



Neonatal Meningitis Caused by Elizabethkingia Meningoseptica: A Case Report

Shamima Akhter¹, Md. Tafazzal Hossain Khan², Md. Shameem³, Rubiya Parvin³, Md. Tariqul Islam³, Nasreen Sultana³, Debabrata Roy¹, Rumman¹

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Abstract:

Neonatal meningitis is a serious medical illness that is rapidly fatal if untreated. Elizabethkingia meningoseptica is a rare organism causing neonatal meningitis but multidrug resistant and outcome is fatal. In this case report septic screening was strongly positive in affected neonate. Cerebrospinal fluid (CSF) analysis revealed purulent meningitis caused by Elizabethkingia meningoseptica, a rare and multidrug-resistant gram-negative bacillus. Despite aggressive management, the neonate deteriorated and expired on the 14th day of her life. This report highlights the importance of maintaining high clinical suspicion and obtaining prompt microbiological diagnosis in neonates with neurological symptoms suggestive of central nervous system infection.

Introduction:

Meningitis during the neonatal period is a potentially devastating condition with long-term consequences. Despite advances in preventive and critical care medicine, bacterial meningitis continues to have an adverse outcome rate of 20 to 60% among its survivors.¹ While Klebsiella, Escherichia coli and Pseudomonas are typical pathogens, rare organisms like Elizabethkingia meningoseptica are emerging, particularly in NICU settings².

Elizabethkingia meningoseptica, is a ubiquitous, glucose non-fermenting, non-motile, catalase,

oxidase positive, and aerobic gram-negative bacillus, commonly found in natural environments such as fresh or salt water, soil and also in hospital environments via contaminated medical equipment, particularly in neonatal wards.^{3,4} It was first reported by bacteriologist Elizabeth O. King in 1959, at the Centers for Disease Control in Atlanta, Georgia, United States of America⁵. E. meningoseptica infection presents mostly as meningitis, bacteremia, skin and soft tissue infection, pneumonia and urinary tract infections in neonates, infants and immunocompromised patients.⁶ As the infection is prone to multidrug resistance, it is difficult to establish standardize

1. Assistant Professor, Department of Neonatology, Sir Salimullah Medical College, Mitford, Dhaka, Bangladesh.

2. Professor, Department, Department of Neonatology, Sir Salimullah Medical College, Mitford, Dhaka, Bangladesh.

3. Associate Professor, Department of Neonatology, Sir Salimullah Medical College, Mitford, Dhaka, Bangladesh.

Corresponding author: Dr. Shamima Akhter, Assistant Professor, Department of Neonatology, Sir Salimullah Medical College, Mitford, Dhaka, Bangladesh. E-mail: dr.sshamima@gmail.com

treatment regimen for *Elizabethkingia meningoseptica*.

Case report:

A term female neonate was admitted at 30 minutes of age to the Neonatal Intensive Care Unit (NICU) of Sir Salimullah Medical College & Mitford Hospital, Dhaka on 21st May, 2024 with a history of delayed crying after birth, convulsion and lethargy. This neonate was delivered by Vaginal delivery at 37 completed weeks of gestation, she didn't cry immediately after birth, resuscitation was done with bag mask ventilation for one minute just after birth. Mother was a primi having regular antenatal checkup with no history of PROM, fever or UTI. In course of treatment on fifth day baby developed fever, poor reflex activities and bulged fontanelle.

Complete Blood Count (CBC) was done which showed Hemoglobin: 13.1 g/dL, Total leukocyte count: 37,700/mm³, Platelet count: 59,000/mm³, CRP was 204mg/dl, Cerebrospinal Fluid (CSF) Analysis showed WBC: 3,500/mm³ (70% neutrophils, 30% lymphocytes), Protein: 366 mg/dL, Glucose: 0.36 mg/dL Gram stain of CSF showed numerous gram-negative bacilli and Culture showed growth of *Elizabethkingia meningoseptica* (only sensitive to Ciprofloxacin and Cefoperazone).

After clinical diagnosis of meningitis neonate was treated with empirical antibiotic Cefotaxim and Amikacin. As the CSF culture revealed only ciprofloxacin and cefoperazone were sensitive, antibiotics were changed to these sensitive antibiotics. Additional NICU care included oxygen, intravenous fluids and nutritional support, CPAP care, Platelet transfusion. Neonate was followed up with close neurological and cardiorespiratory monitoring. Neuroimaging was planned but could not be performed due to compromised clinical condition. During the course of time her condition deteriorated progressively, developed intractable seizure and severe respiratory distress. Despite aggressive management baby expired on the 14th day of her life.

Discussion:

E. meningoseptica is a rare cause of meningitis in newborns, mostly associated with premature birth

and fifty percent of the infections occur in low-birth-weight neonates and produces severe post infectious sequelae including brain abscesses, hydrocephalus, deafness and developmental delay.⁷ But this neonate was term.

Most of the infections are generally nosocomial and has been associated with immunosuppression, underlying medical illness, prolonged hospital stays, prior exposure to multiple antibiotics, indwelling central venous catheter, and other invasive devices.⁸ Some of the risk factors were also common in this neonate such as underlying medical illness and prolong hospital stay.

Sensitivity pattern of *Elizabethkingia meningoseptica* is different from other Gram-negative rods. This bacterium is characterized by its inherent resistance to aminoglycosides, β -lactam agents and carbapenems and also by its susceptibility to Rifampicin, Ciprofloxacin, Vancomycin and Trimethoprim-Sulfamethoxazole⁹. But in our case study *Elizabethkingia meningoseptica* was sensitive to ciprofloxacin and cefoperazone, but the clinical outcomes were below expectations.

Conclusion:

Despite the usual organisms being more common, rare causes of neonatal meningitis should be kept in mind. This is a rare case of neonatal meningitis in NICU of our daily practice.

Conflict of Interest:

The authors stated that there was no conflict of interest in this study

Funding:

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Consent:

For the purpose of publishing this case report and any related photos, the parents were written informed consent was acquired.

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