

## Case Report



# A Rare Case of Burkholderia Cepacia Complex Septicemia in a Newborn

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### Abstract

*Burkholderia cepacia complex (Bcc) has rarely been reported to cause sepsis in newborn. A case in a newborn male was reported in a tertiary hospital in northern part of Bangladesh. Khwaja Yunus Ali Medical College and Hospital, Sirajganj. The baby was born to a preeclamptic mother. He was quite well after a normal vaginal delivery. After 6 days, the baby was admitted to neonatal ward on complaint of dyspnea and fever. Antibiotic therapy was begun after samples for hemocultures were obtained with the suspicion of sepsis according to the clinical and laboratory findings. At the same time, he had a respiratory distress and grunting along with the absence of crying for a prolonged period of time. He was jaundiced. Blood culture revealed the presence of Bcc. The patient was sent to Intensive Care Unit for resuscitation. Antibiotic susceptibility test of the blood specimen showed sensitivity to amikacin, ceftazidime, trimethoprim-sulfamethoxazole, meropenem and levofloxacin. Symptoms improved with medical support along with the antimicrobial therapy. This case highlights the importance of diagnostic blood culture of an acutely sepsis condition to obtain a specific etiological diagnosis and management.*

**Keywords:** *Burkholderia Cepacia Complex (BCC), Septicemia, Newborn*

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### Introduction

*Burkholderia cepacia*, a Gram-negative aerobic bacillus formerly known as *Pseudomonas cepacia*, was first identified in 1950 from the rot of onion bulbs.<sup>1</sup> Bcc is composed of closely related 24 species of bacteria found ubiquitously in nature. Organisms from this complex are well-known opportunistic pathogens.<sup>2</sup>

Bcc are commonly isolated from the patients with cystic fibrosis, lung transplantation, and chronic granulomatous disease. However, sepsis due to Bcc are rare in neonates with a very few reported cases.<sup>3,4</sup> Usually group B streptococcus (GBS) and *Escherichia coli* are the most common etiologic agents causing neonatal sepsis.

### Case summary

A male baby was delivered at 38 weeks of gestation to a 22-year-old primigravida preeclamptic mother was transferred to neonatal ward at the age of 6 days. He was on complaint of dyspnea with the evidences of sepsis, and antibiotic therapy was begun after samples for hemocultures were obtained with the suspicion of sepsis according to the clinical and laboratory data. The mother was suffering from hypertension since 32<sup>nd</sup> weeks of gestation. She had a moderate proteinuria.

The infant began having unstable vital signs after 5 days of life. An initial analysis of arterial blood gases showed a PCO<sub>2</sub> of 51 mm Hg, a pH of 7.19, and a PO<sub>2</sub> of 80 mm Hg,

An initial total WBC count showed leucopenia (3500/ mm<sup>3</sup> of blood) with an evidence of neutropenia. The platelet count was 50,000/ mm<sup>3</sup> at that time.

Initially, the infant received an empirical antibiotic therapy with amikacin and cefotaxime. Antibiotic therapy was changed to meropenem (40 mg/kg per dose twice daily) and amikacin (10 mg/kg per dose in two divided doses) IV, based on the infant's blood culture and sensitivity test. The use of IgGAM shows beneficial effects on sepsis-related inflammation and coagulopathy. For adjunctive sepsis therapy with IV Ig, IgM-enriched formulations may be advantageous for specific patients. The baby also received an infusion of intravenous immunoglobulin at a daily dose of 250 mg/kg.

He was reported jaundiced, prolong non-crying state and with respiratory distress. The relevant investigations were done.

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**The vital signs were as follows:**

Heart rate 130 bpm

Temperature 100°F

Respiratory rate: 65 / min

Body weight: 3.0 Kg

Blood Sample was inoculated on MacConkey agar and 5% sheep blood agar. Gram negative organisms were analyzed for the BD Phoenix™ M50 Automated Microbiology System. In total 45 substrates including carbohydrates, amino acids and proteins were used for the observation of biochemical reactions of the organism. The same equipment was used to investigate the antimicrobial susceptibility test (AST). All the procedures were performed according to the manufacturer's instruction. A sealed and self-inoculating molded polystyrene tray with 136 micro-wells containing dried reagents, serves as the BD Phoenix disposable. The combination panel includes identification (ID) side with dried substrates for bacterial identification and an AST side with varying concentrations of antimicrobial agents, growth and fluorescent controls at appropriate well locations. The BD Phoenix system utilizes an optimized colorimetric redox indicator for AST and various colorimetric and fluorometric indicators for ID.

**Discussion**

Sepsis in newborn caused by Bcc is rarely reported.<sup>5</sup> Most previous case reports involved patients who were immunocompromised, at extremes of age or who had history of steroid injection or penetrating trauma.<sup>6,7</sup> The first reported case occurred in an immunocompromised patient who experienced a spontaneous infection after allogeneic stem cell transplant for angioimmunoblastic T-cell lymphoma.<sup>8</sup>

After getting the lab report regarding the ID and AST, the antibiotic was changed to meropenem and amikacin to treat the infection against Bcc; along with other medical support the patient ultimately got improved to the infection. The organism also showed sensitive to ceftazidime, levofloxacin, cotrimoxazole. Many hospitals faced difficulties to eradicate Bcc despite in vitro antibiotic sensitivity.<sup>9</sup>

The source of infection is not so clear as it may be due to iatrogenic or nosocomial infection which might lead to this septicemia during the hospital-stay of the baby.<sup>3</sup>

Our case of Bcc septicemia in a neonate with no known compromise of his immune system likely represents bacteremic spread associated with his history of hospital stay along with hospital-admitted mother.

**Conclusion**

Our report of a case of septicemia in neonate with Bcc in a patient thought initially to have an infection acquired from hospital highlights the importance of diagnostic blood culture of a sepsis patient. Appropriate blood analysis including a Gram

stain and culture besides other relevant tests can provide a specific etiological diagnosis and help in evaluation of a possible concurrent infectious process. The possibility of an infectious process must always be borne in mind. Due to the modern technologies used in our lab, it became easier to get the true identification of this uncommon bacteria.

When infection is present, the results of culture and susceptibility testing inform appropriate medical decision-making regarding source control and antimicrobial therapy.

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