

Case Report

Burkholderia cepacia sepsis in a patient with Acute Pancreatitis: A Case Report from Nepal

Bikash Khadka^{1*}, Kishor Khanal², Samip Budhathoki³, Anup Ghimire², Ashim Regmi²DOI: <https://doi.org/10.3329/bccj.v10i2.62209>**Abstract:**

Burkholderiacepacia is a rarely diagnosed infection in Nepal. Most cases of B.cepaciaare reported from South East Asia. It can present with a wide spectrum of clinical manifestations ranging from pneumonia to septicemia. We present a case of a 29-year-old man who had acute pancreatitis and was admitted to the hospital due to sepsis. B.cepacia was isolated from ascitic fluid and was successfully treated with intravenous antibiotics.

Keywords: Burkholderia; Pancreatitis; Septicemia.

Introduction

B.cepacia is a catalase-negative, non-lactose fermenting, aerobic gram negative bacillus.¹ It is a well-known pathogen that causes infections in immunocompromised and/or hospitalized patients, such as those with cystic fibrosis, chronic granulomatous diseases, or those taking steroids. It is often found to be resistant to multiple conventional antibiotics and can be fatal.

Case Details

A 29-year-old man with no significant medical history presented in the emergency department with complaints of pain in his upper abdomen for 3 days. It was acute on onset, was associated with a general feeling of fullness in the abdomen and was relieved while bending forward. He was afebrile and his vitals were stable at the time of admission. His physical examination revealed decreased breath sounds with occasional rhonchi in the left lower lung zone. The abdomen was grossly distended, the liver and spleen were palpable and there was tenderness over the epigastric region. His laboratory tests revealed total white cell count of 14,220 cells/cu mm with a neutrophilic predominance, aspartate aminotransferase (AST) of 106 U/L, alanine aminotransferase (ALT) of 71 U/L, RBS of 156 mg/dl and total bilirubin of 3.8 mg/dl. His prothrombin time/international normalized ratio (PT/INR) was 16.1/1.15. Serum lipase and amylase levels were significantly elevated, at 1355 and 330 U/L, respectively. His corrected serum calcium level was 7.3 mg/dl. On the day of admission, a CT scan revealed an acute edematous pancreas with peripancreatic collection, ascites, and bilateral pleural

effusion. Modified CTSI: 6/10 [Image:as below].He was then transferred from the ER to ICU for further care and management. The patient was treated with IV antibiotics (ceftriaxone and vancomycin), IV fluids, analgesics and was kept nothing per oral. The next day, he developed a systemic inflammatory response, with tachycardia (154 beats/min), tachypnea (24 breaths/min), saturation 87 percent at 15 liters via nasal mask, and a fever of 102.7°F without a clear source. The patient get intubated and was on ventilator support. A USG-guided ascitic tap was performed, and 50 mL of deep yellow, turbid fluid was aspirated and sent to the laboratory for further investigations.

The fluid was cultured in Brain-Heart-Infusion broth and incubated in BACTEC for 5 days. On 5th day of incubation, positive growth was indicated and the broth was sub-cultured on blood agar, MacConkey agar and chocolate agar and incubated for 72 hours at 35 degree Celsius. Smooth, grey, translucent colonies with hemolysis and without pigmentation were seen on blood agar plate. The colonies were subjected to catalase and oxidase test where they were both catalase and oxidase positive. Further biochemical testing were carried out on TSI (triple sugar indole) agar, SIM (sulphide, indole, motility) medium, Simon's citrate agar and Christensen's urease agar and incubated at 35 degree C for 18 to 24 hours. The bacterium was non-fermentative, motile (with surface pellicle), utilized citrate and did not hydrolyse urea. Further tests were carried out where the colonies from BAP (blood agar plate) were subcultured on 2 new plates of BA. One plate was incubated at 42 degree Celsius for 24 hours. While in another BAP, Kirby-Bauer disk diffusion method was employed with colistin 10 ug placed in initial inoculation and amoxicillin-clavulanate 20/10 ug in primary area of inoculation and incubated at 35 degree Celsius for 24 hours. Colonies were seen growing on BAP incubated at 42 degrees. And in another BAP with antibiotic disks, no zone of inhibition was seen around colistin and amoxicillin-clavulanate. Presence of gram-negative characters in Gram stain, presence of positive oxidase activity and resistance to polymyxin and amoxicillin-clavulanate, and

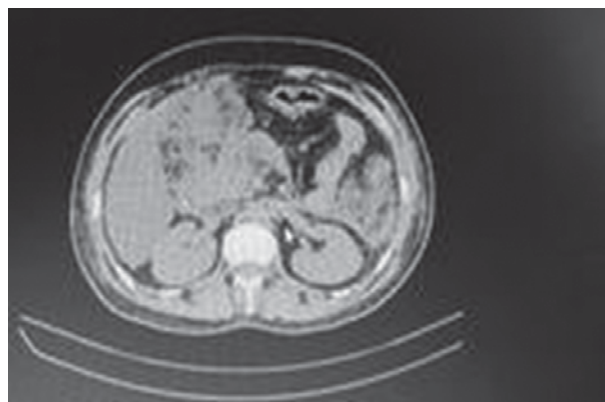
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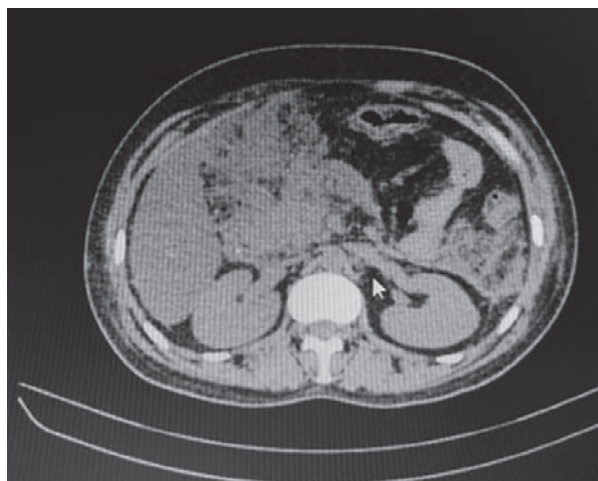
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growth at 42 degree Celsius suggested the isolated organism to be likely *Bulkholderiacepacia* complex. For confirmation, the colonies were subcultured on BCSA (*Bulkholderia Cepacia* Selective Agar) and incubated at 35 degree Celsius for 72 hours. Small, yellow color colonies with light pink zone were isolated after 48 hours.

