2023 with complaints of fever and an ulcer over the upper right thigh for two days. He also reported mild chest pain. The patient had undergone incision and drainage of a right thigh abscess at a private hospital on 06/11/2023, but continued to have persistent fever thereafter.

He had no history of diabetes, hypertension, tuberculosis, bronchial asthma, or chronic kidney disease. He was vaccinated with two doses of Covishield and denied any contact with tuberculosis or recent blood transfusions.

General Examination

The patient was thin built and poorly nourished, with mild pallor and no icterus, cyanosis, clubbing, lymphadenopathy, or pedal edema. He was alert and febrile.

- Pulse: 94 bpm
- BP: 150/100 mmHg
- SpO₂: 98% on room air
- Temperature: 100.8°F
- Local examination: Right upper thigh ulcer 5×6 cm with slough and tenderness (Figure-1)



Figure -1

Investigations (14/11/2023)

- Hb: 11.2 g/dL, TLC: 10,100 cells/mm³, Platelets: 2.28 lakh/mm³
- Serum Creatinine: 0.8 mg/dL, Na⁺: 122 mmol/L, K⁺: 4.3 mmol/L
- HbA1c: 15.0 %, RBS: 194 mg/dL
- CRP: 330.4 mg/L (positive), Procalcitonin: 1.02 ng/mL (moderate risk for sepsis).

Hospital Course

Due to chest pain and ECG changes, a cardiology opinion was obtained — diagnosed as NSTEMI and managed accordingly. Wound debridement (Figure -2) was performed on 14/11/2023, and intraoperative swab was sent for culture. The patient was empirically started on cefaperazone-sulbactam 1.5 g IV BD, along with diabetic control measures.



Figure -2

Despite treatment, he continued to have fever and chest pain. Examination revealed tenderness over the left 7th and 8th costochondral junctions, diagnosed as costochondritis.

Microbiology Findings

- Wound swab (14/11/2023):
- *Staphylococcus haemolyticus* (MR) – sensitive to vancomycin, linezolid, clindamycin, teicoplanin, tetracycline.
- *Enterobacter cloacae* – sensitive to piperacillin-tazobactam, ceftriaxone, imipenem, meropenem, gentamicin, ciprofloxacin.
- *Burkholderia cepacia* – sensitive to gentamicin, amikacin, co-trimoxazole, ceftazidime, ciprofloxacin, imipenem, meropenem.
- AFB: negative.
- Blood culture (17/11/2023): *Burkholderia cepacia* (Figure-3) — susceptible to ceftazidime, co-trimoxazole, imipenem, meropenem, amikacin, ciprofloxacin.

