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Case Report

URINARY TRACT INFECTION BY *BURKHOLDERIA CEPACIA* IN A MALE CHILD: A RARE CASE REPORT

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Abstract: *Burkholderia cepacia* organisms are typically found in water and soil and can survive for prolonged periods in moist environments. They usually cause nosocomial infections in immunocompromised patients. They are resistant to multiple antibiotics. Rarely they can cause urinary tract infection in immunocompromised patients. In our case, a 13 year old boy presented with features of Urinary Tract Infection (UTI). He was diagnosed to have posterior urethral valve and operated. After 1 week of discharge, he came again with features of UTI. Culture urine revealed growth of *Burkholderia cepacia*. It was only sensitive to Ceftazidime. He was given IV ceftazidime. He recovered and discharged. This organism should be suspected when UTI is seen in male patients with obstructive features.

Key Words: Burkholderia cepacia, Urinary tract infection, Antibiotics, Nosocomial, Male Patient

Introduction: *Burkholderia cepacia* complex (BCC), or simply *Burkholderia cepacia*, is a group of catalase-producing, lactose-nonfermenting, Gram-negative bacteria composed of at least 18 different species, including *B. cepacia*, *B. multivorans*, *B. cenocepacia*, *B. vietnamiensis*, *B. stabilis*, *B. ambifaria*, *B. dolosa*, *B. anthina*, *B. pyrrocinia* and *B. ubonensis.[1] B. cepacia* is an opportunistic human pathogen that most often causes pneumonia in immunocompromised individuals with underlying lung disease [2]. BCC organisms are typically found in water and soil and can survive for prolonged periods in moist environments. They show a relatively poor virulence. Virulence factors include adherence to plastic surfaces (including those of medical devices) and production of several enzymes such as elastase and gelatinase. Also relevant might be the ability to survive to attacks from neutrophils [3]. Person-to-person spread has been documented; as a result, many hospitals, clinics, and camps have enacted strict isolation precautions for those infected with BCC.

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Treatment typically includes multiple antibiotics and may include ceftazidime, doxycycline, piperacillin, meropenem, chloramphenicol, and trimethoprim/ sulfamethoxazole [4]. Although co-trimoxazole has been generally considered the drug of choice for *B. cepacia* infections, ceftazidime, doxycycline, piperacillin, and meropenem are considered to be viable alternative options in cases where co-trimoxazole cannot be administered because of hypersensitivity reactions, intolerance, or resistance.

UTI is the most common infectious complication in nosocomial setting which contributes significantly to mortality and morbidity. Structural abnormalities, urological procedures, placement of stents, colonization of indwelling urinary catheters or bladder irrigation with contaminated fluids are the established risk factors [5]. These risk factors may provide nidus for bacterial growth leading to infections and also contribute to recurrence. Members of Enterobacteracea family are the main causative pathogens causing UTI in this patient population [6]. However, rare opportunist organisms which are usually considered as contaminants could cause infections. *Burkholderia cepacia* is not a common genito-urinary tract infection causing pathogen and is usually introduced after some urological procedures or catheterization [7].

We report a case of recurrent urinary tract infections with *B. cepacia* in a 13 year old boy with posterior urethral valve with chronic kidney disease responded on a course of Ceftazidime.

Case Report: A 13 year old boy gave history of on and off fever with burning micturition for one year. He was put on repeated doses of antibiotics. He was evaluated in our hospital and diagnosed to have posterior urethral valve. He was operated and the recovery was normal. Urine detailed report (DR) and urine culture were unremarkable. He was discharged home on baseline creatinine of 2.09mg/dl.

Within a week, he presented with high grade fever with serum creatinine level of 2.2mg/dl. Urine microscopy revealed plenty pus cells and motile bacilli. Urine culture showed growth of 10^5 cfu/ml of non lactose fermenter, oxidase positive gram negative rods. *Burkholderia cepacia* was identified by MALDI-TOF sytem (Vitek MS-Biomerieux). Disc diffusion method was used for susceptibility testing according to Clinical Laboratory Standard Index (CLSI) recommendations. It was found sensitive only to Ceftazidime and Cotrimoxazole. It was resistant to Gentamicin, Aztreonam, Amikacin Imipenem, Levofloxacin, Meropenem, Cefoperazone-Sulbactam and Piperacillin-Tazobactam. After initial intravenous antibiotics of Ceftazidime, his creatinine decreased to the baseline and he was asymptomatic. He was discharged after 2 weeks.

On his next follow up visits he was asymptomatic with normal base line renal function and negative urine culture.

Discussion: Urinary tract infection is an important infectious complication in nosocomial setting. *Burkholderia cepacia complex* (BCC) is ubiquitous in our environment and has been recognized as a group of highly virulent organisms in Cystic fibrosis (CF) and chronic granulomatous disease (CGD).

However, it has wide spectrum of infections ranging from superficial to deep-seated and disseminated infections in non-CF population [8]. Exposure to contaminated hospital instruments and chemicals contributes to *B.cepacia* associated nosocomial infections [9]. Previously Li et al reported a case of Burkholderia urinary tract infection in renal transplant recipients which ended up with graft nephrectomy.

Our organism was resistant to multiple groups of antibiotics.

The source of infections could not be elucidated and it may have been acquired during the posterior urethral valve surgery. Ultrasound is considered a good method for

screening or evaluating the kidney for structural abnormalities and should be done in male patient with UTI.

The cystoscopic examination is subjective to expertise and finding can be missed easily by an inexperienced examiner. Unfortunately proper water and other environmental culture were not considered which could rule out environmental factors.

Conclusion: Although, Burkholderia mainly causes respiratory infections, it may cause urinary tract Infections in patients with obstructive features.

Proper antibiotic therapy is essential for good recovery.

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