Kirby-Bauer disk diffusion test was done to determine the sensitivity of the bacterium to a range of antibiotics. The isolated *Bulkholderiacepacia* complex was sensitive to co-trimoxazole, ceftriaxone, imipenem, and tigecycline. Reports were significant for a markedly elevated total count of 3650 cells/cumm with lymphocyte predominance of 60%. A repeat CT scan of the abdomen and pelvis was done after 7 days of admission revealed a patchy area of collapse/ consolidation in the left lower lobe and minimal right pleural effusion. The spleen and liver measured 13.1 and 21 cm, respectively.



A



B



C



D



E

Figure (A) CT film of abdomen illustrating acute edematous pancreatitis along with peripancreatic collection at the time of admission. Figure (B): serial CT film 1 week after admission. Figure (C): CT film of abdomen after 2 weeks Figure (D) Chest X Ray film at the time of admission demonstrating left sided pleural effusion Figure (E) Chest Xray film after a day of pleural tapping being done

Figure demonstrating CT abdomen and Chest X-ray which showed pancreatitis and pleural effusion.

Case Management

The patient was put under IV antibiotics coverage. Feeding was withheld initially and the nasogastric tube was kept on free drain. Abdominal girth and pressure monitoring was done regularly twice a day. USG guided peritoneal and pleural fluid tapping was done for diagnostic purposes which revealed WBC count of 3650 cells/cu mm in ascitic fluid. Blood culture was negative; *B. cepacia* organism growth was seen in ascitic fluid culture. The organism was sensitive to imipenem, cotrimoxazole and tigecycline, thus imipenem continued for a total of 14 days. Incentive spirometry and chest physiotherapy were continued.

Outcome and followup: Gradual improvement was seen. Oral feeding was started gradually and maintained accordingly with caloric requirements. Active mobilization was done. Pan culture was repeated after 10 days which came negative and antibiotic coverage was tapered off.

Discussion

There have been numerous case reports of *B. cepacia* infection in patients with cystic fibrosis and in immunocompromised patients, but sepsis associated with acute pancreatitis has only been reported a few times in the literature. The isolation of *B. cepacia* in the ascitic fluid followed by resolution of pancreatitis after the treatment of *Burkholderia* confirms the association of *B. cepacia* and pancreatitis. However, no obvious risk factors to predispose the patient for the particular infection could be identified.

This is a one-of-a-kind case in which *B. cepacia* was isolated from ascitic fluid in a patient with acute pancreatitis. A wide range of infectious agents have been linked to acute pancreatitis. The most common bacterial causes are mycoplasma, legionella, leptospira, and salmonella, and only a few people have distinct symptoms caused by these organisms.² Generally, infectious etiology in acute pancreatitis is not considered. Exudative fluid collection in the pleural and abdominal cavities, as seen in this patient, may be a secondary effect of pancreatic inflammation. Septic presentation in this patient could be due to *B. cepacia* bacteremia. *B. cepacia* complex is frequently found in hospital fluids (e.g., irrigation solutions, intravenous fluids, antiseptic solutions, hand foams).³ It is not a normal gut microbiota, so iatrogenic inoculation or ingestion should be suspected in our case. It is often highly resistant to multiple antibiotics. If in-vitro susceptibility testing is available, it can be used to aid in the selection of antibiotics. There aren't many options available for treatment, but some isolates were found to be sensitive to trimethoprim-sulfamethoxazole, doxycycline, ceftazidime, and/or meropenem.⁴ When no single antibiotic is effective, combinations of two or more antibiotics are sometimes found to be effective.⁵ However, no optimal treatment regimen has been reported. In our case, antibiotic coverage was done according to sensitivity in culture reports.

In the cohort including patients with *B. cepacia*, the majority had serious comorbidities such as diabetes, chronic obstructive pulmonary disease (COPD), malignancy, and

congestive heart failure.⁶ This patient did not have any specifics as mentioned above, neither had any pulmonary conditions like cystic fibrosis or had taken medicine for any chronic conditions.

A conclusion couldn't be reached about how this person got infected with this bacterium. The bacteria being resistant to drugs, should not be overlooked due to low suspicion, especially in patients with pancreatitis. Thus, awareness among microbiologists and clinicians regarding this emerging pathogen should be considered in patients who aren't immunocompromised, and also the pattern of disease inoculation in hospital settings should be looked for.

Conclusion

We report a case of acute pancreatitis presenting on sepsis which was associated with *B. cepacia* infection and this is a rare case as many cases have not been reported yet. It is certain, there are limitless opportunities to study such cases and many more associated with *B. cepacia*, including risk factors, prevalence, pattern of contamination and management if isolated.

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