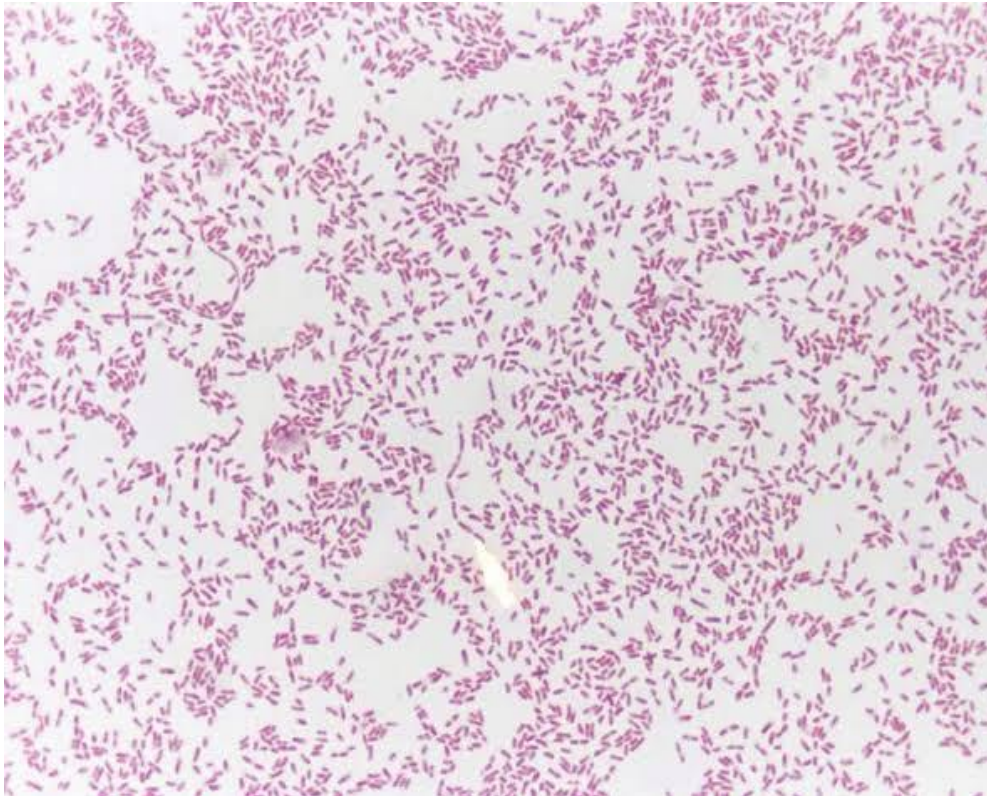


Figure -3

- Started on ciprofloxacin 500 mg PO BD, linezolid 600 mg PO BD, continued cefaperazone-sulbactam.
- Persistent fever (21/11/2023): Antibiotics escalated to meropenem 1 g IV TDS and Bactrim DS 1 tab PO BD.
- Repeat blood culture (29/11/2023): Burkholderia cepacia again positive, susceptible to co-trimoxazole, imipenem, meropenem, ciprofloxacin, ceftazidime.
- ICU consultant advised increased antibiotic dosage — meropenem 1 g IV TDS and Bactrim DS 2 tabs PO BD initiated.

On 28/11/2023, the patient developed swelling over the left side of neck — underwent incision and drainage under local anaesthesia. Wound swab culture grew Burkholderia pseudomallei, susceptible to co-trimoxazole, imipenem, and meropenem.

On 03/12/2023, he developed a new abscess over the left ankle (Figure-4 and 5), which was incised and drained on 04/12/2023; wound culture again revealed Burkholderia pseudomallei with the same sensitivity pattern.



Figure -4



Figure -5

The patient was continued on meropenem 1 g IV TDS and Bactrim DS 2 tabs PO BD.
By 11/12/2023, the thigh wound was healthy; secondary suturing (Figure -6) was performed, and ankle wound (Figure-7) debrided the next day.



Figure -6



Figure -7

By 01/12/2023, fever had subsided completely. Repeat blood culture on 19/12/2023 showed no growth.

He had received 3 weeks of IV meropenem and oral cotrimoxazole, after which he was discharged on continued oral therapy

DISCUSSION

This case illustrates an uncommon multifocal infection involving *Burkholderia cepacia* and *Burkholderia pseudomallei*. Co-infection of these two organisms is extremely rare. *B. cepacia* complex is a well-known

nosocomial pathogen capable of surviving in disinfectants and saline (7,8), while *B. pseudomallei* is the etiological agent of melioidosis, endemic in tropical India (1,2).

The patient's repeated positive blood cultures for *B. cepacia* indicated persistent bacteremia, possibly from an inadequately drained focus. The subsequent emergence of *B. pseudomallei* abscesses in the neck and ankle may reflect hematogenous dissemination from a latent environmental exposure. His uncontrolled hyperglycemia (HbA1c 15%) could have predisposed him to severe infection, as diabetes is a well-documented risk factor for melioidosis (3,4).

Both organisms exhibit intrinsic resistance to multiple antibiotics. *B. pseudomallei* is resistant to aminoglycosides and colistin (10), whereas *B. cepacia* shows resistance to β -lactams and disinfectants (8,9). The combination of meropenem and co-trimoxazole remains the mainstay of therapy for severe melioidosis, supported by prolonged eradication therapy to prevent relapse (11,12).

The complete clinical recovery in this patient underscores the need for early culture-based diagnosis, high clinical suspicion for melioidosis in endemic regions, and strict adherence to infection control measures to prevent *Burkholderia* transmission within hospital settings.

CONCLUSION

This case highlights the clinical challenge of diagnosing and managing multifocal *Burkholderia* infections. In regions such as South India, clinicians should maintain a high index of suspicion for melioidosis in patients with persistent fever and non-healing abscesses, even in the absence of major comorbidities. Prolonged culture-based antibiotic therapy with meropenem and co-trimoxazole, coupled with surgical drainage and close microbiological follow-up, is crucial for successful outcomes.

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