

An unwelcome intruder: *Burkholderia cepacia* invades the testis in a renal transplant recipient – a rarity

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ABSTRACT

Testicular abscesses are rare complications of epididymo-orchitis and are usually caused by *Staphylococcus aureus* or enteric Gram-negative bacilli. The *Burkholderia cepacia* complex (BCC) comprises multidrug-resistant, opportunistic organisms that commonly affect immunocompromised individuals and patients with indwelling devices. Although BCC has been associated with intra-abdominal, splenic, and prostatic abscesses, testicular involvement has not been previously described. A 51-year-old man with end-stage renal disease on long-term hemodialysis through an arteriovenous fistula and two prior failed renal transplants, who presented with fever and severe unilateral scrotal pain. Imaging revealed a testicular abscess, and cultures from blood, pus, and excised tissue grew *B. Cepacia*. He required orchidectomy and prolonged targeted antimicrobial therapy, with complete recovery. This case illustrates an exceptionally rare genitourinary manifestation of BCC infection in a chronically immunocompromised host and underscores the need to consider opportunistic pathogens when evaluating acute scrotal conditions in transplant patients.

Key words: Bacteremia, *Burkholderia cepacia*, Orchitis, Renal transplantation, Testicular abscess

The *Burkholderia cepacia* complex (BCC) comprises over 20 genetically-related, aerobic, non-fermenting Gram-negative bacilli commonly found in moist environments such as soil, water, and healthcare-associated solutions, including disinfectants, irrigation fluids, and intravenous preparations [1]. Formerly considered organisms of low virulence, BCC species are now recognized as clinically significant opportunistic pathogens, capable of causing severe infections in vulnerable hosts. In immunocompromised individuals, including those with cystic fibrosis, chronic granulomatous disease, hematological malignancies, or solid-organ transplants, BCC infections can be aggressive, persistent, and difficult to treat [2]. The organism possesses multiple virulence determinants: intrinsic multidrug resistance, robust biofilm formation, enzymatic degradation of antimicrobials and disinfectants, efflux pump systems, and the ability to survive in low-nutrient environments [3]. These features make BCC a formidable pathogen in hospital settings, where it has been implicated in outbreaks linked to contaminated medical solutions and equipment. In renal transplant recipients, BCC can cause bacteremia,

pneumonia, urinary tract infections, deep-seated abscesses, and device-related infections due to ongoing immunosuppression and frequent exposure to healthcare environments [4]. Testicular abscess is an uncommon sequela of epididymo-orchitis, typically caused by *Staphylococcus aureus*, *Escherichia coli*, or other enteric pathogens [5]. To date, BCC-associated testicular abscess has not been reported in the literature. Sparse reports of BCC genitourinary involvement include prostatitis with micro-abscesses and urinary tract infections, but testicular involvement remains undocumented [6,7].

We report what appears to be the first described case of a testicular abscess caused by *B. cepacia* in a renal transplant recipient, highlighting the importance of considering atypical and opportunistic pathogens in acute scrotal presentations in immunocompromised patients.

CASE PRESENTATION

A 51-year-old man with end-stage renal disease (ESRD) presented with a 4-day history of intermittent high-grade fever and worsening left-sided scrotal pain, which was throbbing in character, progressively increasing over 72 h, and aggravated by movement and palpation. There was associated scrotal swelling but no dysuria, flank pain, abdominal pain, or respiratory symptoms. His medical

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history included ESRD on thrice-weekly hemodialysis since 2022 through a functioning arteriovenous fistula, following rejection of two renal transplants (2005 and 2013). Comorbidities included long-standing type 2 diabetes mellitus and a recent diagnosis of pulmonary aspergillosis for which he had completed treatment 2 months prior, placing him at high risk for opportunistic infections. He also had a remote history of treated pulmonary tuberculosis.

On admission, he was febrile (102°F) and tachycardic (124/min) but hemodynamically stable (Blood pressure 124/88 mmHg). Local examination revealed an enlarged, tense, and markedly tender left hemiscrotum measuring approximately 6 × 4 × 4 cm, with loss of rugae and warmth but no ulceration.

Laboratory Investigations included white blood cells 12,400/ μ L, C-reactive protein 38 mg/L, procalcitonin 7 ng/mL, and serum creatinine: 4.8 mg/dL. No abnormality was detected in urinalysis, and blood culture became positive on day 4 of admission for *B. cepacia*.

Scrotal ultrasonography demonstrated a markedly enlarged left testis (42 × 40 × 44 mm) with multiple cystic areas, fluid-fluid levels, and increased vascularity, findings strongly suggestive of a developing testicular abscess.

A provisional diagnosis of epididymo-orchitis with evolving abscess was made. Empiric therapy with cefotaxime 2 g every 8 h and doxycycline 100 mg twice daily was initiated. Given the concerning imaging and worsening pain, urgent surgical exploration was performed. Approximately 60–70 mL of thick pus was drained, and the testis was found to be completely liquefied and necrotic, necessitating left orchidectomy (Fig. 1).

Cultures from blood, intraoperative pus, and excised testicular tissue all yielded *B. cepacia* sensitive to meropenem, ceftazidime, aztreonam, cefoperazone-sulbactam, levofloxacin, and trimethoprim-sulfamethoxazole.

