

CASE REPORT

Burkholderia Cepacia Sepsis in a Case of Acute Pancreatitis: Report from a Tertiary Care Centre in North India

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ABSTRACT

Background: Burkholderia cepacia complex (Bcc) includes a group of Gram-negative, non-fermenting bacilli that are increasingly recognised as opportunistic and nosocomial pathogens, particularly in patients with underlying conditions. While commonly associated with cystic fibrosis, Bcc infections in immunocompetent individuals are rare but can be severe.

Case Presentation: We report a rare case of Burkholderia cepacia sepsis in a 51-year-old hypertensive male without significant comorbidities, who presented with acute necrotising pancreatitis. The patient initially received broad-spectrum antibiotics and supportive care. Worsening symptoms led to imaging, which revealed peripancreatic fluid collections. Culture of peripancreatic aspirate and blood samples yielded B. cepacia, identified using VITEK 2 and confirmed by biochemical testing. The isolate was sensitive to meropenem, ceftazidime, and cotrimoxazole. The patient showed significant clinical improvement with targeted antimicrobial therapy, including ceftazidime-avibactam, levofloxacin, and oral cotrimoxazole.

Conclusion: This case highlights the emerging role of B. cepacia as a pathogen in non-cystic fibrosis settings and underscores the importance of routine identification of non-fermenting Gram-negative bacilli in clinical microbiology. Early detection and appropriate antimicrobial therapy are critical to managing such rare but serious infections in acute pancreatitis patients.

Keyword: Burkholderia, Sepsis, Blood culture

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BACKGROUND

Burkholderia cepacia complex (BCC) comprises a group of Gram-negative, non-fermenting, aerobic bacilli that includes 20 closely related species, with *Burkholderia cenocepacia*, *Burkholderia multivorans*, and *Burkholderia vietnamiensis* being the most prevalent, which are challenging to differentiate accurately due to their approximately 80% genetic similarity, although they vary significantly in their pathogenic potential. *Burkholderia cepacia* (*B. cepacia*) is an opportunistic pathogen and is recognised for causing serious infections in individuals with pre-existing conditions like cystic fibrosis or chronic granulomatous disease. Additionally, it has been implicated in hospital-acquired bloodstream infections among non-CF patients, with reported mortality rates between 25% and 64%.^{1,2} Detection of *B. Cepacia* is performed by routine

culture of various specimens like sputum, other respiratory samples and blood onto highly selective agar-based culture media containing some antimicrobial agents that inhibit the growth of other Gram-negative bacteria.³ Antibiotics used to treat *Burkholderia cepacia* infections include Meropenem, Imipenem, Minocycline, Levofloxacin and co-trimoxazole.⁴

CLINICAL DESCRIPTION

A 51-year-old male, hypertensive, smoker with no significant past medical history, presented in the emergency department with complaints of pain in the upper abdomen for 4 days. It was acute on onset, associated with a general feeling of fullness in the abdomen, which was relieved

