Original Article

Silent Invader: One-year case series of Neonatal Elizabethkingia Septicemia

Jinsa Elesabeth Jacob[1], Kiran Gopal[2], Syed Ali A[3], Saritha N[4]

[1]Junior Resident, Department of Microbiology, Government Medical College, Thiruvananthapuram, Kerala, India. [2]Assistant Professor, Department of Microbiology, Government Medical College, Thiruvananthapuram, Kerala, India. [3]Associate Professor, Department of Microbiology, Government Medical College, Thiruvananthapuram, Kerala, India. [4]Professor and HOD, Department of Microbiology, Government Medical College, Thiruvananthapuram, Kerala, India

Abstract

Background: Elizabethkingia species are non-fermenting, Gram-negative bacilli. They are emerging pathogens in hospital settings, primarily causing nosocomial infections in neonates. **Material and Methods:** A study was conducted in neonatal intensive care unit of Sri Avittam Thirunal Hospital, Thiruvananthapuram over a period of one year (October 2024 to September 2025). Blood samples from preterm neonates with suspected sepsis were collected in BACT/ALERT bottles sent to Microbiology laboratory for culture and sensitivity. Once positive signal was detected by the BACT/ALERT system, organism was grown in routine culture media and identified based on biochemical reactions. Antimicrobial susceptibility testing showed sensitivity to Vancomycin, a unique clue for identification. The species level identification was by MALDI-TOF and VITEK 2 system. **Results:** Elizabethkingia species was isolated from 11 preterm neonates (6 males, 5 females) suspected with late-onset septicemia. Common presenting features were poor activity, feeding intolerance and respiratory distress. Elizabethkingia meningoseptica and Elizabethkingia anophelis were the predominant species isolated. They showed resistance to β-lactams and aminoglycosides, with susceptibility to Fluoroquinolones, Cotrimoxazole, Minocycline and Vancomycin. Combination therapy with Cotrimoxazole, Ciprofloxacin and vancomycin led to clinical improvement in all cases except for one child, whose neurodevelopmental follow-up revealed hydrocephalus. During monthly environmental surveillance conducted in neonatal ICU, no Elizabethkingia species were isolated from any of the samples. **Conclusion:** Elizabethkingia species is an important emerging pathogen especially in late-onset neonatal sepsis with high resistance to conventional antibiotics. Early identification and appropriate antimicrobial therapy are crucial for favorable outcomes. The implementation of stringent infection control practices remains crucial to prevent neonatal septicemia caused by Elizabethkingia species.

Keywords: Elizabethkingia species, Neonatal septicemia, Non fermenting Gram-negative bacilli.

Received: 01 May 2026 **Revised: 20 May 2026** **Accepted: 10 June 2026** **Published: 02 July 2026**

Introduction

Elizabethkingia species

- Non-motile, Non-fastidious, Non-fermenting Gram-negative bacilli.
- Emerging pathogen in hospital settings.[1]

Primarily cause nosocomial infections in immunocompromised or critically ill populations [1].

- Different species are Elizabethkingia meningoseptica, Elizabethkingia anophelis, Elizabethkingia miricola.
- Most common presentation- Neonatal meningitis followed by bacteremia.[2]
- Affects premature infants during the first 2 weeks of life.[3]
- Brain abscesses and other severe sequelae are common.[4]
- Presenting a case series of 11 preterm neonates with Elizabethkingea septicemia
- From Neonatal ICU of Sri Avittam Thirunal Hospital, Thiruvananthapuram over a period of one year (October 2024 to September 2025).

Materials and Methods

- Blood samples from neonates with suspected sepsis in BACT/ALERT bottles sent to Microbiology laboratory for culture and sensitivity. Gram stain showed long, thin, slightly curved gram-negative bacilli. Blood agar showed smooth and large, non hemolytic, pale-yellow colonies. MacConkey agar showed non lactose fermenting colonies.

Biochemical reactions: Non-motile, Oxidase positive, Non fermenting organism.

Antimicrobial susceptibility testing showed Sensitivity to Vancomycin, a unique clue for identification.

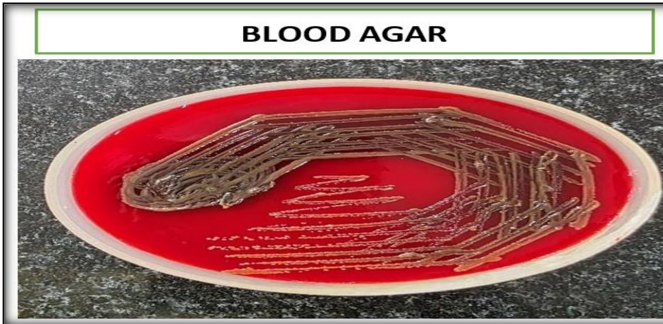
Species level identification was done by MALDI-TOF (Vitek - MS) and VITEK 2 system.[5,6]

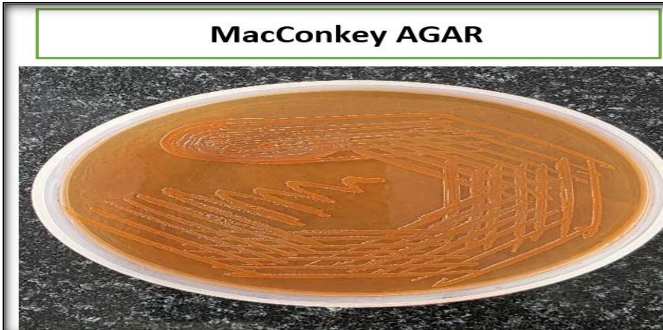
Address for correspondence: Dr. Kiran Gopal, Assistant Professor, Department of Microbiology, Government Medical College, Thiruvananthapuram, Kerala, India.
E-mail: kirangopal6@gmail.com