He was started on renal-adjusted intravenous meropenem, with subsequent defervescence and clinical improvement. He completed 14 days of intravenous therapy, followed by oral trimethoprim-sulfamethoxazole (800/160 mg twice daily) for 12 weeks due to the risk of relapse. He remained asymptomatic with no recurrence on follow-up.

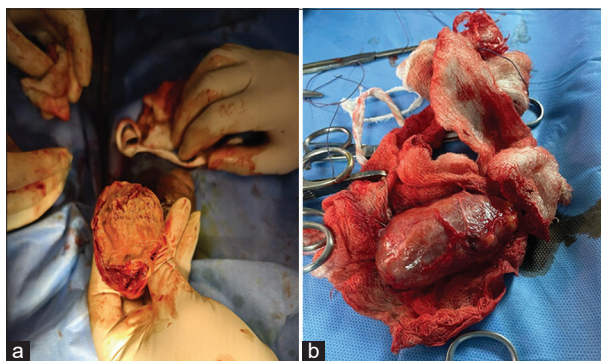


Figure 1: (a) Liquefied and necrosed testis; and (b) left orchidectomy

DISCUSSION

BCC is a well-recognized opportunistic pathogen in immunocompromised patients. Its ability to persist in hospital environments, resist disinfectants, and colonize aqueous solutions contributes to healthcare-associated infections [8]. In dialysis patients, contamination of dialysis fluids, disinfectants, or vascular access devices has been implicated in outbreaks [9].

BCC exhibits intrinsic resistance (β -lactamases and efflux pumps), biofilm formation on catheters and epithelial surfaces, environmental resilience, and survival on antiseptics such as chlorhexidine and quaternary ammonium compounds [3,10]. These mechanisms likely contributed to this patient's infection, given his long-term hemodialysis and immunosuppressed state.

Two mechanisms were considered for possible routes of infection. Hematogenous spread (most likely) showed positive blood cultures, high-grade fever, no urinary symptoms, and normal urinalysis. In immunocompromised patients, BCC bacteremia can seed unusual sites, including spleen, liver, prostate, and soft tissues [6,11]. Ascending genitourinary infection (less likely) is uncommon with normal urine analysis, and no prior urinary catheterization is required. Prabhu *et al.* describe BCC causing multiloculated abdominal abscesses [4]. A recent case reported BCC prostatitis with abscess formation [6]. Jayawardena *et al.* reported multiple splenic abscesses due to BCC [7]. However, no prior testicular abscess due to BCC has been documented, making this the first such report.

BCC should be considered in immunocompromised or dialysis patients with persistent fever and deep-seated infections. Acute scrotal pain in transplant recipients warrants early imaging to exclude an abscess. Complete source control (orchidectomy when needed) is critical for cure. Prolonged, targeted antimicrobial therapy is necessary due to the risk.

CONCLUSION

This case represents the first reported instance of a testicular abscess caused by *B. cepacia*. The unusual presentation in a chronically immunocompromised patient underscores the need for vigilance for opportunistic pathogens in acute scrotal conditions. Early imaging, timely surgical intervention, and prolonged culture-directed therapy are essential for optimal outcomes.

REFERENCES

1. Mahenthiralingam E, Baldwin A, Dowson CG. *Burkholderia cepacia* complex bacteria: Opportunistic pathogens with important natural biology. *J Appl Microbiol* 2008;104:1539-51.
2. Rhodes KA, Schweizer HP. Antibiotic resistance in *Burkholderia* species. *Drug Resist Updat* 2016;28:82-90.
3. Sousa SA, Ramos CG, Leitão JH. *Burkholderia cepacia* complex: Emerging multihost pathogens equipped with a wide range of virulence factors and determinant. *Int J Microbiol* 2011;2011:607575.
4. Prabhu D, Ravikumar GP, Kulkarni A. Intra-abdominal abscesses

- by *Burkholderia cepacia* in poorly controlled diabetes mellitus: A case series. J Krishna Inst Med Sci Univ 2023;12:122-5.
5. Trojian TH, Lishnak TS, Heiman D. Epididymitis and orchitis: An overview. Am Fam Physician 2009;79:583-7.
 6. Sarma KV, Oommen AT, Sankar TM. Enteric fever with lung adenocarcinoma. Asian J Case Rep Med Health 2024;7:183-8.
 7. Jayawardena MN, Chandrasiri NS, Wijekoon S, Madanayake P, Corea E, Ranasinghe DD, *et al.* *Burkholderia cepacia*; an unusual cause of multiple splenic abscesses: A case report. Sri Lankan J Infect Dis 2017;7:123-6.
 8. Lutz JK, Lee J. Prevalence and antimicrobial-resistance of *Pseudomonas aeruginosa* in swimming pools and hot tubs. Antimicrob Resist Infect Control 2011;1:2.
 9. Khadka B, Khanal K, Budhathoki S, Ghimire A, Regmi A. *Burkholderia cepacia* sepsis in a patient with Acute Pancreatitis: A case report from Nepal. Bangladesh Crit Care J 2022;10:146-8.
 10. De Smet B, Peeters C, Coenye T. Comparative analysis of the *Burkholderia cenocepacia* K56-2 essential genome reveals cell envelope functions that are uniquely required for survival in species of the genus *Burkholderia*. J Hosp Infect 2014;86:217-20.
 11. Limmathurotsakul D, Peacock SJ. Melioidosis: A clinical overview. Br Med Bull 2011;99:125-39.

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