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while bending forward. Vitals were stable at the time of admission, and physical examination was unremarkable. During the course of admission, his abdominal pain worsened. Laboratory investigations revealed a total white blood cell count of 13,380 cells/cu mm with a neutrophilic predominance, ALT 63 U/L, AST 65 U/L and Alkaline phosphatase 357 U/L. Serum lipase and amylase levels were significantly elevated at 1285 and 360 U/L. On evaluation, he was found to have acute severe necrotising pancreatitis on Contrast Enhanced Computed Tomography scan. Patient was initially managed with IV antibiotics, Piperacillin plus Tazobactam, Levofloxacin, Meropenem for 7 days, Vancomycin for 3 days and IV fluids and analgesics. But the patient again developed pain in the abdomen, fever, and multiple episodes of vomiting. Repeat contrast-enhanced computed tomography scan showed peripancreatic fluid collection with extension into the lesser sac with acute necrotic collection (with <30% necrosis of the pancreas). A 200 ml sample of peripancreatic fluid and a blood sample were received in the Department of Microbiology for further culture and sensitivity testing. The culture bottles were incubated at $35 \pm 2^\circ\text{C}$ in the BacT/ALERT blood culture System, and the bottles that showed a positive signal on the fifth day of incubation were gram-stained. Subcultures were performed from these bottles on Blood agar and MacConkey agar plates (Hi-Media), which were incubated aerobically at 37°C overnight. (Figure 1,2) A suspension was prepared from the plates that showed growth as Non-lactose fermenter colonies on MacConkey agar, and the turbidity of the bacterial suspension was adjusted with VITEK Densichek (bio Mérieux) to match the McFarland 0.5 standard in 0.45% sodium chloride. Bacterial identification and susceptibility testing were performed using VITEK 2 ID-GNB card and AST-NO09 card, and the bacteria were identified as *B. cepacia*. At the same time, the peri-pancreatic aspirate was also received in the bacteriology laboratory and processed manually by gram staining, inoculation on Blood agar and Mac-conkey agar, followed by spot tests; identified manually by biochemical reactions and confirmed by Vitek-2. Antimicrobial susceptibility testing was performed manually on Mueller-Hinton agar. The bacteria were sensitive to meropenem, cotrimoxazole and Ceftazidime. The patient was managed with culture-sensitive antibiotics; ceftazidime and avibactam for 8 days, levofloxacin for 5

days and improved symptomatically. Subsequently, the patient was put on oral co-trimoxazole coverage for 14 days.

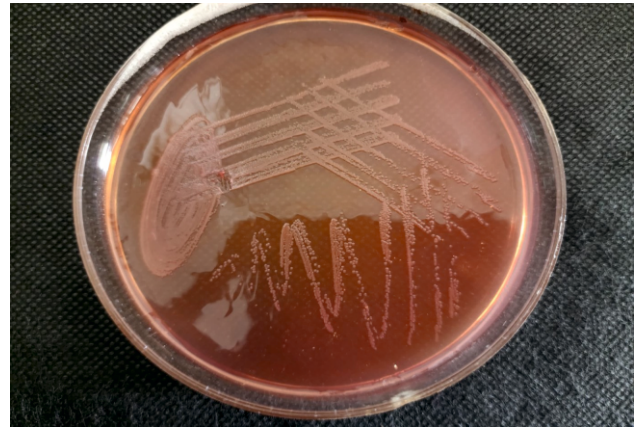


Fig. 1: Mac Conkey agar showing pale colourless colonies suggestive of non-lactose fermenters.



Fig. 2: Blood agar showing non-haemolytic colonies.

CASE FOLLOW-UP

Gradual improvement was seen. The patient responded well to oral cotrimoxazole. The culture was repeated after 14 days, and antibiotic coverage was tapered off. Repeat DSA assessment showed significant resolution of peripancreatic fluid collection, with residual collection of 20-30 ml.

DISCUSSION

B. cepacia is recognised as a group of 24 closely related opportunistic pathogens collectively known as the (BCC), widely distributed in the environment, exhibiting remarkable metabolic versatility.⁵ In various healthcare facilities, *B. cepacia* has been recognised as a major contaminant and has been recovered from medications, disinfectants like 0.5% chlorhexidine gluconate (CHG), as

well as different equipment.⁶ Remarkably, Bcc bacteria also possess the capacity to survive and proliferate in water-based environments, such as water bodies, lakes, rivers, drinking water, and liquids containing small amounts of nutrients.⁵

In addition to being responsible for causing serious infections in individuals with pre-existing conditions like cystic fibrosis, case reports from around the globe state the isolation of this bacteria in endocarditis, septic arthritis, Urinary tract infection, infected pancreatic pseudocyst, and keratitis.^{7,8,9,10,11}

