



Nosocomially Acquired Post Partum Bacteremia Due to *Elizbethkingia Meningoseptica* : A Case Study

KEYWORDS

Elizbethkingia meningoseptica, nosocomial, bacteremia, post partum

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ABSTRACT *Post partum period is a state of impaired immunological response predisposing the mother to a variety of nosocomially acquired infections. We report a case of bacteremia due to *Elizbethkingia meningoseptica* in a 22 year female in her post partum period. *Elizbethkingia meningoseptica* is a common contaminant of the hospital environment causing wide spectrum of infections in immunocompromised patients. Isolation and identification of this bacterium is important due to its natural resistance to multiple antibiotics.*

Introduction

An increase of uncommon Gram-negative bacilli has occurred in the last decade in the nosocomial environment. Previously, infections caused by *Elizbethkingia meningoseptica* were rarely identified, but in the last two years we found that several patients were diagnosed with nosocomial infections caused by this agent [1]. In healthcare settings this bacteria is generally found in saline solutions used for flushing and reconstitution of antibiotics as well as in the water sinks and tanks of the hospital [2,3]. Colonization of patients occurs via these contaminated medical devices involving fluids, respirators, intubation tubes, mist tents, humidifiers, incubators for newborns, ice chests, syringes, etc. has been documented [4,5]. It has also been reported to cause endocarditis, eye infections, cellulitis, abdominal infections, epididymitis, bronchitis, sinusitis, etc.[2,3] in immunosuppressed patients with underlying medical diseases, prolonged hospital stay and prior use of higher antibiotics.

Case study

We report a case of 22 year-old- female who presented with high grade fever with chills and rigors and pain abdomen for 10 days, burning micturition and decrease urination since one week. She delivered a male child by cesarean section at a private hospital thirteen days back three days after which she started developing swelling in the abdomen and legs. Later on pus started oozing out from the stichline accompanied with high grade fever.

On clinical examination she was febrile. Her body temperature was 103 degree celcius, blood pressure was 130/88 mm of Hg and pulse rate 34 per minute. There was mild pallor, but no icterus, cyanosis, or clubbing. She had pedal edema. Examination of the respiratory system revealed, respiratory rate was 28/min with oxygen saturation 99%. Her hemoglobin was 9.0 g%, total leucocyte count was 21,000/cu mm with differential leucocyte counts showing predominantly neutrophilia (92%) and 8% of lymphocytes. Her random blood sugar was 150mg/dl, blood urea 103.42 mg/dl and serum creatinine 1.65 mg/dl. Her liver function test was normal. Antibodies to HIV-1 and 2 were non-reactive. Per abdominally her uterus was involuted, stitched line infected and gaped with a small hematoma below the stich line. Per vaginally there was infected lochia with mild bleeding. On the day of admission urine and blood culture were sent. Urine culture revealed *Escherichia coli* with significant bacteria.

Blood culture was incubated in BACT Alert, an automated blood culture system for microbial detection (bioMerieux, France). The culture became positive the next day from which subculture was done on 5% blood agar and Mac Conkey agar and incubated at 37 degree celcius for 18 to 24 hours in

aerobic environment. Grey non haemolytic smooth circular 1-2mm colony with entire edges, regular margins were observed on 5% blood agar with no growth on Mac Conkey agar. On Gram stain, Gram Negative bacilli was seen which was non sporing and non motile. Biochemical reaction revealed catalase and oxidase positive, Indole negative, TSI K/K reaction and citrate was non utilizing. The strain was identified by VITEK 2 Compact System (bioMeerieux, France) as *Elizbethkingia meningoseptica*. Antibiotic susceptibility performed by VITEK 2 system showed the isolate to be sensitive to Ampicillin/sulbactam (MIC <2), Ticarcillin (MIC<8), Piperacillin/Tazobactam (MIC 8), Ceftazidime (MIC 2), Ceftriaxone (MIC 4), Cefoperazone/sulbactam (MIC <8), Imipenem (MIC <1), Meropenem (MIC<0.25), Ciprofloxacin (MIC <0.25), Levofloxacin (MIC 0.5), Tetracycline (MIC<1), Co-trimoxazole (MIC<20) and Tigecycline (MIC <0.5). It was found to be resistant to aminoglycosides (Amikacin, Gentamicin and Tobramycin) and Colistin. Also the isolate was sensitive to Vancomycin by disc diffusion method. Patient was started on empirical treatment with Piperacillin/tazobactam at the time of admission but unfortunately, the patient's condition worsened in spite of starting this antibiotics and succumbed to his illness within a day. After the sensitivity report the antibiotic was changed to Vancomycin and patient responded to it with decrease in the total leucocyte count (12,800).

Environmental samples were also obtained from patients bed railings and saline solutions but did not reveal the pathogen. However, patient might have acquired the infection during the course of treatment in his previous stay at the hospital or during care at his home after the initial discharge and then came back to our centre when clinical signs and symptoms of bacteremia developed.

Discussion

Nosocomial meningitis caused by *Elizbethkingia meningoseptica* both in infants and in adults have been reported by various workers in India over the past decade [5-9]. However, to the best of our knowledge postpartum bacteremia due to this rare pathogen has not being documented from this part of the country.

