**CASE SERIES**

*Elizabethkingia meningoseptica* Infections: A Case Series from a Tertiary Hospital in South Tamil Nadu

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**ABSTRACT**

*Elizabethkingia meningoseptica* is an opportunistic pathogen increasingly reported as hospital-acquired infection. Here, we report a series of cases of eight patients with invasive *E. meningoseptica* infections over a period of 27 months in a tertiary teaching hospital from South India. Age range was 45 days to 84 years, median 66 years, with male preponderance. Associated risk factors included recent hospitalization with surgeries, diabetes mellitus, renal failure, mechanically ventilated, and central line. All isolates were susceptible to minocycline. Combination therapy with ciprofloxacin and piperacillin tazobactam was most common. Six recovered and two patients were lost to follow-up.

**Keywords:** *Elizabethkingia meningoseptica*, Empirical antibiotic therapy, Intensive care unit.

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**INTRODUCTION**

Despite ubiquitous presence in hospital environment, *E. meningoseptica* is overlooked or misidentified as pseudomonas-like organisms in laboratories without trained microbiologists and automated identification system. Prolonged hospitalization, broad spectrum antibiotics, and central line catheter are some of the significant risk factors. In this report, we describe case series of eight invasive *E. meningoseptica* infections between January 2019 to March 2021 in a tertiary teaching hospital from South Tamil Nadu.

**CASE DESCRIPTION**

**Patients' Characteristics**

During the study period, eight patients were identified. Table 1 shows the demographic details, risk factors, and clinical outcome of these patients. Age range was 45 days to 84 years. Associated risk factors included the recent hospitalization with surgeries (5/8), diabetes mellitus (5/8), renal failure (4/8), mechanically ventilated (5/8), and central line (1/8). A case of extreme preterm twin baby with prolonged intensive care unit (ICU) stay had prior blood cultures at different time periods growing multidrug organisms including carbapenem-resistant *Escherichia coli*, *A. baumannii* (sensitive only to colistin) and *Sphingomonas paucimobilis*. Median days of ICU stay prior to bacteremia was 9.5 days (range: 6–48 days). Six acquired infection in the ICU, and two from the hospital ward and dialysis unit each. Cases were reported sporadically without clusters of infection.

**Antimicrobial Susceptibility**

All isolates were susceptible to minocycline, and varied susceptibility to piperacillin tazobactam (25%) trimethoprim/sulfamethoxazole (37%), and fluoroquinolones (ciprofloxacin 50%, levofloxacin 50%).

**Therapeutic Regimens and Outcome**

Most commonly, the combination therapy with ciprofloxacin and piperacillin tazobactam was used.

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| Table 1: Clinical characteristics of the patients |
|-----------------------------------------------|
| Age   | 79 | 40 | 64 | 75 | 1  | 68 | 22 | 84 |
| Gender | M | M | M | F | M | M | M | M |
| Culture positive | November 2018 | December 2018 | January 2019 | July 2019 | September 2019 | December 2019 | January 2021 | February 2021 |
| Diagnosis | Metabolic encephalopathy | Acute cerebrovascular accident with left hemiparesis | Right foot first metatarsal osteomyelitis/triple vessel disease/bilateral pleural effusion | Acute pulmonary thromboembolism/pneumonitis | Extreme preterm baby | Diabetic foot ulcer with cellulitis | CAPD peritonitis | Large bowel obstruction with sigmoid volvulus, chronic kidney disease/septic shock |
| Recent hospitalization and procedures | Yes, below knee amputation done 2 weeks back | Right frontotemporoparietal decompressive craniectomy and tracheostomy done a week back | Wound debridement and removal of remnant bone done a week back | Laparoscopy assisted vaginal hysterectomy with bilateral salpingooophorectomy done a week back | Left below knee amputation | Emergency laparotomy with sigmoid colon resection and descending colostomy done 2 weeks back and Blood culture, \textit{Klebsiella pneumoniae} (CRE) |
| ICU stay | Specialty ICU | Neurology ICU | Specialty stepdown ICU | No, Medical ward | Neonatal ICU | Respiratory ICU | No, Surgery ward | Surgical ICU |
| Duration of hospitalization | 10 days | 40 days | 25 days | 2 days | 102 days | 26 days | 14 days | 41 days |
| Diabetes | Yes | Yes | Yes | No | No | Yes | Yes | No |
| Mechanical ventilation | No | Yes | No | No | Yes | Yes | Yes | Yes |
| Central line | No | Yes | No | No | Yes | Yes | No | Yes |
| Number of ICU days prior to bacteremia | 6 | 9 | 10 days | No | 48 days | 22 days | No | 21 |
| Renal failure | No | No | Yes | No | No | Yes | Yes | Yes |
| Treatment | Ciprofloxacin | Meropenem, piptaz | Piptaz, ciprofloxacin | Meropenem, levofloxacin | Piptaz, meropenem | Ciprofloxacin, cotrimoxazole | Intraperitoneal ciprofloxacin for 14 days | Piptaz, meropenem |
| Duration of therapy | 9 days | 9 days | 8 days | 5 days | 10 days | 7 days | 14 days | 8 days |
| Microbiological clearance | Yes | Yes | No | Yes | Yes | No | Yes | No |
| Outcome | Survived | Survived | AMA | Survived | Survived | AMA | Survived | Died |

AMA, against medical advice; CAPD, continuous ambulatory peritoneal dialysis; CRE, carbapenem-resistant enterobacteriaceae
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that many clinicians are still unaware of this organism. In India, most of the case reports and series are from few large medical centers with well-equipped laboratories.²–⁴

Notable limitations include retrospective design of the study, with few cases. Vitek 2 System with limited Elizabethkingia species in its database has poor concordance of species identification in comparison with 16S ribosomal RNA sequencing, only 24.5–26.5%.⁵ Also as reported by Lau et al., almost all E. anophelis species were misidentified as E. meningoseptica by Vitek 2.⁶ The species identification was not confirmed by 16SrRNA sequencing in the study.

**Highlights**
Prior surgical procedure followed by empirical antibiotic therapy was a major predisposing factor for this infection. There was no remarkable change in the antimicrobial susceptibility over 2.5-year period with good susceptibility to minocycline and ciprofloxacin.

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