This is a one-of-a-kind case in which *B. cepacia* was isolated from peri-pancreatic fluid in a patient with acute necrotising pancreatitis. *Escherichia coli*, *Klebsiella pneumoniae*, *Enterobacter* spp., and *Enterococcus* spp are the most Common pathogens associated with acute pancreatitis, and other organisms involved are *Pseudomonas aeruginosa*, *Staphylococcus* spp., *Streptococcus* spp., and *Bacteroides*. Although frequently associated with immunocompromised hosts, *Burkholderia* species are emerging pathogens in healthcare settings. Infection of necrotic collections marks a critical stage in the progression of acute pancreatitis, and infected necrosis, the leading cause of death in AP, has a mortality rate of 30 to 35%. The infection mechanisms are varied and include, in decreasing order of frequency: iatrogenic causes, intestinal bacterial translocation, colonic micro-perforations with associated microvascular involvement, hematogenous spread, and duodenobiliary reflux through a pancreatic fistula.¹²

CONCLUSION

The emerging pathogen *B. cepacia* is frequently missed in clinical settings, largely due to limited awareness and a low level of suspicion among both microbiologists and clinicians. To accurately assess the prevalence of its infections in our country, this organism warrants greater attention. Given that *B. cepacia* is not fastidious and does not require special growth conditions, it is recommended that all non-fermenting isolates be routinely identified to the species level as part of standard microbiological protocol.

Conflict of Interest: None

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Written informed Consent: Taken

REFERENCES

1. Shi H, Chen X, Chen L, Zhu B, Yan W, Ma X. Burkholderia cepacia infection in children without cystic fibrosis: a clinical analysis of 50 cases. Front Pediatr. 2023 May 15;11:1115877.
2. Ibrahim T, Abdallah TA, Abdallah A, Qazi R, Alimam A, Mohammad H, et al. Epidemiology, microbiological, clinical characteristics, and outcome of Burkholderia cepacia complex infections in non-cystic fibrosis adult patients from Qatar. IJID Reg. 2024 Mar 26;11:100355.
3. Marrs ECL, Perry A, Perry JD. Evaluation of Three Culture Media for Isolation of Burkholderia cepacia Complex from Respiratory Samples of Patients with Cystic Fibrosis. Microorganisms. 2021 Dec 16;9(12):2604. doi: 10.3390/microorganisms9122604. PMID: 34946206; PMCID: PMC8705780.
4. Clinical and Laboratory Standards Institute (CLSI). Performance standards for antimicrobial susceptibility testing. 35th ed. CLSI supplement M100. Wayne, PA: Clinical and Laboratory Standards Institute; 2025.
5. Tavares Tavares M, Kozak M, Balola A, Sá-Correia I. Burkholderiacepacia complex bacteria: a feared contamination risk in water-based pharmaceutical products. Clin Microbiol Rev. 2020;33:e00139-19.
6. Suhartono S, Mahdani W, Muzayanna NN. Prevalence of Burkholderia cepacia recovered from clinical specimens in the Zainoel Abidin general hospital, Banda Aceh, Indonesia. Iran J Microbiol. 2023 Feb;15(1):38-44. doi:10.18502/ijm.v15i1.11916. PMID: 37069904; PMCID: PMC10105269.
7. Yonas E, Damay V, Pranata R, Nusarintowati N. Infective endocarditis due to Burkholderia cepacia in a neonate: a case report. J Med Case Rep. 2018;12:120.
8. Koo J, Deans GD. A rare case of Burkholderia cepacia complex septic arthritis. Case Rep Infect Dis. 2018 Sep 16;2018:6232760. doi:10.1155/2018/6232760.
9. VS K, Oommen AT, S TM, Henry RA, MV O. Case report of a patient with Burkholderia cepacia urinary tract infection with prostatitis and prostatic microabscess. Asian J
10. Rawi S, Mago S. 1309: Multi-drug resistant

Burkholderia cepacia-infected pancreatic pseudocyst.
Am J Gastroenterol. 2019 Oct;114(Suppl): S727.

11. Ho MC, Kang EYC, Yeh LK, et al. Clinico-microbiological profile of Burkholderia cepacia keratitis: a case series. Ann Clin MicrobiolAntimicrob. 2021;20:6.

12. El Boukili I, Boschetti G, Belkhodja H, Kepenekian V, Rousset P, Passot G. Update: Role of surgery in acute necrotising pancreatitis. J Visc Surg. 2017 ;154(6):413-420.