Elizbethkingia meningoseptica is a ubiquitous waterborne saprophytic bacillus not considered a part of the normal human flora. It rarely causes infection in the post-neonatal immunocompetent host [10]. Environmental studies have shown that this organism can survive in chlorine-treated water, often colonizing sink basins and taps and in ventilator tubing [11,12]. The organism resides in the hospital environment with include contaminated syringes in ice chests, vials, sink drains, sink taps, tube feedings, flush solutions for arterial catheters, pressure transducers, and antiseptic solutions

[13]. From here the organism is transmitted to the susceptible individual either from the health care worker or from direct contaminated sources in the hospital environment.

During partum and post partum period the mother is put on various invasive medical devices such as peripheral venous catheters, with saline being infused in them making them prone to colonization with these rare environmental contaminant which causes infection in these group of individuals having low immunity. This bacteria is usually resistant to multiple antibiotics viz. beta-lactams, aminoglycosides, tetracycline, colistin, etc., making it a very successful nosocomial pathogen causing serious life-threatening infections in these young adult with impaired immunological response.

E. meningoseptica is unique as it a Gram-negative bacillus inherently resistant to many antimicrobial agents commonly used to treat infections caused by Gram-negative bacteria (aminoglycosides, beta-lactam antibiotics, tetracyclines and chloramphenicol) but are often susceptible to agents generally used to treat infections caused by Gram-positive bacteria (rifampicin, clindamycin, erythromycin, trimethoprim-sulfamethoxazole, quinolones and vancomycin) (2). This isolate when also responded to Vancomycin with no response to beta lactam antibiotics. Due to the unpredictable sensitivity pattern of these Gram negative organism the empirical therapy is not usually beneficial.

Due to the ability of this organism to grow unsuspectingly in hospital environment, natural resistance to many antibiotics and ability to cause life threatening infections makes this organism an emerging life threatening pathogen which increases the burden of disease on general population both financially and emotionally.

REFERENCE

1. Pereira GH, Garcia DO, Abbouda CS, Barbosaa VLB, da Silvaca PSL (2013) Nosocomial infections caused by *Elizabethkingia meningoseptica*: an emergent pathogen. *Braz j infect dis* 17(5):606-609 | 2. Ceyhan M, Celik M (2011) *Elizabethkingia meningoseptica* (*Chryseobacterium meningosepticum*) infections in children. *Int J Pediatr* 2011:215237. | 3. Hsu MS, Liao CH, Huang YT, Liu CY, Yang CJ, Kao KL, et al (2011) Clinical features, antimicrobial susceptibilities, and outcomes of *Elizabethkingia meningoseptica* (*Chryseobacterium meningosepticum*) bacteremia at a medical center in Taiwan, 1999-2006. *Eur J Clin Microbiol Infect Dis* 30:1271-1278 | 4. Moulin GS (1979) Airway colonization by *Flavobacterium* in an intensive care unit. *J of Clin Microbiol*. 10(2): 155-160. | 5. Bomb K, Arora A, Trehan N (2007) Endocarditis due to *Chryseobacterium meningosepticum*. *Indian J Med Microbiol* 25:161-162. | 6. Sharma S, Kumar N, Jha A, Baveja U (2011) *Elizabethkingia meningoseptica*: An emerging cause of septicemia in critically ill patients. *J Lab Physicians* 3:62-63. | 7. Dias M, Fernandes A, Furtado Z (2012) Case series: *Elizabethkingia meningoseptica*. *J Clin Diagn Res* 6:1550-1551. | 8. Gokul BN, Chandramukhi A, Ravikummar R, Aroor S (1989) *Flavobacterium meningosepticum* meningitis in a neonate. *Indian J Pediatr* 56:524-527. | 9. Padmaja P, Verghese S, Bhirmanandham CV, Ajith, Thirugnanasambandham S, Ramesh S (2006) *Chryseobacterium meningosepticum*: An uncommon pathogen causing adult bacterial meningitis. *Indian J Pathol Microbiol* 49:293-295. | 10. S. N. Hoque, J. Graham, M. E. Kaufmann, and S. Tabaqchali, (2001) *Chryseobacterium* (*Flavobacterium*) *meningosepticum* outbreak associated with colonization of water taps in a neonatal intensive care unit. *J of Hosp Inf* 47(3):188-192. | 11. Sztajn bok J and Troster EJ (1998) Community acquired *Chryseobacterium meningosepticum* pneumonia and sepsis in a previously healthy child. *J Infect* 37: 310-312 (letter). | 12. Kirby JT, Sader HS, Walsh TR, Jones RN (2004) Antimicrobial susceptibility and epidemiology of a worldwide collection of *Chryseobacterium* spp: report from the SENTRY antimicrobial surveillance program (1997-2001). *J Clin Microbiol* 42: 445-448. | 13. Steinberg JP and Burd EM (2010) Other gram negative and gram variable bacilli. In Mandell GL, Bennett JE and Dolin R, editors. *Mandell, Douglas and Bennett's principles and practice of infectious diseases*, 7th edition. United States: Churchill Livingstone. 3015-3033. |