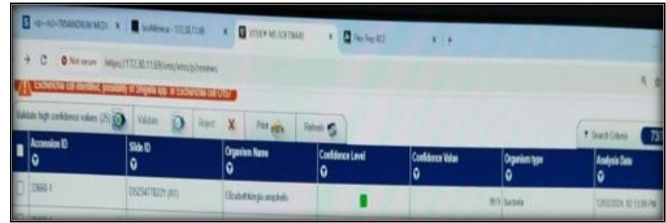
DOI:
10.21276/amit.2026.v13.i2.793

How to cite this article: Jacob JE, Gopal K, Ali AS, Saritha N. Silent Invader: One year case series of Neonatal Elizabethkingia septicemia. Acta Med Int. 2026;13(2):911-913.

© 2026 Acta Medica International | Published by Parsvnath Publishing House







Results

- Elizabethkingia species isolated from 11 neonates (6 males, 5 females)
- Suspected with late-onset septicemia.
- Mean age of onset -16days
- Common presenting features - Respiratory distress, Poor activity, feeding intolerance, Fever.

Gestational Age	No of Cases
Extreme Preterm	4
Moderate Preterm	1
Late preterm	4
Term	2
Total	11
Birth weight	**No of Cases**
Extremely low birth weight	1
Very low birth weight	3
Low birth weight	7
Total	11

Birth weight	No of Cases
Extremely low birth weight	1
Very low birth weight	3
Low birth weight	7
Total	11

Microbiological findings

Organism	Blood (n=3)	Blood +CSF (n=8)	Total (11)
Elizabethkingia meningoseptica	1	7	8
Elizabethkingia anophelis	2	1	3

ANTIBIOTICS	Elizabethkingia species (n=11)	
	No	%
Trimethoprim+ sulfamethoxazole	11	100%
Piperacillin+tazobactam	9	82%
Cefoperazone-sulbactam	10	90%
Ciprofloxacin	11	100%
Meropenem	0	0
Vancomycin	11	100%
Minocycline	11	100%

Treatment and Outcome

- Initially all neonates were started on empirical antibiotic therapy with Piperacillin-Tazobactam, Amikacin, Cefoperazone-Sulbactam.
- Modified based on the culture and sensitivity report.
- Treatment- Combination therapy with Cotrimoxazole, Ciprofloxacin and Vancomycin for 14-28days.
- All neonates recovered.

Discussion

- Elizabethkingia septicemia has got marked predilection for preterm and low birth weight infants.

Vulnerability of preterm neonates may be due to

- Immature immune systems
- Underdeveloped skin and mucosal barriers
- Necessity for intensive care procedures.
- Progress of treatment- Monitored by CSF analysis and serial Neurosonography.
- In neonates with ventriculitis and abnormal CSF counts, duration of antibiotics was extended to 28days.[3]

Combination therapy led to clinical improvement in all cases except for one child, whose neurodevelopmental follow-up revealed hydrocephalus.

- Infection control practices was strengthened in NICU during each case.
- Patient was isolated and contact precautions were taken to prevent spread of infection.
- Monthly environmental surveillance conducted in neonatal ICU
- No Elizabethkingia species were isolated from any of the samples.[4]

Enhanced infection prevention and control measures were implemented

- Reinforcement of hand hygiene
- Environmental cleaning
- Equipment sterilization
- Water source surveillance.[5]

Conclusion

- Elizabethkingia neonatal sepsis is clinically significant cause of morbidity and mortality among preterm neonates.
- Early recognition, accurate microbiological identification, prompt initiation of appropriate antimicrobial therapy are essential.
- Stringent infection prevention and control measures.
- Regular environmental surveillance.
- Establishment of standardized antimicrobial guidelines for managing Elizabethkingia infections in neonatal intensive care settings.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Tille PM. Bailey & Scott's Diagnostic Microbiology 15th ed. St.louis (MO): Elsevier;2021
2. Bennett JE, Dolin R, Blaser MJ, editors. Mandell, Douglas, and Bennett's principles and practice of infectious diseases. 10th ed. Philadelphia, PA: Elsevier
3. Baruah FK, Borkakoty B, Ahmed A, Bora P. Neonatal meningitis and septicemia caused by multidrug resistant Elizabethkingia anophelis identified by 16s ribosomal RNA: An emerging threat. J Global Infect Dis 2020;12:225-227
4. Alkaysi SN, Alkazak MM, Alaraj JM. Neonatal bacteremia and meningitis caused by Elizabethkingia, treatment and challenges: a case report and literature review. Int J Contemp Pediatr 2025;12:1846-9.
5. Pracop GW, Church DL, Hall GS, janda WM, Koneman EW, Schreckenberger PC, Woods GL. Koneman's Color Atlas and Textbook OF Diagnostic Microbiology, 7th ed. Philadelphia: Wolters Kluwer health; 2017.
6. Collee JG, Fraser AG, Marmion BP, Simmons A editors. Mackie & McCartney practical medical Microbiology. 14 th ed. New Delhi: Elsevier; 2014